Nuclear Data Sheets for A = 183*

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Abstract: Evaluated nuclear structure and decay data for all nuclides with mass number A=183 (Yb, Lu, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb) are presented here. At, Po and Fr have not yet been observed, but for prediction of ground state and/or isomer properties see, e.g., 2015Bh08 (At, Fr), 2013Ba41 (Tl), 2013Ho05 (Po). This evaluation includes structure and decay data information available by 15 April 2015 and supersedes that by R.B. Firestone published in *Nuclear Data Sheets* **65**, 589 (1992) (literature cutoff 9 January 1991), and subsequent revisions by C.M. Baglin for ^{183}Au in ENSDF database (literature cutoff 13 March 1999), ^{183}Hg in *Nuclear Data Sheets* **91**, 117 (2000) (literature cutoff 25 September 2000), ^{183}Tl in *Nuclear Data Sheets* **95**, 49 (2002) (literature cutoff 1 January 2002) and ^{183}Pb in ENSDF (literature cutoff 6 January 2003).

Since the prior Nuclear Data Sheets publication of this mass chain: ^{183}Yb (2012Ku26) and ^{183}Pb (2006An11, 2006Se18, 2007De09, 2009Se13) have been observed; our knowledge of high-spin states has been significantly expanded for ^{183}Ta (2009Sh17), ^{183}W (1999Sa60), ^{183}Re (1998Ha51, 2001Sh41), ^{183}Au (2002Jo18, 2005So01) and ^{183}Tl (2001Mu26, 2004Ra28); a large amount of new structure information for ^{183}W has been obtained from transfer reactions (1997Pr02, 2011Bo09), (n,n' γ) (1993Pr09) and thermal neutron capture (1993Pr09, 1997Pr02, 2011Bo09, 2014Hu02), as well as from the two-photon cascade study by 2005Su29.

Cutoff Date: All data received by 15 April 2015 have been evaluated.

General Policies and Organization of Material: see <http://www.nndc.bnl.gov/nds/NDSPolicies.pdf>.

Acknowledgments: The evaluator is grateful to the compilers of the XUNDL database (S. Gaereds, B. Singh, K. Abusaleem, J. Chenkin, G. Reed, R. Zywna, J. Roediger) for XUNDL database compilations of data from 6 papers, and thanks the reviewer of this evaluation for constructive comments. The evaluator also thanks M. Galan for the critical reading of a couple of datasets.

General Comments: Uncertainties in absolute γ -ray intensities are calculated using the method of Browne (1986Br21).

Throughout this evaluation rotational band parameters have been calculated from the standard energy equation:

$$E(J,K)=E_0+A[J(J+1)+\delta_{K,1/2}(-1)^{J+1/2}a(J+1/2)]+BJ^2(J+1)^2$$

Where **A** is given in keV, **B** in eV, and the decoupling constant **a** is dimensionless. Where not explicitly stated, **B** is assumed to be 0 and each set of parameters is calculated with the minimum number of lowest lying level energies necessary to define the standard energy equation.

Theoretical conversion coefficients are from relativistic Hartree-Fock calculations using the "Frozen Orbitals" approximation and obtained from the code BrIcc v2.3 (29-Mar-2013) (2008Ki07). For mixed transitions with unknown δ , $\delta=1.00$ has been assumed for E2+M1 and E3+M2 transitions, and $\delta=0.10$ for other mixed multipolarities.

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NUCLEAR DATA SHEETS

Index for A = 183

Nuclide	Data Type	Page	Nuclide	Data Type	Page
	Skeleton Scheme for A=183	152	¹⁸³ Pb	¹⁸⁷ Po α Decay	422
¹⁸³ Yb	Adopted Levels	155		U(p,X)	423
¹⁸³ Lu	Adopted Levels	155			
¹⁸³ Hf	Adopted Levels, Gammas	156			
	¹⁸³ Lu β^- Decay	157			
	¹⁸³ Hf ⁷¹⁺ IT Decay	158			
¹⁸³ Ta	Adopted Levels, Gammas	159			
	¹⁸³ Hf β^- Decay	163			
	¹⁸¹ Ta(¹⁸ O, ¹⁶ O γ)	165			
	¹⁸² Ta(n, γ) E=thermal	166			
¹⁸³ W	Adopted Levels, Gammas	168			
	¹⁸³ Ta β^- Decay	205			
	¹⁸³ W IT Decay (5.30 s)	209			
	¹⁸³ Re ϵ Decay	210			
	¹⁷⁶ Yb(¹⁴ C, α 3n γ)	213			
	¹⁸² W(n, γ) E=thermal	217			
	¹⁸² W(n, γ) E=thermal: $\gamma\gamma$ Coin	244			
	¹⁸² W(n, γ) E=res	254			
	¹⁸² W(n, γ) E=4.1 eV	259			
	¹⁸² W(d,p), (pol d,p)	263			
	¹⁸² W(t,d)	267			
	¹⁸³ W(γ,γ'): Mossbauer	267			
	¹⁸³ W(n,n' γ)	268			
	Coulomb Excitation	271			
	¹⁸⁴ W(d,t)	273			
	¹⁸⁴ W(³ He, α)	275			
¹⁸³ Re	Adopted Levels, Gammas	276			
	¹⁸³ Re IT Decay (1.04 ms)	293			
	¹⁸³ Os ϵ Decay (13.0 h)	294			
	¹⁸³ Os ϵ Decay (9.9 h)	302			
	¹⁷⁶ Yb(¹¹ B,4n γ)	305			
	¹⁸¹ Ta(α ,2n γ)	313			
	¹⁸² W(³ He,d),(α ,t)	315			
¹⁸³ Os	Adopted Levels, Gammas	317			
	¹⁸³ Os IT Decay (9.9 h)	331			
	¹⁸³ Os IT Decay (=30 ns)	331			
	¹⁸³ Ir ϵ Decay	333			
	¹⁷⁰ Er(¹⁸ O,5n γ)	346			
	¹⁸⁶ W(α ,7n γ), ¹⁸⁵ Re(p,3n γ)...	352			
¹⁸³ Ir	Adopted Levels, Gammas	355			
	¹⁸³ Pt ϵ Decay (43 s)	358			
	¹⁸⁷ Au α Decay	359			
	¹⁶⁸ Er(¹⁹ F,4n γ)	359			
	¹⁸⁵ Re(α ,6n γ)	360			
¹⁸³ Pt	Adopted Levels, Gammas	362			
	¹⁸³ Pt IT Decay	370			
	¹⁸³ Au ϵ Decay	370			
	¹⁸⁷ Hg α Decay (1.9 min)	382			
	¹⁸⁷ Hg α Decay (2.4 min)	382			
	(HI,xn γ)	382			
¹⁸³ Au	Adopted Levels, Gammas	386			
	¹⁸³ Hg ϵ Decay	392			
	¹⁸⁷ Tl α Decay	396			
	¹⁵² Sm(³⁵ Cl,4n γ)	397			
	¹⁵⁹ Tb(²⁹ Si,5n γ)...	399			
¹⁸³ Hg	Adopted Levels, Gammas	401			
	¹⁸³ Tl ϵ Decay	406			
	¹⁸⁷ Pb α Decay (15.2 s)	406			
	¹⁸⁷ Pb α Decay (18.3 s)	408			
	¹⁵⁵ Gd(³² S,4n γ) E=159 MeV	409			
	¹⁵⁵ Gd(³² S,4n γ) E=160 MeV	410			
¹⁸³ Tl	Adopted Levels, Gammas	413			
	¹⁸⁷ Bi α Decay (38 ms)	417			
	¹⁸⁷ Bi α Decay (0.370 ms)	418			
	¹⁰⁸ Pd(⁷⁸ Kr,p2n γ)	418			
	¹⁴⁴ Sm(⁴² Ca,p2n γ): E=195,200 MeV	419			
	¹⁴⁴ Sm(⁴² Ca,p2n γ): E=209 MeV	421			
¹⁸³ Pb	Adopted Levels, Gammas	422			

Skeleton Scheme for A=183

Skeleton Scheme for A=183 (continued)

NUCLEAR DATA SHEETS

Ground-State and Isomeric-Level Properties for A=183

Nuclide	Level	$J\pi$	$T_{1/2}$	Decay Modes
¹⁸³ Yb	0.0		≥ 222 ns	% β^- =100
¹⁸³ Lu	0.0	(7/2+)	58 s 4	% β^- =100
¹⁸³ Hf	0.0	(3/2-)	1.018 h 2	% β^- =100
	1464			
¹⁸³ Ta	0.0	7/2+	5.1 d 1	% β^- =100
	1310.16+x		0.9 μ s 3	%IT=100
¹⁸³ W	0.0	1/2-	$\geq 6.7 \times 10^{20}$ y	% α =?
	309.492	11/2+	5.30 s 8	%IT=100
¹⁸³ Re	0.0	5/2+	70.0 d 14	% ϵ =100
	496.242	9/2-	7.8 ns 4	%IT=100
	598.83	(5/2)-	1.96 ns 5	%IT=100
	1907.21	(25/2)+	1.04 ms 4	%IT=100
	1936.66+x	(21/2)	10 ns 4	%IT=100
¹⁸³ Os	0.0	9/2+	13.0 h 5	% ϵ +% β^+ =100
	170.73	1/2-	9.9 h 3	% ϵ +% β^+ =85 2; %IT=15 2
¹⁸³ Ir	0.0	5/2-	58 min 6	% ϵ +% β^+ =100
¹⁸³ Pt	0.0	1/2-	6.5 min 10	% ϵ +% β^+ =100; % α =0.0096 5
	34.74	7/2-	43 s 5	% ϵ +% β^+ =96.9 8; % α <3 $\times 10^{-4}$; %IT=3.1 8
¹⁸³ Au	0.0	(5/2)-	42.8 s 10	% ϵ +% β^+ =99.45 25; % α =0.55 25
¹⁸³ Hg	0.0	1/2-	9.4 s 7	% ϵ +% β^+ =88.3 20; % α =11.7 20; % ϵ p=0.00026 6
¹⁸³ Tl	0.0	(1/2+)	6.9 s 7	% ϵ +% β^+ >0; % α =?
	628.7	(9/2-)	53.3 ms 3	% α =1.5 3; % ϵ +% β^+ =?; %IT=?
	975.01	(13/2+)	1.48 μ s 10	%IT=100
¹⁸³ Pb	0.0	(3/2-)	535 ms 30	% α =90
	97	(13/2+)	415 ms 20	% α =100; %IT=?
¹⁸⁷ Au	0.0	1/2+	8.4 min 3	% α =0.00300 SY; ...
¹⁸⁷ Hg	0.0	3/2(-)	1.9 min 3	% α >0.0120; ...
	59	13/2(+)	2.4 min 3	% α >0.0250; ...
¹⁸⁷ Tl	335	(9/2-)	15.60 s 12	% α =0.15 5; ...
¹⁸⁷ Pb	0.0	(13/2+)	18.3 s 3	% α =12 2; ...
	33	(3/2-)	15.2 s 3	% α =7 2; ...
¹⁸⁷ Bi	0.0	(9/2-)	38 ms 3	% α =100
	112	(1/2+)	0.370 ms 20	% α =100
¹⁸⁷ Po	0.0	(1/2-,5/2-)	1.40 ms 25	% α =100

Adopted Levels

$Q(\beta^-)=4490$ CA; $S(n)=4170$ CA; $S(p)=10810$ CA; $Q(\alpha)=-1390$ CA 1997Mo25.

Production: $^9\text{Be}(^{238}\text{U}, X)$, $E=1$ GeV/nucleon (2012Ku26); 1.6 gm/cm² target at entrance to FRS fragment separator operated in achromatic ion-optical mode; 0.5 – 2 s beam spills with 2 – 4 s repetition period; event-by-event in-flight particle identification from tof (2 plastic scin, 30 ps time resolution), energy deposition (2 MUSIC ionization chambers separated by Cu stripper foil) and magnetic rigidity (four time-projection chambers, Bp resolution better than 10^{-4}); 0.21 nb 5 production cross section (2012Ku26).

 ^{183}Yb Levels

E(level)	$T_{1/2}$	Comments
0.0	≥ 222 ns	$\% \beta^- = 100$. $T_{1/2}$: lifetime must be long enough for ion to have survived the 300 ns flight time between production target and final focal plane.

Adopted Levels

$Q(\beta^-)=3570$ 10; $S(n)=5910$ SY; $Q(\alpha)=-540$ SY 2012Wa38.

Uncertainty in $S(n)$, $Q(\alpha)$ is 220, 510, respectively (2012Wa38). $S(p)=7870$ is calculated by 1997Mo25.

 ^{183}Lu Levels

E(level)	$J\pi$	$T_{1/2}$	Comments
0.0	$(7/2^+)$	58 s 4	$\% \beta^- = 100$. $T_{1/2}$: from decay curve for $K\alpha$ x ray(Hf) in ^{183}Lu β^- decay (1983Ry01). $J\pi$: systematics of odd-A Lu with $A \geq 167$ favor a $7/2[404]$ g.s. for ^{183}Lu .

Adopted Levels, Gammas

$Q(\beta^-)=2010\ 30$; $S(n)=5310\ 30$; $S(p)=8700\ SY$; $Q(\alpha)=830\ SY$ 2012Wa38.

Uncertainty in $S(p)$ and $Q(\alpha)$ is 200 (2012Wa38).

 ^{183}Hf Levels

Cross Reference (XREF) Flags

A ^{183}Lu β^- Decay
B $^{183}\text{Hf}^{71+}$ IT Decay

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
0.0 [§]	(3/2-)	A	1.018 h 2	$\% \beta^-=100$. $T_{1/2}$: from $\gamma(t)$ (2006Vo12) in ^{183}Hf β^- decay. Others: 1.05 h 5 (1967Mo13), 1.067 h 17 (1966Ba06), 1.10 h 7 (1960Po01), 1.07 h 5 (1956Ga46) from β^- decay. The weighted average of all data is 1.019 h 3 and the unweighted average is 1.061 h 13.
68.57 [§] 18	(5/2-)	A		$J\pi$: intraband (M1) 69γ to (3/2-) g.s..
168.1 [§] 3	(7/2-)	A		$J\pi$: intraband 99γ to (5/2-) 69; intraband 168γ to (3/2-) g.s..
205.7 5	(5/2-)	A		Likely configuration: 5/2 1/2[510] (1983Ry01). 137γ to (5/2-) 69; 206γ to (3/2-) g.s..
316.9 4	(7/2-)	A		Likely configuration: 7/2 7/2[503] (1983Ry01). 316γ to (3/2-) g.s.; 149γ to (7/2-) 168.
1125.3 [#] 4	(5/2+)	A		Allowed β^- decay ($\log ft=5.6$) from possible 7/2[404] ^{183}Lu . 1125γ to (3/2-) g.s.; 957γ to (7/2-) 168.
1255.8 [#] 6	(7/2+)	A		1088γ to (7/2-) 168; 1187γ to (5/2-) 69.
1464 64		B		$\%IT(^{183}\text{Hf}^{71+})=100$; $T_{1/2}(^{183}\text{Hf}^{71+})=10\ \text{s} +48-5$ (2010Re07, 2012Re19) from $^{183}\text{Hf}^{71+}$ IT decay. $J\pi$: possibly the $K\pi=27/2-$ state with configuration ((π 7/2[404])+(π 9/2[514]))+(ν 11/2[615])) and predicted $E=1712$ (2010Re07, 2012Re19).
1604.8 8	($\leq 9/2$)	A		$E(\text{level})$: from direct mass measurement in $^{183}\text{Hf}^{71+}$ IT decay (2010Re07, 2012Re19). $J\pi$: 1537γ to (5/2-) 69, 1437γ to (7/2-) 168 suggest $J\pi=(3/2-, 5/2, 7/2, 9/2-)$.

[†] From least-squares fit to adopted $E\gamma$.

[‡] Suggested by 1983Ry01 based on systematics.

[§] (A): 3/2[512] band. Analogous to ^{185}W isotone (1983Ry01). Band parameters: $E_0=-20$, $A=13.4$, $B=42.0$ ($J=3/2, 5/2, 7/2$ levels).

[#] (B): $\pi=+$ 3-quasiparticle band. Possible configuration: ((π 11/2[615])(π 9/2[514])(ν 7/2[514])) (1983Ry01).

 $\gamma(^{183}\text{Hf})$

E(level)	$E\gamma^{\dagger}$	$I\gamma^{\dagger}$	Mult.	α	Comments
68.57	68.6 2	100.0	(M1)	11.79 19	Mult.: from intensity balance in β^- decay.
168.1	99.4 5	33 7	[M1+E2]	3.84 25	
	168.2 4	100 10	[E2]	0.519 9	
205.7	137.3 6	40 10	[E2]	1.067 23	
	205.6 6	100 30	[E2]	0.262 5	
316.9	148.7 6	25 5	[M1+E2]	1.05 25	
	248.7 5	100 10	[M1+E2]	0.23 9	
	316.0 10	30 10	[E2]	0.0679 12	
1125.3	957.3 6	12 3			
	1056.7 5	66 7			
	1125.3 5	100 10			
1255.8	1087.7 6	100 25			
	1187.0 10	50 25			
1604.8	1436.5 10	83 42			
	1536.5 10	100 50			

[†] From ^{183}Lu β^- decay.

^{183}Lu β^- Decay 1983Ry01

Parent ^{183}Lu : E=0; $J\pi=(7/2+)$; $T_{1/2}=58$ s 4; Q(g.s.)=3570 100; % β^- decay=100.

1983Ry01: ^{183}Lu from 11.7 MeV/nucleon ^{136}Xe bombardment of natural W and Ta targets; observed radiations assigned to

^{183}Lu β^- decay on the basis of x- γ coincidence data; 2 Ge(Li) detectors; measured E γ , I γ , $\gamma\gamma$ coin, (K α x ray)- γ coin, K α x ray(t). Decay scheme constructed on the basis of energy sums.

For this decay, Q $\times$ ' Branching=3670 100 cf. Summed decay energies =3750 417.

 ^{183}Hf Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0 §	(3/2-)	1.018 h 2	% β^- =100. $T_{1/2}$: from $\gamma(t)$ for 459 γ , 784 γ and 1470 γ (2006Vo12); 0.2% systematic uncertainty combined in quadrature with statistical uncertainty. Others: 1.05 h 5 (1967Mo13), 1.067 h 17 (1966Ba06), 1.10 h 7 (1960Po01), 1.07 h 5 (1956Ga46).
68.57 § 18	(5/2-)		
168.1 § 3	(7/2-)		
205.7 5	(5/2-)		$J\pi$: likely configuration: 1/2[510] (J=5/2 member).
316.9 4	(7/2-)		$J\pi$: likely configuration: 7/2[503] (J=7/2 member) (1983Ry01).
1125.3 # 4	(5/2+)		
1255.8 # 6	(7/2+)		
1604.8 8	($\leq 9/2$)		

[†] From least-squares fit to E γ .

[‡] Suggested by 1983Ry01 based on systematics.

§ (A): 3/2[512] band. Analogous to ^{185}W isotone.

(B): $\pi=(+)$ 3-quasiparticle band?. Possible configuration: ((π 7/2[404])(π 9/2[514])(ν 7/2[514])) (1983Ry01).

 β^- radiations

E β^-	E(level)	I β^- [‡]	Log ft [†]
(1970 100)	1604.8	≈ 2.8	≈ 6.3
(2310 100)	1255.8	4.5 13	6.37 15
(2440 100)	1125.3	45 8	5.46 11
(3250 100)	316.9	10.3 20	6.60 11
(3360 100)	205.7	5.4 13	6.94 13
(3400 100)	168.1	14 4	6.55 14
(3500 100)	68.57	18 14	6.5 4
(3570 § 100)	0.0	<8	>8.4 ^{1u}

[†] Calculated assuming 100 keV uncertainty in Q value.

[‡] Absolute intensity per 100 decays.

§ Existence of this branch is questionable.

 $\gamma(^{183}\text{Hf})$

I γ normalization: normalized assuming $\Sigma(I(\gamma+ce)$ to g.s.)=96 4 based on I β (g.s.)<8% if log f^{1u}_t >8.5.

E γ	E(level)	I $\gamma^{\dagger}$	Mult.	α	Comments
68.6 2	68.57	18 4	(M1)	11.79 19	Mult.: intensity balance rules out E1. %I γ =4.4 5 assuming adopted decay scheme normalization.
99.4 5	168.1	10 2	[M1+E2]	3.84 25	
137.3 6	205.7	4 1	[E2]	1.067 23	
148.7 6	316.9	5 1	[M1+E2]	1.05 25	
168.2 4	168.1	30 3	[E2]	0.519 9	%I γ =7.3 12 assuming adopted decay scheme normalization.
205.6 6	205.7	10 3	[E2]	0.262 5	$\Delta I\gamma(\text{absolute})=0.8$ per 100 decays.
^x 220.1 5		6 2			
248.7 5	316.9	20 2	[M1+E2]	0.23 9	
316.0 10	316.9	6 2	[E2]	0.0679 12	
^x 449.3 6		8 2			
957.3 6	1125.3	12 3			
1056.7 5	1125.3	66 7			
1087.7 6	1255.8	12 3			
1125.3 5	1125.3	100 10			%I γ =24 4 assuming adopted decay scheme normalization.
1187.0 10	1255.8	6 3			

Continued on next page (footnotes at end of table)

^{183}Lu β^- Decay 1983Ry01 (continued) $\gamma(^{183}\text{Hf})$ (continued)

E_γ	E(level)	$I_\gamma^\dagger$
1436.5 10	1604.8	=5
1536.5 10	1604.8	=6
^x 1596.7 10		=9

[†] For absolute intensity per 100 decays, multiply by 0.25 4.

^x γ ray not placed in level scheme.

Decay Scheme **$^{183}\text{Hf}^{71+}$ IT Decay 2010Re07,2012Re19**

Parent ^{183}Hf : $E=1464$ 64; $J\pi=?$; $T_{1/2}=10$ s +48-5; %IT decay=100.

2010Re07: ^{197}Au projectiles ($E=478$ A to 492 A MeV) fragmented by ^9Be on Nb backing; stripped reaction products separated in fragment separator (with 200 μm Al foil at center), injected into storage ring and stochastically and electron cooled; time-resolved Schottky mass spectrometry; measured $T_{1/2}$ of metastable states for highly-ionized or bare ^{183}Hf ions. See also 2012Re19.

 ^{183}Hf Levels

E(level)	Comments
1464 64	%IT($^{183}\text{Hf}^{71+}$)=100; $T_{1/2}(^{183}\text{Hf}^{71+})=10$ s +48-5 (2010Re07,2012Re19). $J\pi$: possible $K\pi=27/2^-$ state with configuration $((\pi 7/2[404])+(\pi 9/2[514])+(\nu 11/2[615]))$ (2010Re07). E(level): from direct mass measurement (2010Re07).

Adopted Levels, GammasQ(β^-)=1071.1 17; S(n)=6934.18 20; S(p)=6533 6; Q(α)=1340 5 2012Wa38. ^{183}Ta Levels

Cross Reference (XREF) Flags

A ^{183}Hf β^- Decay
 B $^{182}\text{Ta}(n,\gamma)$ E=thermal
 C $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
0.0@	7/2+ [§]	ABC	5.1 d 1	% β^- =100. μ =(+) ^{2.36 3} (2005St24). $J\pi$: J from atomic beam (1963Do13); π from μ in agreement with Nilsson model value (=2.19) for π 7/2[404] orbital. $T_{1/2}$: weighted average of 5.2 d 1 (1953Du20), 5.0 d 1 (1955Po26), 5.0 d 4 (1957Su13), 5.0 d 4 (1966Ba18). μ : from 1984Ed01 (NMR on oriented nuclei; ^{181}Ta reference standard). Other: 2.28 3 (1981Al21; NMR/rad detection).
73.164& 14	(9/2)-	ABC	106 ns 10	$J\pi$: E1 73 γ to 7/2+ g.s.; band assignment. $T_{1/2}$: weighted average of 107 ns 11 (1967Mo13) in ^{183}Hf β^- decay and 101 ns 20 (2008Vo04) in $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
143.202@ 16	9/2+ [§]	ABC		$J\pi$: M1 143 γ to 7/2+ g.s.; band assignment.
231.39& 9	(11/2)-	C		$J\pi$: Q(+D) intraband 158 γ to (9/2)- 73; band assignment.
317.10@ 7	11/2+ [§]	C		$J\pi$: Q intraband 317 γ to 7/2+ g.s..
368.3 7	(7/2, 9/2, 11/2)	B		$J\pi$: 225 γ to 9/2+ 143; 295 γ to (9/2)- 73.
417.07& 12	(13/2)-	C		$J\pi$: stretched Q intraband 344 γ to (9/2)- 73; intraband Q(+D) 186 γ to (11/2)- 231.
459.062# 15	(5/2+)	ABC		$J\pi$: 316 γ to 9/2+ 143; 459 γ to 7/2+ g.s.; band assignment.
520.11@ 13	13/2+ [§]	C		Intraband 203 γ to 11/2+ 317; intraband 377 γ to 9/2+ 143.
545.6 6	(5/2+, 7/2, 9/2+)	B		$J\pi$: 87 γ to (5/2+) 459; 402 γ to 9/2+ 143.
572.79# 3	(7/2+)	ABC		$J\pi$: M1 intraband 114 γ to (5/2+) 459.
629.31& 15	(15/2)-	C		$J\pi$: Q intraband 398 γ to (11/2)- 231; Q(+D) intraband 212 γ to (13/2)- 417.
716.89# 11	(9/2+)	C		$J\pi$: intraband 144 γ to (7/2+) 573.
730.9 8		B		$J\pi$: 158 γ to (7/2+) 573 so J=(3/2 to 11/2).
735.05 8		A		$J\pi$: 735 γ to 7/2+ g.s. so J=(3/2 to 11/2).
749.7@ 5	15/2+ [§]	C		$J\pi$: 229 γ to 13/2+ 520; Q intraband 433 γ to 11/2+ 317.
806.4 5		B		$J\pi$: 807 γ to 7/2+ g.s., 663 γ to 9/2+ 143 so $J\pi$ =(5/2+, 7/2, 9/2, 11/2+).
856.911 20	(5/2-)	AB		$J\pi$: 784 γ to (9/2)- 73; 284 γ to (5/2+) 459 imply $J\pi$ =(5/2-, 7/2, 9/2+); possible K-2 9/2[514] γ vibrational state (1969Mc08).
867.68& 18	(17/2)-	C		$J\pi$: stretched Q intraband 450 γ to (13/2)- 417; intraband 238 γ to (15/2)- 629.
890.06# 21	(11/2+)	C		$J\pi$: intraband 173 γ to (9/2+) 717.
905.86a 10	(13/2-)	C		$J\pi$: (Q) 833 γ to (9/2)- 73; band assignment.
940.2 7	(5/2+, 7/2, 9/2+)	B		$J\pi$: 481 γ to (5/2+) 459; 797 γ to 9/2+ 143.
948.58? 12		A		$J\pi$: possible 376 γ to (7/2+) 573, possible 876 γ to (9/2)- 73, possible 807 γ to 9/2+ 143, so $J\pi$ =(7/2, 9/2, 11/2+).
960.05? 13		A		Possible 225 γ to 735.
971.4 8		B		$J\pi$: 399 γ to (7/2+) 573.
1030.26? 12		A		Possible 295 γ to 735.
1091.42# 23	(13/2+)	C		$J\pi$: intraband 201 γ to (11/2+) 890; intraband 375 γ to (9/2+) 717.
1102.35a 12	(15/2-)	C		$J\pi$: intraband D+Q 196 γ to (13/2)- 906; stretched Q 871 γ to (11/2)- 231.
1127.8 6	(5/2+, 7/2, 9/2+)	B		$J\pi$: 985 γ to 9/2+ 143; 668 γ to (5/2+) 459.
1129.99& 20	(19/2)-	C		$J\pi$: intraband stretched Q 501 γ to (15/2)- 629; intraband 262 γ to (17/2)- 868.
1150.79 10	($\leq$ 5/2)	AB		$J\pi$: 692 γ to (5/2+) 459; log ft=7.8, log $f^{lu}t$ <8.5 from (3/2-).
1310.16a 15	(17/2-)	C		$J\pi$: stretched Q 893 γ to (13/2)- 417; intraband 208 γ to (15/2)- 1102.
1310.16+x		C	0.9 μ s 3	%IT=100. Possible γ to (17/2-) 1310. $T_{1/2}$: from ($^{18}\text{O},^{16}\text{O}\gamma$). $J\pi$: intraband 228 γ to (13/2+) 1091.
1319.4# 4	(15/2+)	C		145 γ to 1310+x.
1455.40+x 10		C		
1543.39 8	(5/2-)	A		$J\pi$: 687 γ to (5/2-) 857; 1470 γ to (9/2)- 73; log ft=5.9 from (3/2-).
1565.2+x 10		C		255 γ to 1310+x.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

¹⁸³Ta Levels (continued)

E(level) [†]	Jπ [‡]	XREF	Comments
1784.31? 20	(3/2+, 5/2)	A	Jπ: possible 1784γ to 7/2+ g.s.; log ft=6.7, log f ^l u _t <8.5 from (3/2-).

[†] From least-squares fit to adopted E_γ, assigning 1 keV uncertainty to E_γ data for which authors did not state an uncertainty and omitting uncertainly-placed transitions, unless all transitions from a given level are of that character.

[‡] Values given without further justification are based on rotational band structure.

§ Definite Jπ assigned to all members of g.s. band based on independently-determined Jπ(g.s.)=7/2+ and mult(143γ)=M1.

(A): π 5/2[402] band. Band parameters: E₀=418, A=16.4, B=-14.7 (J=5/2, 7/2, 9/2 levels).

@ (B): π 7/2[404] band. Band parameters: E₀=-56, A=16.0, B=-5.0 (J=7/2, 9/2, 11/2 levels).

& (C): π 9/2[514] band. Band parameters: E₀=8.1, A=14.5, B=-4.2 (J=9/2, 11/2, 13/2 levels).

^a (D): γ cascade based on (13/2-). Probable γ-vibrational state coupled to 9/2[514]. Band parameters: E₀=186, A=16.2, B=-27.4 (J=13/2, 15/2, 17/2 levels).

γ(¹⁸³Ta)

E(level)	E _γ [†]	I _γ [†]	Mult. [‡]	α	Comments
73.164	73.160 15	100	E1	0.815	B(E1)(W.u.)=2.8×10 ⁻⁶ 3. Other E _γ (mult): 73.6 I (Q or D+Q) from (¹⁸ O, ¹⁶ Oγ).
143.202	143.19 2	100	M1	1.566	Other E _γ : 143.6 I from (¹⁸ O, ¹⁶ Oγ).
231.39	158.3# 1	100#	Q(+D)		Mult.: D+Q or Q from γ asymmetry in ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
317.10	173.7# 1	100# 11			
	317.3# 1	59# 30	(E2)	0.0695	Mult.: Q intraband γ from ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
368.3	225.1§	100§			
	295.1§	61§			
417.07	185.7# 1	100# 6	Q(+D)		Mult.: D+Q or Q from γ asymmetry in ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
	344.0# 3	9# 3	(E2)	0.0549	Mult.: Q intraband γ from ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
459.062	315.855 20	4.1 4	[E2]	0.0704	Other I _γ : 37 from (n,γ) E=thermal; γ not observed in (¹⁸ O, ¹⁶ Oγ).
	459.073 20	100 3	[M1, E2]	0.045 20	
520.11	203.0# 1	100# 33			
	376.8# 10	83# 50			
545.6	86.5§	100§			
	402.4§	58§			
572.79	113.72 3	100	M1	3.02	Other E _γ (mult): 114.2 I (D+Q or Q) from (¹⁸ O, ¹⁶ Oγ).
629.31	212.3# 1	100# 10	Q(+D)		Mult.: D+Q or Q from γ asymmetry in ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
	397.7# 3	13# 7	(E2)	0.0366	Mult.: Q intraband γ from ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
716.89	144.1# 1	100#			
730.9	158.1§	100§			
735.05	735.05@ 8	100			
749.7	229.3# 6	67# 17			
	432.8# 6	100# 33	(E2)	0.0292	Mult.: Q intraband γ from ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
806.4	75.5§	43§			
	233.6§	3.2§			
	663.2§	52§			
	806.5§	100§			
856.911	284.10 5	0.55 6	[E1]	0.0252	
	311.4§	1.6§			
	397.86 2	4.4 5			Other I _γ : 7.1 from (n,γ) E=thermal.
	783.73 3	100 3			
	856.78@ 15	0.17 5			
867.68	238.4# 1	100# 20			
	450.0# 5	20# 10	(E2)	0.0264	Mult.: Q intraband γ from ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
890.06	173.0# 2	100#			
905.86	832.6# 1	100#	(Q)		Mult.: from ¹⁸¹ Ta(¹⁸ O, ¹⁶ Oγ).
940.2	481.2§	100§			
	796.9§	37§			
948.58?	375.78@ 12	63 14			
	806.5@ 2	100 21			
	875.5@ 3	43 21			
960.05?	225.00@ 10	100			
971.4	165.1§	57§			
	398.6§	100§			
1030.26?	295.21@ 8	100			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Ta})$ (continued)

E(level)	$E\gamma^\dagger$	$I\gamma^\dagger$	Mult. [‡]	α	Comments
1091.42	201.2 [#] 2	100 [#] 20			
	374.9 [#] 3	40 [#] 20	[E2]	0.0431	
1102.35	196.4 [#] 1	56 [#] 22	D+Q		Mult.: from $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
	685.2 [#] 3	33 [#] 22			
	871.3 [#] 2	100 [#] 33	Q		Mult.: from $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
1127.8	321.7 [§]	15 [§]			
	668.4 [§]	21 [§]			
	984.6 [§]	100 [§]			
1129.99	262.3 [#] 1	100 [#] 33			
	501.0 [#] 9	33 [#] 17	(E2)	0.0201	Mult.: Q intraband γ from $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
1150.79	344.3 [§]	5.4 [§]			
	691.73 10	100 10			
1310.16	207.8 [#] 1	100 [#] 10	Q(+D)		Mult.: D+Q or Q from γ asymmetry in $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
	404.4 [#] 10	<5 [#]			
	682.2 [#] 10	<5 [#]			
	893.0 [#] 10	24 [#] 10	Q		Mult.: from $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
1310.16+x	x				E γ : x<50 keV if mult(x)=M1 or <100 keV if mult(x)=M1,E2; due to high internal conversion and low detection efficiency, a γ with this energy could not have been detected in $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.
1319.4	228.0 [#] 3	100 [#]			
1455.40+x	144.8 [#] 1	100 [#]			
1543.39	594.8 [@] 3	8 4			
	686.50 10	8.9 9			
	1470.2 1	100 11			
	1543.0 10	=0.74			
1565.2+x	254.6 [#] 10	100 [#]			
1784.31?	1784.3 [@] 2	100			

[†] From ^{183}Hf β^- decay, except as noted.[‡] From $\alpha(\text{K})\text{exp}$ or intensity balance in β^- decay, except as noted.[§] From $^{182}\text{Ta}(\text{n},\gamma)$ E=thermal.[#] From $^{181}\text{Ta}(^{18}\text{O},^{16}\text{O}\gamma)$.[@] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)Bands for ^{183}Ta $^{183}_{73}\text{Ta}_{110}$

^{183}Hf β^- Decay 2008Vo04,1969Mc08,1967Mo13

Parent ^{183}Hf : $E=0.0$; $J\pi=(3/2^-)$; $T_{1/2}=1.018$ h 2; $Q(\text{g.s.})=2010$ 30; $\%\beta^-$ decay=100.

Other: 2006Vo12.

2008Vo04, 2006Vo12: Source obtained from $^{182}\text{Hf}(n,\gamma)$ $E=\text{thermal}$ (measured $\sigma_n=133$ b 10; neutrons from TRIGA Mark-II reactor (at ATI, Vienna); HPGe detector; measured E_γ , absolute I_γ (2008Vo04), $T_{1/2}(^{183}\text{Hf})$ (2006Vo12).

1969Mc08: source from $^{182}\text{Hf}(n,\gamma)$; ^{182}Hf from 1–2 y irradiation of Hf, followed by isotopic separation; Ge(Li) detectors (FWHM=0.8 keV and 1.7 keV at 100 keV); 2 NaI(Tl) scin for $\gamma\gamma$ coin; anthracene β detector; thin-window Ge(Li) detector; measured $E\beta$, E_γ , I_γ , K x ray, $\gamma\gamma$ coin, $\beta\gamma$ coin.

1967Mo13: source from $\text{W}(n,\alpha)$; NaI(Tl), Ge(Li) and anthracene detectors; measured $E\beta$, $I\beta$, E_γ , I_γ , $\gamma\gamma$ coin, $\beta\gamma$ coin, $\gamma\gamma(t)$.

The adopted level scheme is from 1969Mc08. The total energy release for this decay scheme is 2198 107 cf.

$Q_{\text{xBR}}=2010$ 30.

 ^{183}Ta Levels

E(level) [†]	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0	7/2+	5.1 d 1	$T_{1/2}$: from Adopted Levels.
73.164 14	(9/2)–	107 ns 11	$T_{1/2}$: from $73\gamma(t)$ (1967Mo13).
143.197 16	9/2+		
459.060 15	(5/2+)		
572.79 3	(7/2+)		
735.06? 8			
856.909 20	(5/2–)		
948.58? 12			
960.05? 13			
1030.26? 12			
1150.79 11	($\leq 5/2$)		
1543.39 8	(5/2–)		
1784.31? 20	(3/2+, 5/2)		

[†] From least-squares fit to E_γ omitting the 806.5 γ which fits its placement poorly.

[‡] From Adopted Levels.

 β^- radiations

1967Mo13 report an additional β branch with $E\beta$ ($\%I\beta$) of 1000 60 (10 3) from β singles and 1000 50 (20 4) from β –459 γ coin, the latter $I\beta$ is probably enhanced due to source impurities and limited γ resolution.

$E\beta^-$	E(level)	$I\beta^{-\ddagger\S}$	Log ft	Comments
(230 30)	1784.31?	0.04 3	6.7 4	
(470 30)	1543.39	3.1 4	5.87 12	
(860 30)	1150.79	0.30 3	7.79 8	
(980 30)	1030.26?	0.09 8	8.5 4	
(1050 30)	960.05?	0.08 7	8.7 4	
(1150 30)	856.909	68.6 20	5.89 6	Measured $E\beta$ ($\%I\beta$)=1180 40 (56 11) (1967Mo13, β singles). Other $E\beta$: 1160 100 (1969Mc08). 1180 β –784 γ coin (1967Mo13, 1969Mc08) and 1180 β –459 γ coin (1967Mo13) observed.
(1270 ^{\S} 30)	735.06?	0.3 5	8.4 8	
(1440 30)	572.79	0.15 9	9.71 ^u 3	
(1550 30)	459.060	28.7 12	6.74 5	Measured $E\beta$ ($\%I\beta$)=1540 30 (34 7) (1967Mo13; β singles), 1540 30 (24 5; β –459 γ coin). Other $E\beta$: 1540 80 (1969Mc08). 1540 β –459 γ coin observed (1967Mo13, 1969Mc08)..
(2010 30)	0.0	≤ 14	$\geq 8.51^u$	

[†] From $I(\gamma+\text{ce})$ balance at level, assigning $0.5I_\gamma \pm 0.5I_\gamma$ to transitions with uncertain placement.

[‡] Absolute intensity per 100 decays.

^{\S} Existence of this branch is questionable.

 $\gamma(^{183}\text{Ta})$

I_γ normalization: based on $\%I_\gamma(784)$ from 2008Vo04; see also the general comment on I_γ . If $\Sigma(I(\gamma+\text{ce})$ to g.s.)=93 7 (which assumes $\leq 14\%$ β^- feeding to g.s. based on $\log f^{lu}_t \geq 8.5$ for $\Delta J=(2)$, $\Delta\pi=(\text{yes})$ transition), I_γ normalization=0.91 10 in satisfactory agreement with adopted normalization. No β branches to the 3 levels below 459 keV were observed by 1967Mo13 or 1969Mc08.

Continued on next page (footnotes at end of table)

^{183}Hf β^- Decay 2008Vo04,1969Mc08,1967Mo13 (continued) $\gamma(^{183}\text{Ta})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger$	Mult.§	α	Comments
73.160 15	73.164	38 4	E1	0.815	%I γ =35 3 assuming adopted decay scheme normalization. Mult.: from $\alpha(K)\text{exp}=0.65$ 6 (1969Mc08) based on I(K x ray) (assuming all observed I(K x ray) is attributable to conversion of the 73 γ). Other $\alpha(K)\text{exp}$: 0.5 (1967Mo13); ≤ 1 if I($\gamma+\text{ce}$)(73) $\leq 100\%$.
^x 84.69 6		0.030 6			
113.72 3	572.79	0.140 14	M1	3.02	Mult.: from intensity balance through the 573 level.
^x 124.1 2		0.025 8			
^x 131.0 3		0.018 12			
^x 139.0 2		0.025 12			
143.19 2	143.197	0.47 5	M1	1.566	Mult.: from intensity balance through the 143 level.
^x 149.1 2		0.019 10			
^x 153.75 15		0.034 7			
^x 157.90 15		0.033 12			
^x 160.78 2		0.52 5			
^x 165.20 15		0.036 12			
^x 180.4 2		0.031 12			
^x 223.40 15		0.08 3			
225.00@ 10	960.05?	0.150 15			
284.10 5	856.909	0.36 4	[E1]	0.0252	
295.21@ 8	1030.26?	0.170 17			
315.855 20	459.060	1.22 12	[E2]	0.0704	
375.78@ 12	948.58?	0.088 20			
397.86 2	856.909	2.9 3			
459.073 20	459.060	29.8 9	[M1,E2]	0.045 20	From 2008Vo04. Other %I γ : 27 3 (1969Mc08).
^x 466.7 2		0.09 4			
^x 471.1 2		0.16 3			
^x 476.90 18		0.72 7			
^x 481.31 5		0.70 15			
^x 500.7 3		0.080 8			
^x 536.8 2		0.150 15			
594.8@ 3	1543.39	0.21 10			
686.50 10	1543.39	0.240 24			
691.73 10	1150.79	0.30 3			
^x 715.3 10		0.044 20			
^x 717.2 10		0.07 3			
^x 727.3 3		0.06 3			
735.05@ 8	735.06?	0.88 9			
^x 762.9 3		0.07 3			
^x 769.3 3		0.14 5			
783.73 3	856.909	65.5 19			From 2008Vo04. Other %I γ : 65 7 (1969Mc08).
^x 797.2 5		0.020 2			
806.5@ 2	948.58?	0.14 3			
856.78@ 15	856.909	0.11 3			
^x 868.5 2		0.040 4			
875.5@ 3	948.58?	0.06 3			
^x 959.6 10		0.026 20			
^x 987.1 3		0.040 4			
^x 1045.5 3		0.07 2			
^x 1112.7 3		0.040 4			
1470.2 1	1543.39	2.7 3			
1543.0 10	1543.39	0.02 2			
1784.3@ 2	1784.31?	0.07 3			

† From 1969Mc08, except as noted.

‡ Absolute I γ from 2008Vo04 for 459 γ and 784 γ has been adopted; for the other lines, %I γ is taken from 1969Mc08. Note that I γ (2008Vo04)/I γ (1969Mc08)=1.01 11 for the 784 γ .

§ The assumed multipolarities shown within square brackets are consistent with intensity balance.

Absolute intensity per 100 decays.

@ Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

Decay Scheme

^{183}Ta Levels

& (D): Sequence based on (13/2-) 906. Probable K+2 γ -vibrational state coupled to 9/2[514].

¹⁸¹Ta(¹⁸O,¹⁶Oγ) 2009Sh17 (continued)

γ(¹⁸³Ta)

Eγ	E(level)	Iγ	Mult. [†]	Comments
x	1310.60+x			Eγ: x<50 keV for M1 or <100 keV for M1 or E2 γ. Due to high internal conversion and low detection efficiency, a gamma ray of this energy could not have been detected in this experiment.
73.6 1	73.6	41 4	Q(+D)	Mult.: R(asym)=1.0 1 implies Q or D+Q multipolarity.
114.2 1	573.40	6 2	Q(+D)	Mult.: R(asym)=1.1 1 implies Q or D+Q multipolarity.
143.6 1	143.60	21 4		Mult.: R(asym)=1.1 1 for 143.6+144.1 doublet.
144.1 1	717.50	10 2		Mult.: R(asym)=1.1 1 for 143.6+144.1 doublet.
144.8 1	1455.4+x	≈2		Mult.: R(asym)=1.1 1 for 144.8+144.1 doublet.
158.3 1	231.82	100 6	Q(+D)	Mult.: R(asym)=1.0 1 implies Q or D+Q multipolarity.
173.0 2	890.67	6 2		Mult.: R(asym)=1.2 1 for 173.7+173.0 doublet.
173.7 1	317.30	37 4		Mult.: R(asym)=1.2 1 for 173.7+173.0 doublet.
185.7 1	417.50	65 4	Q(+D)	Mult.: R(asym)=1.1 1 implies Q or D+Q multipolarity.
196.4 1	1102.78	5 2	D+Q	Mult.: R(asym)=0.8 2.
201.2 2	1092.0	10 2		Mult.: R(asym)=1.0 3 for 201.2+203.0 doublet.
203.0 1	520.31	6 2		Mult.: R(asym)=1.0 3 for 203.0+201.2 doublet.
207.8 1	1310.60	21 2	Q(+D)	Mult.: R(asym)=1.0 2 implies Q or D+Q multipolarity.
212.3 1	629.74	30 3	Q(+D)	Mult.: R(asym)=1.0 1 implies Q or D+Q multipolarity.
228.0 3	1320.0	≈2		Mult.: R(asym)=1.1 3 for 228.0+229.3 doublet.
229.3 6	749.9	4 1		Mult.: R(asym)=1.1 3 for 229.3+228.0 doublet.
238.4 1	868.12	10 2		
254.6 10	1565.2+x	4 2		
262.3 1	1130.42	6 2		
317.3 1	317.30	22 11	Q	Mult.: R(asym)=1.5 1.
344.0 3	417.50	6 2	Q	Mult.: R(asym)=1.4 2.
374.9 3	1092.0	4 2		Mult.: R(asym)=1.9 9 for 374.9+376.8 doublet.
376.8 10	520.31	5 3		Mult.: R(asym)=1.9 9 for 376.8+374.9 doublet.
397.7 3	629.74	4 2	Q	Mult.: R(asym)=1.5 2.
404.4 10	1310.60	<1		
432.8 6	749.9	6 2	Q	Mult.: R(asym)=2.2 6.
450.0 5	868.12	2 1	Q	Mult.: R(asym)=2.8 7.
459.2 1	459.2	8 4		
501.0 9	1130.42	2 1	Q	Mult.: R(asym)=2.6 7.
682.2 10	1310.60	<1		
685.2 3	1102.78	3 2		
832.6 1	906.29	29 5	(Q)	Mult.: R(asym)=1.3 2.
871.3 2	1102.78	9 3	Q	Mult.: R(asym)=1.6 2.
893.0 10	1310.60	5 2	Q	Mult.: R(asym)=1.7 3.

[†] From asymmetry ratio R(asym)=Iγ(in-plane)/Iγ(out-of-plane); expected ratios are >1 for stretched Q, 0.5 for stretched D, =1 for ΔJ=1, D+Q transitions with small δ.

¹⁸²Ta(n,γ) E=thermal 1971VaYW

Jπ(¹⁸²Ta target)=3-.

Secondary gammas only are reported by the authors.

¹⁸³Ta Levels

E(level) [†]	Jπ [‡]	E(level) [†]	Jπ [‡]	E(level) [†]	Jπ [‡]
0.0	7/2+	545.6	(5/2+, 7/2, 9/2+)	940.2	(5/2+, 7/2, 9/2+)
73.2	(9/2)-	572.8	(7/2+)	971.5	
143.2	9/2+	730.9		1127.8	(5/2+, 7/2, 9/2+)
368.3	(7/2, 9/2, 11/2)	806.4		1150.7	(≤5/2)
459.1	(5/2+)	857.0	(5/2-)		

[†] From least-squares fit to Eγ assuming the same uncertainty for all data.

[‡] From Adopted Levels.

$^{182}\text{Ta}(n,\gamma)$ E=thermal 1971VaYW (continued)

 $\gamma(^{183}\text{Ta})$

E_γ	E(level)	I_γ	E_γ	E(level)	I_γ	E_γ	E(level)	I_γ
73.1	73.2	25	295.1	368.3	0.97	481.2	940.2	3.0
75.5	806.4	2.3	311.4	857.0	0.13	663.2	806.4	2.8
86.5	545.6	0.77	315.9	459.1	37	668.4	1127.8	0.49
113.8	572.8	12	321.7	1127.8	0.34	691.7	1150.7	4.6
143.2	143.2	11	344.3	1150.7	0.25	783.7	857.0	8.3
158.1	730.9	4.4	397.9	857.0	0.59	796.9	940.2	1.1
165.1	971.5	0.85	398.6	971.5	1.5	806.5	806.4	5.4
225.1	368.3	1.6	402.4	545.6	0.45	984.6	1127.8	2.3
233.6	806.4	0.17	459.1	459.1	100			

Adopted Levels, Gammas

Q(β⁻)=-556 8; S(n)=6190.81 5; S(p)=7222.9 17; Q(α)=1673.2 19 2012Wa38.

For prediction of Q(α) and partial half-life for α decay, see 2012Sa18.

Interacting boson-fermion model calculation of E(level), B(E2) values and n stripping spectroscopic factors (2012Ab03).

¹⁸³W Levels

Cross Reference (XREF) Flags

A ¹⁸³Ta β⁻ Decay
B ¹⁸³W IT Decay (5.30 s)
C ¹⁸³Re ε Decay
D ¹⁷⁶Yb(¹⁴C,α3nγ)
E ¹⁸²W(n,γ) E=thermal

F ¹⁸²W(n,γ) E=thermal: γγ Coin
G ¹⁸²W(n,γ) E=4.1 eV
H ¹⁸²W(n,γ) E=res
I ¹⁸²W(d,p), (pol d,p)
J ¹⁸²W(t,d)

K ¹⁸³W(γ,γ'): Mossbauer
L ¹⁸³W(n,n'γ)
M Coulomb Excitation
N ¹⁸⁴W(d,t)
O ¹⁸⁴W(³He,α)

E(level) [†]	Jπ [‡]	XREF	T _{1/2}	Comments
0.0 [@]	1/2- ^{&}	ABCDEFGHIJK MN	≥6.7×10 ²⁰ y	μ=+0.11778476 9. %α=? μ: NMR (1989Ra17, 2011StZZ); from 1974Sa25, relative to ² H. <r ² > ^{1/2} (charge)=5.33 fm 15 (2004An14). Jπ: J=1/2 from NMR; π from L(d,p)=1. T _{1/2} : from 2011Be39 following search for α decay to ¹⁷⁹ Hf 375-keV level (90% confidence level). Other: >1.1×10 ¹⁷ y from specific activity (1960Be13); ≥1.0×10 ¹⁹ y (1995Ge17).
46.4838 ^a 5	3/2- ^{&}	ABCDEFGHIJK MN	0.185 ns 4	μ=-0.1 I; Q=1.8 4 (2011StZZ). μ: from g=0.07 7 from Mössbauer (1967Ag02) if J=3/2. Sign from 2011StZZ. Q: from Mössbauer (2011StZZ from 1967Ag02); relative to ¹⁸² W(100). Jπ: M1+E2 46γ to 1/2- g.s.; L(d,p)=1. T _{1/2} : from (γ,γ'): Mössbauer. Others: 219 ps 10, 208 ps from Coulomb excitation.
99.0791 [@] 9	5/2- ^{&}	ABCDEFG IJK MN	726 ps 20	μ=+0.91 4. μ: Mossbauer, recalculation (1989Ra17, 2011StZZ) using data from 1967Gi03 and 1968Pe06; relative to ¹⁸³ W(g.s.). Q=2.0 3. Q: 2011StZZ; from Q/Q(¹⁸² W, 2+)=0.94 4 Mössbauer (1967Ag02) and Q(¹⁸² W, 2+)=-2.1 4 (2011StZZ). Jπ: E2 99γ to 1/2- g.s.; E2 210γ from 9/2- 309; L(d,p)=3. T _{1/2} : weighted average of 0.77 ns 4 (1970HaYD), 0.72 ns 7 (1967Ag02) from (γ,γ'): Mössbauer and 707 ps 35 from RDM, 716 ps 32 from B(E2) and adopted γ properties in Coulomb excitation. Other data: 975 ps 40 (1971Bo42) and 0.57 ns 21 (1962Su14) in (γ,γ'): Mössbauer. The unweighted average of all data is 0.74 ns 5.
207.0114 ^a 14	7/2- ^{&}	ABCDE MN		μ=0.42 21. μ: from thin-foil transient-field IMPAC (1992La02; rounded to 0.4 2 in 2011StZZ). Jπ: intraband M1+E2 108γ to 5/2- 99; E2 161γ to 3/2- 46.
208.8069 ^b 7	3/2- ^c	A CDEFGHIJ MN	≈245 ps	Jπ: M1+E2 209γ to 1/2- g.s.; M1+E2 110γ to 5/2- 99.
291.7236 ^b 14	5/2- ^c	A CDEFG IJ MN	60 ps 3	T _{1/2} : from Coulomb excitation. Jπ: M1 245γ to 3/2- 46; M1+E2 85γ to 7/2- 207. T _{1/2} : from Coulomb excitation.

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Adopted Levels, Gammas (continued) ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
308.9466 [@] 20	9/2- $\&$	A CDE I Mn		XREF: I(309.2). μ =1.53 14 (1992La02,2011StZZ). g-factor=0.12 6 (1992La02; thin-foil transient-field IMPAC). J π : M1+E2 102 γ to 7/2- 207; L(d,p)=5. %IT=100.
309.492 ^e 4	11/2+	AB DE n	5.30 s 8	J π : M2 102 γ to 7/2- 207. T _{1/2} : from IT decay.
412.0939 ^b 17	7/2-c	A CDE G IJ MN		XREF: I(412.3). J π : L=3 and asymmetry in (pol d,p).
453.0695 ^f 17	7/2-g	A CDE G IJ L N	18.5 ns 3	XREF: I(452.9). J π : M1+E2 144 γ to 9/2- 308.9; M1+E2 161 γ to 5/2- 292; L=3 and asymmetry in (d,p). T _{1/2} : unweighted average of 18.4 ns 4 (1967Ma28), 18.0 ns 4 (1967Me01), and 19.5 ns 3 (1971Ho14) all from β^- decay and 18.2 ns 5 from ^{183}Re ϵ decay the weighted average is 18.7 ns 4. Others: 21.5 ns 20 from ($^{14}\text{C},\alpha 3n\gamma$), 19 ns (1966Ho13) in ϵ decay.
475.05 ^a 6	11/2- $\&$	DE M		μ =1.1 2 (1992La02,2011StZZ). μ : from thin-foil transient-field IMPAC (1992La02). J π : M1+E2 166 γ to 9/2- 309; intraband 268 γ to 7/2- 207.
485.38 ^d 5	13/2+	D I NO		XREF: I(486.1). J π : asymmetry and L=6 in (pol d,p).
533? 3		GH		Reported in (n, γ) E=res but absent in (n, γ) E=thermal, so existence considered to be questionable.
551.24 ^b 3	9/2-c	E I MN		XREF: I(552.8). μ =2.2 9 (1992La02,2011StZZ). μ : from thin-foil transient-field IMPAC (1992La02). J π : intraband 259 γ to 5/2- 292; D+Q 344 γ to 7/2- 207; L $\geq$ 3 and asymmetry in (pol d,p); 3/2[512] band member.
557.5 7	(1/2, 3/2, 5/2-)	F		J π : 557 γ to 1/2- g.s..
595.338 ^h 7	9/2-g	A DE I L N		XREF: I(599.4). J π : M1+E2 142 γ to 7/2- 453; L $\geq$ 3 and asymmetry in (pol d,p).
622.60 ⁱ 5	(9/2)+	A DE L N		J π : M1 313 γ to 11/2+ 309.5; 1218 γ from 5/2+ 1840.
631.11 [@] 8	13/2- $\&$	D M	10.4 ps [§] +28-14	μ =2.6 3 (1992La02,2011StZZ). μ : from thin-foil transient-field IMPAC (1992La02).
677.7 7	(1/2, 3/2, 5/2+)	F		469 γ to 3/2- 209; γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
687.63 ^e 7	(15/2+)	D I		XREF: I(689.4). J π : intraband 202 γ to 13/2+ 485; intraband 378 γ to 11/2+ 309.5.
739.95 ^b 5	11/2-c	E I MN		XREF: I(740.3)N(742). J π : asymmetry and L=5 in (pol d,p).
766.30 ^f 6	11/2-g	DE		J π : 171 γ to 9/2- 595; 313 γ to 7/2- 453; 7/2[503] band member.
776.80 ⁱ 12	(11/2)+	DE L		J π : 467 γ to 11/2+ 309; intraband 154 γ to 9/2+ 622; band assignment.
777.0 3	(11/2-)	L		J π : possible 324 γ to 7/2- 453. Proposed as 11/2 7/2[503] state by 1997Pr02 in (n,n' γ), but 766 level is assigned as that state here and in ($^{14}\text{C},\alpha 3n\gamma$).
804.9 7	(1/2, 3/2, 5/2+)	F		J π : 596 γ to 3/2- 209; 5386 γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.

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Adopted Levels, Gammas (continued)

 ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF		T _{1/2}	Comments
808.3 7	(1/2, 3/2, 5/2+)	F			J π : 599 γ to 3/2- 209; 5382 γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
816.5 10	(1/2, 3/2, 5/2+)	F			J π : 608 γ to 3/2- 209; 5374 γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
849.94 ^a 9	15/2-&	D	M		J π : intraband D+Q 219 γ to 13/2- 631; 375 γ to 11/2- 475.
871.9 10	(1/2, 3/2, 5/2+)	FGH			J π : 5319 γ from 1/2+ 6191 in (n, γ) E=thermal: $\gamma\gamma$; 663 γ to 3/2- 209.
899.7 10	($\leq$ 9/2-)	F			608 γ to 5/2- 292.
903.503 ^j 17	(5/2-)	EFG	MN		J π : 595 γ to 9/2- 309; 904 γ to 1/2- g.s..
909.4 7	(1/2, 3/2, 5/2+)	F	I		XREF: I(913).
					J π : 701 γ to 3/2- 209; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
914.81 ^d 7	17/2+	D			
926.1 ^b 5	13/2-c		M		
934.661 ^k 18	1/2-	EFGHI	L N		XREF: I(935.0).
					J π : L=1 and asymmetry in (pol d,p).
941.6 7	($\leq$ 7/2)	F			895 γ to 3/2- 45.
949.9 7	($\leq$ 7/2)	F			903 γ to 3/2- 45.
951.3 7	($\leq$ 7/2)	F			742 γ to 3/2- 209.
956.30 ⁱ 11	(13/2)+	D	I	NO	XREF: I(964.2)N(960).
					J π : L=6 in ($^3\text{He},\alpha$) and (d,p); band assignment.
960	(1/2, 3/2)	H			J π : primary γ from 1/2+ in (n, γ) E=res.
963.43 11	(11/2, 13/2)		L		J π : 488 γ to 11/2- 475; 332 γ to 13/2- 631; authors' suggested values in (n,n' γ).
965.13 ^h 7	13/2-g	D			
999.60 ^j 7	7/2-	E G I	L N		J π : L=3 and asymmetry in (pol d,p).
1026.373 ^k 12	(3/2)-	EFGHI	MN		XREF: I(1029).
					J π : L(d,p)=1; 615 γ to 7/2- 412.
1053.269 ^k 21	(5/2)-	E G I	MN		J π : 762 γ to 7/2- 412 and 846 γ to 7/2- 207; 1007 γ to 3/2- 47; band assignment.
1061.99 [@] 11	17/2-&	D	M	3.0 ps [§] 4	μ =2.6 7 (1992La02,2011StZZ).
					μ : from thin-foil transient-field IMPAC (1992La02).
1069.42 ^l 9	7/2-	E	I	L N	J π : L=3 and asymmetry in (pol d,p).
1096.4 7	($\leq$ 9/2)	F			J π : 997 γ to 5/2- 99.
1126.2 ^j 8	9/2-		I	N	E(level): from (d,p), (pol d,p).
					J π : L $\geq$ 5 in (d,p); band assignment.
1149.91 ^s 5	3/2-#	E	I	M	XREF: I(1149.8).
					J π : from L(d,p)=1, (pol d,p).
1156? 5	(5/2, 3/2)+		I	N	E(level): from (d,p).
					J π : possibly an L=2 line (J π =5/2+ preferred) reported in (d,p), (pol d,p).
1168.74 ^e 8	19/2+	D			
1188.4? 7	($\leq$ 7/2)	F			J π : 979 γ to 3/2- 209.
					Reported only in (n, γ) E=thermal: $\gamma\gamma$ coin, so existence is shown as tentative.
1190.25 ^f 7	15/2-g	D			
1214.31 ^l 10	9/2-	E	I	L N	XREF: I(1217.2).
					J π : from (pol d,p). Also, L(d,p) $\geq$ 5; 923 γ to 5/2- 292.
1223.40? 13			L		Evaluator considers existence of this level to be highly uncertain; reported in (n,n' γ) alone, where the only γ deexciting it could be placed elsewhere.
					J π : possible 154 γ to 7/2- 1069. J π =(9/2-) proposed in (n,n' γ).
1226.5 7	($\leq$ 5/2)	F			J π : 1226 γ to 1/2- g.s..
1229.31 ^s 6	(5/2)-	E	I	N	J π : L(d,p)=3. Supported by 634 γ to 9/2- 595, 1020 γ to 3/2- 209. Band assignment.
1261.4 ^k 5	(7/2-)	E		N	J π : L(d,t)=(3); band assignment.
1272.2 7	($\leq$ 9/2)	F			J π : 980 γ to 5/2- 292.

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Adopted Levels, Gammas (continued) ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
1275.19 5	(5/2+, 7/2, 9/2-)	E		J π : weak 372 γ to (5/2-) 903; 653 γ to (9/2)+ 623; 822 γ to 7/2- 453.
1281j 6	(11/2-)	I N		
1291.67 7	(1/2-, 3/2-)	E H M		J π : (E2) 1292 γ to 1/2- g.s.; 1193 γ to 5/2- 99; primary γ from 1/2+ resonance in (n, γ) E=res.
1309.409t 19	(3/2-)	EF		J π : weak 310 γ to 7/2- 999; weak 375 γ to 1/2- 935; primary γ from 1/2+ in (n, γ) E=thermal.
1309.9? 10	($\leq$ 5/2-)	M		J π : possible (E2) 1310 γ to 1/2- g.s.. Presumed to differ from 1309.4 level because the strong 1310 γ reported in Coulomb excitation was absent in (n, γ) E=thermal: $\gamma\gamma$ coin and (n, γ) E=thermal studies.
1319.63k 3	(9/2-)	E N		XREF: N(1314). J π : 416 γ to (5/2-) 903, 697 γ to (9/2)+ 623, weak 725 γ to 9/2- 595, and 1/2[521] band assignment from (d,t) imply J π =(9/2-). However, 5/2+ is proposed for a possible vibrational state by 2011Bo09 based on strong branching to 9/2[624] 623 level and absence of level in single-nucleon transfer reactions. No primary γ from 1/2+ is observed in (n, γ) E=thermal.
1327.67a 11	19/2-&	D		
1331.7? 10	(19/2-)	M		
1335.42 4	(3/2-)	E I n		XREF: n(1339). J π : 1336 γ to 1/2- g.s.; 1128 γ to 7/2- 207; member of L=(1+3) doublet in (d,p); primary γ from 1/2+ in (n, γ) E=thermal.
1337.8 8	(5/2-, 7/2-)	E I n		XREF: n(1339). J π : 743 γ to 9/2- 595; presumed L=(3) member of L=(1+3) doublet in (d,p).
1372.23 7	5/2-, 7/2-	E L N		XREF: N(1375). J π : L(d,t)=3; 1163 γ to 3/2- 209, 1063 γ to 9/2- 309.
1376.41 12	($\geq$ 7/2)	E		J π : 754 γ to (9/2)+ 623; 1067 γ to 9/2- 309.
1386.3v 6	9/2-	I		J π : L(d,p)=5 and asymmetry in (pol d,p).
1397l 12	(11/2-)	N		J π : L(d,t) $\geq$ 5; band assignment.
1403 3		E		
1412.9 7	($\leq$ 9/2)	F		J π : 1121 γ to 5/2- 292.
1417.6 7	($\leq$ 5/2)	F		J π : 1417 γ to 1/2- g.s..
1432.9 7	($\leq$ 5/2)	F		J π : 1433 γ to 1/2- g.s..
1437.42 6	(1/2-, 3/2-)	E G I N		XREF: I(1439.8)N(1441). J π : L(d,p)=(1); 1438 γ to 1/2- g.s.; 1339 γ to 5/2- 99.
1439.75d 8	(21/2+)	D		
1439.92h 8	17/2-g	D		J π : intraband 250 γ to 15/2- 1190 and 475 γ to 13/2- 965.
1463.18 8	(3/2, 5/2)-	EF HI Mn		XREF: n(1468). J π : 1463 γ to 1/2- g.s.; possible E2 1051 γ to 7/2- 412 in Coulomb excitation.
1466.7r 5	($\geq$ 11/2)	D		J π : 779 γ to (15/2+) 687; 981 γ to 13/2+ 485.
1471.05u 4	1/2-	EF HI n		XREF: n(1468). J π : L(d,p)=1; asymmetry favors 1/2 in (pol d,p). 1471 γ to 1/2- g.s..
1474.77 23	(3/2 to 9/2)	I L N		XREF: I(1476.1)N(1476). J π : 1063 γ to 7/2- 412; 1182 γ to 5/2- 292.
1485.45 23	(1/2-, 3/2-)	E I MN		XREF: I(1483.7)N(1489). J π : L(d,p)=(1); 1485 γ to 1/2- g.s.; E=4605 primary γ from 1/2+ in (n, γ) E=thermal.
1502.1 10	($\leq$ 7/2)	F		J π : 1456 γ to 3/2- 46.

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Adopted Levels, Gammas (continued) ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
1510.4 5	(3/2-, 5/2, 7/2-)	i M		XREF: i(1514?). Absence of a 1412 γ from this level implies that it differs from the 1510.6 level. J π : 1098 γ to 7/2- 412; 1302 γ to (3/2)- 209. Level excited in Coulomb excitation, but expected 1510 γ branch to 1/2- g.s. has not been observed (although the 1510 γ from 1556 level is reported as complex in (n, γ) E=thermal, and could be complex in Coulomb excitation also).
1510.64 6	($\leq 9/2$)	E i		XREF: i(1514?). E(level): see comment on 1510.4 level. J π : 1412 γ to 5/2- 99.
1537.9 6	(1/2-, 3/2, 5/2-)	F		J π : 1246 γ to 5/2- 292; 1538 γ to 1/2- g.s..
1542.9 5	($\leq 9/2$)	E G I		XREF: G(1545)I(1542.8). J π : 1251 γ to 5/2- 292.
1550 4	11/2+, 13/2+		NO	XREF: N(1550). E(level): from ($^3\text{He}, \alpha$). J π : L($^3\text{He}, \alpha$)=6.
1550.52 ^w 11	5/2-	E I L n		XREF: n(1550). J π : L(d,p)=3, asymmetry in (pol d,p). Possible 5/2[503] bandhead proposed in (n, γ) E=thermal by 2011Bo09; J=5/2 member of 1/2[501] band, proposed in (n,n' γ) by 1997Pr02, was rejected by 2011Bo09 due to its large (d,p) strength. Compared with that observed in ^{181}Hf and ^{185}W for 5/2 1/2[501] states.
1556.22 ^u 5	(3/2-)	EF HI Mn		XREF: I(1556.7)n(1550). J π : L(d,p)=1,3 for 1551+1556 doublet and L=3 component already assigned to 1551 level; (E2) 1556 γ to 1/2- g.s.; 1144 γ to 7/2- 412. Band assignment adopted from 2011Bo09.
1569.85 7	(5/2-)	E N		XREF: N(1562). J π : 1570 γ to 1/2- g.s.; 1158 γ to 7/2- 412; L(d,t) ≥ 3 .
1577.8 5	9/2-, 11/2-	I		J π : L(d,p)=5.
1586.38 6	(3/2-)	EF		J π : 1587 γ to 1/2- g.s.; 1380 γ to 7/2- 207; primary γ from 1/2+ in (n, γ) E=thermal.
1592 6	5/2-, 7/2-	I N		J π : L(d,t)=3.
1595.29 [@] 15	21/2-&	D		
1601.6 5		I		
1612.04 5	(1/2-, 3/2, 5/2-)	EFG		J π : 1612 γ to 1/2- g.s.; 1513 γ to 5/2- 99.
1615.2 10	($\leq 9/2$)	F		J π : 1324 γ to 5/2- 292.
1616.9 10	($\leq 9/2$)	F		J π : 1518 γ to 5/2- 99.
1628.22 5	3/2-	EF I		XREF: I(1628.2). J π : from (pol p,d); supported by 1628 γ to 1/2- g.s.; 1529 γ to 5/2- 99; 1177 γ to 7/2- 453.
1629.85 15	(1/2-, 3/2, 5/2-)	E GH		J π : 695 γ to 1/2- 934; 1338 γ to 5/2- 292.
1633.32 12	(1/2-, 3/2, 5/2-)	EF		J π : 1634 γ to 1/2- g.s.; 1532 γ to 5/2- 99.
1650 6		i N		E(level): from (d,t). J π : possibly 1/2-, 3/2- from L(d,p)=1 for E=1651 level.
1658.2 7	($\leq 9/2$)	F i		J π : 1366 γ to 5/2- 292.
1660.59 11	(1/2-, 3/2, 5/2-)	EF i		XREF: i(1663). J π : 1562 γ to 5/2- 99; 1661 γ to 1/2- g.s..
1663.6 ^r 3	($\geq 11/2$)	D		J π : 976 γ to (15/2+) 687.
1663.64 20	(1/2-, 3/2, 5/2-)	EF i		XREF: i(1663). J π : 1372 γ to 5/2- 292; 1663 γ to 1/2- g.s..
1669.3 10	($\leq 9/2$)	F H		J π : 1378 γ to 5/2- 292.
1672.75 4	(3/2-, 5/2-)	EFGH n		J π : 1466 γ to 7/2- 207; 1673 γ to 1/2- g.s..
1677.1 7	(1/2-, 3/2-)	F I		J π : L(d,p)=(1); 1468 γ to 3/2-.

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Adopted Levels, Gammas (continued)

 ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
1683.3 7	5/2 ⁻ , 7/2 ⁻	E I N		XREF: I(1680.3)N(1679). J π : L=3 in (d,p) and (d,t).
1686.33 9		E		J π : 1064 γ to (9/2) ⁺ 623 allows J=(5/2 to 13/2).
1691.2 12		I N		XREF: N(1692).
1698.2 3	(1/2, 3/2, 5/2 ⁺)	E		J π : primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1711 12	11/2 ⁺ , 13/2 ⁺	I NO		J π : L($^3\text{He},\alpha$)=6.
1713.61 ^f 8	19/2 ⁻ g	D		
1716.6 6	(1/2 ⁺ , 3/2 ⁺ , 5/2 ⁺)	E I		J π : primary γ from 1/2 ⁺ in (n, γ) E=thermal; L(d,p)=(0,2).
1725.65 12	(1/2, 3/2)	EF		J π : 1726 γ to 1/2 ⁻ g.s.; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1730.48 4	(3/2 ⁻)	EFGH		J π : 1731 γ to 1/2 ⁻ g.s.; weak 1278 γ to 7/2 ⁻ 453; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1734.73 25	(5/2 ⁺)	E I		XREF: I(1735.7). J π : L(d,p)=(2); 1528 γ to 7/2 ⁻ 207.
1737.2 4	(3/2 ⁻)	E I N		XREF: I(1735.7). J π : 1284 γ to 7/2 ⁻ 453; L(d,t)=1.
1746.11 ^p 7	(19/2 ⁻)	D	12.7 ns 20	J π : stretched Q 556 γ to (15/2 ⁻) 1190.3; 307 γ to (21/2 ⁺) 1439.8. T _{1/2} : from ($^{14}\text{C},\alpha 3n\gamma$).
1746.39 ^e 9	(23/2 ⁺)	D		J π : intraband gammas to (21/2 ⁺) and (19/2 ⁺).
1746.8 7	(1/2, 3/2)	F		J π : 1747 γ to 1/2 ⁻ g.s.; primary γ from 1/2 ⁺ in (n, γ) E=thermal: $\gamma\gamma$ coin.
1763 6	5/2 ⁻ , 7/2 ⁻			J π : L(d,t)=3.
1785.58 16	5/2 ⁺	E I		XREF: I(1784.1). J π : L(d,p)=2; J=5/2 from asymmetry in (pol d,p).
1789.76 15	(1/2, 3/2)	EF N		J π : 1790 γ to 1/2 ⁻ g.s.; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1793.8 6	5/2 ⁻ , 7/2 ⁻	I		J π : L(d,p)=3.
1802.1 7	(1/2, 3/2)	HI		E(level): from (d,p).
1811.11 4	(1/2 ⁻)	EFG I		J π : fed by primary γ from 1/2 ⁺ resonance. XREF: I(1812.4). J π : L(d,p)=1; asymmetry in (pol d,p) favors J=1/2.
1813.9 7	($\leq 5/2$)	F		J π : 1814 γ to 1/2 ⁻ g.s..
1821.5 5	1/2 ⁻ , 3/2 ⁻	I		J π : L(d,p)=1.
1822 6	5/2 ⁻ , 7/2 ⁻		N	J π : L(d,t)=3; possibly identical to the 1828 level.
1823.86 4	(3/2 ⁻)	EFG I		XREF: I(1823.3). J π : L(d,p)=1; possible 1412 γ to 7/2 ⁻ 412.
1828.1 7	($\leq 5/2$)	F		J π : 1828 γ to 1/2 ⁻ g.s..
1833.81 13	(1/2 ⁻ , 3/2)	EF		J π : 1834 γ to 1/2 ⁻ g.s.; 1542 γ to 5/2 ⁻ 292; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1837.2 4	(1/2 ⁻ , 3/2)	E H		J π : 1837 γ to 1/2 ⁻ g.s.; 1545 γ to 5/2 ⁻ 292; primary γ from 1/2 ⁺ in (n, γ) E=thermal. Possibly the 1847 11 tentative level for which L(d,p)=1; if so, J π =1/2 ⁻ , 3/2 ⁻ .
1840.3 3	5/2 ⁺	E I		XREF: I(1840.8). Other E: 1842.7 4 from 2011Bo09 in (d,p).
1846.7 4	(1/2 ⁻ , 3/2 ⁻)	E G		J π : 5/2 ⁺ from (pol d,p) and L(d,p)=2. J π : L(d,p)=1 for E=1847 11 tentative level whose energy overlaps that of the adopted 1837 level.
1866.50 15	(3/2 ⁻ , 5/2, 7/2 ⁻)	E GH		J π : 1455 γ to 7/2 ⁻ 412; 1820 γ to 3/2 ⁻ 46.
1869.69 10	(1/2 ⁻ , 3/2)	EF		J π : 1870 γ to 1/2 ⁻ g.s.; 967 γ to (5/2 ⁻) 903; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1880.6 ^f 4	($\geq 13/2$)	D		J π : 966 γ to (17/2 ⁺) 914.
1886.15 8	($\leq 5/2$)	F		J π : 1884 γ to 1/2 ⁻ g.s.; 1838 γ to 3/2 ⁻ 46.
1886.81 4	(1/2 ⁻ , 3/2)	EFGH		J π : 1887 γ to 1/2 ⁻ g.s.; 1595 γ to 5/2 ⁻ 292; primary γ from 1/2 ⁺ in (n, γ) E=thermal.

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Adopted Levels, Gammas (continued) ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
1893.82 10	(1/2 ⁻ , 3/2)	EF I		XREF: I(1892.1). J π : 1894 γ to 1/2 ⁻ g.s.; 1602 γ to 5/2 ⁻ 292; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1900.53 ^q 10	(19/2 ⁺)	D	<3.0 ns	T _{1/2} : from ($^{14}\text{C}, \alpha 3n\gamma$). J π : 154 γ to (19/2 ⁻) 1746; 986 γ to 17/2 ⁺ 915.
1900.84 11	(1/2 ⁻ , 3/2)	EF		J π : 1900 γ to 1/2 ⁻ g.s.; 1801 γ to 5/2 ⁻ 99; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1900.87 ^a 15	23/2 ⁻ &	D		J π : intraband 573 γ to 19/2 ⁻ 1328.
1907.6 8	(1/2 ⁺)	I		J π : L(d,p)=(0,2); J=1/2 favored in (pol d,p).
1915.39 20	(1/2 ⁻ , 3/2)	EFGH		XREF: G(1920.0). J π : 1916 γ to 1/2 ⁻ g.s.; 1625 γ to 5/2 ⁻ 292; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
1932.1 7	($\leq 7/2$)	F		J π : 1885 γ to 3/2 ⁻ 46.
1944.31 ^s 5	3/2 ⁻	EFGH		J π : L(d,p)=1, J=3/2 from asymmetry in (pol d,p).
1952.5 7	1/2 ⁻ , 3/2 ⁻	F I		XREF: I(1944.5). J π : L(d,p)=1; 1952 γ to 1/2 ⁻ g.s..
1964.72 17	(5/2 ⁻)	EF I N		XREF: I(1962.1)N(1967). J π : 1964 γ to 1/2 ⁻ g.s.; 1552 γ to 7/2 ⁻ 412; L(d,p)=3.
1971.6 9	1/2 ⁻ , 3/2 ⁻	I		J π : L(d,p)=1.
1975.80 25	(1/2 ⁺ , 3/2, 7/2 ⁻)	E h		J π : 826 γ to 3/2 ⁻ 1150, 701 γ to (5/2 ⁺) 1275 suggest J π =(1/2 ⁺ , 3/2, 5/2, 7/2 ⁻).
1982.20 ^s 9	3/2 ⁻	E GhI		XREF: I(1981.0). J π : L(d,p)=1, J=3/2 from asymmetry in (pol d,p).
1989.70 ^p 12	(21/2 ⁻)	D		J π : intraband 243 γ to (19/2 ⁻).
1990.56 7	(3/2 ⁻)	EF HI N		J π : 1990 γ to 1/2 ⁻ g.s.; 991 γ to 7/2 ⁻ 999; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
2004.4 10	($\leq 7/2$)	F		J π : 1796 γ to 3/2 ⁻ 209.
2007.89 ^h 10	21/2 ⁻ g	D		J π : 294 γ to 19/2 ⁻ 1713; 568 γ to 17/2 ⁻ 1440.
2009.7 6	($\leq 7/2$)	I n		XREF: n(2016). J π : L(d,p)=2,3.
2022.7 10	($\leq 7/2$)	F n		XREF: n(2016). J π : 1814 γ to 3/2 ⁻ 209. L(d,t)=3,1 for E=2016 6.
2028.46 7	(1/2 ⁻ , 3/2)	EF		J π : 2029 γ to 1/2 ⁻ g.s.; 1929 γ to 5/2 ⁻ 99; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
2043.39 ^d 11	25/2 ⁺	D		J π : intraband 297 γ to (23/2 ⁺) 2043; 604 γ to (21/2 ⁺) 1439.
2044.6 7	(3/2 ⁺)	F I		J π : L(d,p)=(0,2); 1946 γ to 5/2 ⁻ 99.
2050.61 ^o 13	(23/2 ⁻)	D	<1.5 ns	304 γ to (19/2 ⁻) 1746; 611 γ to (21/2 ⁺) 1439; band assignment.
2057.7 7	(1/2, 3/2)	F I		T _{1/2} : from ($^{14}\text{C}, \alpha 3n\gamma$). XREF: I(2050). J π : 2058 γ to 1/2 ⁻ g.s.; primary γ from 1/2 ⁺ in (n, γ) E=thermal.
2059.36 12	(3/2 ⁻)	EF I		XREF: I(2062.5). J π : L(d,p)=1; 1853 γ to 7/2 ⁻ 207.
2091.5 5	1/2 ⁻ , 3/2 ⁻	E I		XREF: I(2091.0). J π : L(d,p)=1. Supported by 2092 γ to 1/2 ⁻ g.s., 1992 γ to 5/2 ⁻ 99, primary γ from 1/2 ⁺ in (n, γ) E=thermal.
2095.5 6	($\leq 7/2$)	F		J π : 1887 γ to 3/2 ⁻ 209.
2099.28 13	(3/2 ⁻ , 5/2 ⁻)	EFGHI		XREF: I(2099.9). J π : 1686 γ to 7/2 ⁻ 412; 2099 γ to 1/2 ⁻ g.s..
2101.89 14	(23/2 ⁺)	D		J π : 112 γ to (21/2 ⁻) 1989; very weak 355 γ to (19/2 ⁻) 1746; D 168 γ from (25/2 ⁻) 2270.
2111.6 7	($\leq 7/2$)	F		J π : 1903 γ to 3/2 ⁻ 209.

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Adopted Levels, Gammas (continued) ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
2126.35 ^s 7	3/2-	EF GHI N		XREF: I(2127.4)N(2137). J π : L(d,p)=1; J=3/2 from asymmetry in (pol d,p). Supported by 2126 γ to 1/2- g.s.; 1058 γ to 7/2- 1069. Note that branching from this level reported by 1973Ca02 in (n, γ) E=4.1 eV is vastly different from that adopted here from (n, γ) E=thermal; possibly level is complex there.
2130.2 7	($\leq 7/2$)	F		J π : 1921 γ to 3/2- 209.
2152.9 7	($\leq 7/2$)	F		J π : 1944 γ to 3/2- 209.
2154.20 ^q 16	(21/2+)	D		J π : 254 γ to (19/2+) 1901; band assignment.
2157.48 19	(1/2-, 3/2)	EF		J π : 2158 γ to 1/2- g.s.; 2059 γ to 5/2- 99; primary γ from 1/2+ in (n, γ) E=thermal.
2164.82 6	(3/2-)	EF G		J π : 2166 γ to 1/2- g.s.; 1712 γ to 7/2- 453; primary γ from 1/2+ in (n, γ) E=thermal.
2166.9 10	($\leq 7/2$)	F		J π : 1958 γ to 3/2- 209.
2169.87 8	(3/2, 5/2+)	E		J π : 895 γ to (5/2+) 1275; 2072 γ to 5/2- 99; primary γ from 1/2+ in (n, γ) E=thermal.
2176.75 6	(3/2)	EF G H		XREF: G(2179.0). J π : 2177 γ to 1/2- g.s.; weak 858 γ to 5/2+ 1320; weak 1886 γ to 5/2- 292; primary γ from 1/2+ in (n, γ) E=thermal.
2209.05 9	(1/2+)	EF I N		J π : L(d,p)=(0,2); asymmetry in (pol d,p) favors J=1/2.
2221.79 [@] 18	25/2-&	D		
2231.46 17	(1/2, 3/2)	E		J π : 2231 γ to 1/2- g.s.; possible 2185 γ to 3/2- 45; primary γ from 1/2+ in (n, γ) E=thermal.
2233.1? 7	($\leq 7/2$)	F		Presumed to differ from 2231 level because γ branching differs. J π : possible 1942 γ to 5/2- 292; possible 2184 γ to 3/2- 46.
2235.72 11	(3/2-)	EF		J π : 2236 γ to 1/2- g.s.; 1783 γ to 7/2- 453; primary γ from 1/2+ in (n, γ) E=thermal.
2239.1 7	($\leq 7/2$)	F		J π : 2030 γ to 3/2- 209.
2248.08 7	(3/2, 5/2-)	EF		J π : 2249 γ to 1/2- g.s.; 974 γ to 5/2+ 1275; 1957 γ to 5/2- 292.
2253.37 ^P 12	(23/2-)	D		J π : intraband 263 γ to 21/2- 1989 and 507 γ to (19/2-) 1746.
2257.6 10	(1/2, 3/2, 5/2+)	EF I		J π : 2211 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
2262.9 7	($\leq 7/2$)	F		J π : 2053 γ to 3/2- 209.
2266.30 16	(1/2-, 3/2)	EF		J π : 2266 γ to 1/2- g.s.; 1975 γ to 5/2- 292; primary γ from 1/2+ in (n, γ) E=thermal.
2269.69 ^m 13	(25/2-)	D	<3.0 ns	J π : 168 γ to (23/2+) 2102; 219 γ to (23/2-) 2050; band assignment. T _{1/2} : from ($^{14}\text{C}, \alpha 3n\gamma$).
2282.97 6	(3/2-)	EF I		J π : 2283 γ to 1/2- g.s.; 1831 γ to 7/2- 453; primary γ from 1/2+ in (n, γ) E=thermal.
2292.59 11	($\leq 5/2$)	EF		J π : 2293 γ to 1/2- g.s..
2303.91 5	(3/2-)	EF I		J π : 2304 γ to 1/2- g.s.; 2097 γ to 7/2- 207; primary γ from 1/2+ in (n, γ) E=thermal.
2311.8 7	(1/2, 3/2, 5/2+)	F		J π : 2213 γ to 5/2- 99 implies J $\leq$ (9/2); primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
2314.98 23		E		
2324.67 ^f 8	23/2-g	D		
2325.6 3	(1/2-, 3/2, 5/2-)	EF G H I		XREF: G(2327.0)I(2330). J π : 2326 γ to 1/2- g.s.; 2035 γ to 5/2- 292.
2340.33 ^o 15	(25/2-)	D		J π : 290 γ to (23/2-) 2050; band assignment.
2349.7 4		E		
2359.74 23	(1/2, 3/2, 5/2+)	EF		J π : 2313 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.

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Adopted Levels, Gammas (continued)

 ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
2366.4 6	(1/2, 3/2)	F		J π : 2366 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
2367.40 20	(1/2-, 3/2)	E		J π : 2366 γ to 1/2- g.s.; 2268 γ to 5/2- 99; primary γ from 1/2+ in (n, γ) E=thermal.
2369.05 6	(1/2-, 3/2)	EF		J π : 2369 γ to 1/2- g.s.; 2271 to 5/2- 99; primary γ from 1/2+ in (n, γ) E=thermal.
2373.2 10	(1/2-, 3/2, 5/2+)	EF		J π : 2082 γ to 5/2- 292; primary γ from 1/2+ in (n, γ) E=thermal.
2384.09 14	(5/2-)	E		J π : 2383 γ to 1/2- g.s.; 1065 γ to 9/2- 1320.
2392.71 5	(1/2-, 3/2)	EF		J π : 2393 γ to 1/2- g.s.; 2101 γ to 5/2- 292; primary γ from 1/2+ in (n, γ) E=thermal.
2413.25 ^e 12	(27/2+)	D		J π : 370 γ to 25/2+ 2043; 667 γ to 23/2+ 1746; band assignment.
2417.48 7	($\leq$ 5/2)	E I		XREF: I(2412). J π : 2418 γ to 1/2- g.s..
2418.1 7	($\leq$ 7/2)	F		J π : 2126 γ to 5/2- 292; 2209 γ to 3/2- 209.
2428.04 10	($\leq$ 7/2)	E		J π : 2136 γ to 5/2- 292; 2381 γ to 3/2- 46.
2429.79 ^q 17	(23/2+)	D		J π : 276 γ to (21/2+) 2154; band assignment.
2431.1 7	($\leq$ 7/2)	F		J π : 2222 γ to 3/2- 209.
2433.2 7	($\leq$ 7/2)	F		J π : 2387 γ to 3/2- 47.
2433.63 6	($\leq$ 7/2)	E		J π : 1407 γ to 3/2- 1026.
2447.7 7	($\leq$ 7/2)	F		J π : 2401 γ to 3/2- 46.
2450.4 7	($\leq$ 7/2)	F		Level appears to differ from 2450 level reported in (n, γ) E=thermal because the strongest (2404 γ) branch placed here from this level is absent there. J π : 2404 γ to 3/2- 46. See comment on 2450.4 level.
2450.56 6	($\leq$ 7/2)	E		J π : 2404 γ to 3/2- 46.
2460.10 22	(1/2, 3/2)	E		J π : possible 2460 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2475.0 7	($\leq$ 7/2)	F		J π : 2266 γ to 3/2- 209; primary γ from 1/2+ in (n, γ) E=thermal.
2481.46 9	(1/2-, 3/2)	E		J π : 2482 γ to 1/2- g.s.; 2190 γ to 5/2- 292; primary γ from 1/2+ in (n, γ) E=thermal.
2485.60 19	($\leq$ 5/2)	E		J π : 2439 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
2492.98 7	(1/2-, 3/2)	E		J π : 2493 γ to 1/2- g.s.; possible 2395 γ to 5/2- 99; primary γ from 1/2+ in (n, γ) E=thermal.
2493.9	($\leq$ 7/2)	F		Presumed to differ from 2493 level in (n, γ) E=thermal because γ -deexcitation pattern differs. J π : 2285 γ to 3/2- 209.
2503.25 8	($\leq$ 5/2)	EF I		XREF: I(2500). J π : 2503 γ to 1/2- g.s.; 2211 γ to 5/2- 292.
2516.6 4	($\leq$ 7/2)	E		J π : possible 2308 γ to 3/2- 209.
2517.67 9	($\leq$ 5/2)	EF		J π : possible 2518 γ to 1/2- g.s..
2522.50 5	($\geq$ 3/2)	E		J π : possible 2423 γ to 5/2- 99; possible 2110 γ to 7/2- 412.
2523.04 5	(3/2-, 5/2-)	EF		J π : 2523 γ to 1/2- g.s.; 1454 γ to (7/2)- 1069.
2530.1 7	($\leq$ 5/2)	F		J π : 2530 γ to 1/2- g.s..
2535.16 6	(1/2-, 3/2, 5/2+)	EF		J π : 1307 γ to (5/2)- 1229; primary γ from 1/2+ in (n, γ) E=thermal.
2536.15 ^p 13	(25/2-)	D		J π : 283 γ to (23/2-) 2253; 547 γ to (21/2-) 1989; band assignment.
2547.6 7	($\leq$ 7/2)	F		J π : 2501 γ to 3/2- 46. A possible primary 3643 γ from 1/2+ in (n, γ) E=thermal renders J=7/2 unlikely.
2550.3 7	($\leq$ 5/2)	F		J π : 2341 γ to 3/2- 209; primary 3641 γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
2552.8 7	($\leq$ 5/2)	F		J π : 2553 γ to 1/2- g.s..
2559.83 ^a 14	27/2-&	D		

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Adopted Levels, Gammas (continued) ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
2567.9 7	($\leq 5/2$)	F		J π : 2568 γ to 1/2- g.s..
2574.0 6	($\leq 5/2$)	F		J π : 2574 γ to 1/2- g.s.; 2365 γ to 3/2- 209.
2591.24 ^m 15	(27/2-)	D		J π : D 322 γ to (25/2-) 2269; band assignment.
2593.39 12	(1/2, 3/2)	EF		J π : 2593 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2597.8 7	($\leq 7/2$)	F		J π : 2551 γ to 3/2- 46.
2608.53 18	(1/2, 3/2)	E		J π : possible 2610 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2611.2 3	(3/2+, 5/2+)	EF		J π : 1234 γ to 7/2+ 1376; 2565 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
2612.7 5	(3/2-, 5/2-)	EF		J π : possible 2612 γ to 1/2- g.s.; possible 1543 γ to 7/2- 1069.
2615.79 21	($\leq 7/2$)	EF		J π : 2569 γ to 3/2- 46; possible 2617 γ to 1/2- g.s. renders J=7/2 unlikely.
2623.03 8	($\leq 5/2$)	E		J π : 2625 γ to 1/2- g.s.; 2332 γ to 5/2- 292.
2629.17 12	(1/2, 3/2)	E		J π : 1695 γ to 1/2- 935; primary γ from 1/2+ in (n, γ) E=thermal.
2649.42 ^o 14	(27/2-)	D		J π : 309 γ to 25/2- 2340; 599 γ to (23/2-) 2050; band assignment.
2655.47 ^h 14	25/2-g	D		J π : 330 γ to 25/2- 2325; 648 γ to 21/2- 2008; band assignment.
2655.8 10	($\leq 7/2$)	F		J π : 2609 γ to 3/2- 46.
2656.26 13	($\leq 5/2$)	E		J π : 2656 γ to 1/2- g.s..
2668.4 4	(1/2, 3/2)	EF		J π : 2668 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2687.77 19	($\leq 7/2$)	EF		J π : 2479 γ to 3/2- 209.
2697.0 4	(1/2, 3/2)	E		J π : 1762 γ to 1/2- 935; primary γ from 1/2+ in (n, γ) E=thermal.
2699.16 8	(1/2-, 3/2, 5/2-)	EF		J π : 2700 γ to 1/2- g.s.; 1796 γ to (5/2-) 903.
2706.59 ^d 14	(29/2+)	D		
2708.11 9	(1/2, 3/2)	EF		J π : 2708 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2715.51 8	(3/2-, 5/2-)	EF		J π : 2716 γ to 1/2- g.s.; possible 2262 γ to 7/2- 453.
2722.74 11	(1/2-, 3/2, 5/2-)	E		J π : 2723 γ to 1/2- g.s.; possible 1819 γ to 5/2- 903.
2723.26 ^q 13	(25/2+)	D		J π : 294 γ to (23/2+) 2430; 569 γ to (21/2+) 2154.
2738.0 10	($\leq 7/2$)	F		J π : 2692 γ to 3/2- 46.
2741.4 3	(1/2, 3/2)	EF		J π : 2741 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal..
2744.0 7	($\leq 7/2$)	F		J π : 2535 γ to 3/2- 209.
2765.2 7	($\leq 7/2$)	F		J π : 2719 γ to 3/2- 46.
2768.56 22	($\leq 7/2$)	EF		J π : 1742 γ to 3/2- 1026. Possible 2767 γ to 1/2- g.s. makes J=7/2 unlikely.
2770.0 5	(1/2, 3/2)	EF		J π : 2770 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2772.9 3	($\leq 7/2$)	E		J π : 1746 γ to (3/2)- 1026.
2782.32 17	($\leq 7/2$)	F		J π : 2735 γ to 3/2- 46.
2783.33 16	($\leq 7/2$)	EF		J π : 2575 γ to 3/2- 209.
2804.96 8	(1/2, 3/2)	EF		J π : 2806 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2813.31 7	($\leq 7/2$)	EF		J π : 1504 γ to 3/2- 1309. Possible 1876 γ to 1/2- 935 makes J=7/2 unlikely.
2815.8? 3	(1/2, 3/2)	E		J π : 2816 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2817.3 10	($\leq 7/2$)	F		J π : 2609 γ to 3/2- 209.
2832.85 18	($\leq 5/2$)	EF		J π : 2833 γ to 1/2- g.s..
2833.91 9	($\leq 7/2$)	F		J π : 2786 γ to 3/2- 46.
2837.73 ^p 13	(27/2-)	D		J π : 302 γ to (25/2-) 2536; 584 γ to (23/2-) 2253; band assignment.
2839.4 7	($\leq 7/2$)	F		J π : 2630 γ to 3/2- 209.
2843.3 7	($\leq 5/2$)	F		J π : 2843 γ to 1/2- g.s..

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Adopted Levels, Gammas (continued)

 ^{183}W Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
2846.41 8	($\leq 5/2$)	EF		J π : 2847 γ to 1/2- g.s..
2856.0 7	(1/2, 3/2, 5/2+)	F		J π : 2647 γ to 3/2- 209; primary γ from 1/2+ in (n, γ) E=thermal.
2874.09 25	($\geq 25/2+$)	D		J π : 168 γ to (29/2+) 2706.
2881.2 10	($\leq 7/2$)	F		J π : 2672 γ to 3/2- 209.
2884.11 7	($\leq 7/2$)	E		J π : possible 2836 γ to 3/2- 46.
2898.7 3	($\leq 5/2$)	E		J π : possible 2899 γ to 1/2- g.s..
2910.3 7	(1/2, 3/2)	F		J π : 2910 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
2915.12? 23	(1/2, 3/2, 5/2+)	EF		J π : possible 2869 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
2929.89 [@] 21	29/2-&	D		J π : 708 γ to 25/2- 2222; band assignment.
2932.56 ^m 15	(29/2-)	D		J π : 341 γ to (27/2-) 2591; 663 γ to (25/2-) 2269; band assignment.
2945.6 7	($\leq 7/2$)	F		J π : 2899 γ to 3/2- 46.
2954.6 7	($\leq 5/2$)	F		J π : 2954 γ to 1/2- g.s..
2966.7 7	(1/2, 3/2)	F		J π : 2967 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
2977.78 ^o 16	(29/2-)	D		J π : 328 γ to (27/2-) 2649; 637.7 γ to 25/2- 2340; band assignment.
2979.08 7	(1/2, 3/2)	EF		J π : 2979 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
3010.9 ^f 4	27/2-g	D		J π : 686 γ to 23/2- 2325; band assignment.
3015.3? 7		F		J π : tentative γ to 5/2- 99 implies J $\leq$ (9/2). Reported in (n, γ) E=thermal: $\gamma\gamma$ coin but not in (n, γ) E=thermal, so level and deexciting γ are indicated as uncertain here.
3031.0 7	($\leq 7/2$)	F		J π : 2984 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
3042.5 7	($\leq 5/2$)	F		J π : 3042 γ to 1/2- g.s..
3054.5 7	($\leq 3/2$)	F		J π : 3054 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin..
3071.0 7	(1/2, 3/2, 5/2+)	F		J π : 3024 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
3078.7 6	($\leq 3/2$)	F		J π : 3079 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
3083.9 7	($\leq 3/2$)	F		J π : 3084 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
3096.5 10	($\leq 5/2$)	F		J π : 3050 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal: $\gamma\gamma$ coin.
3097.57 7	(1/2, 3/2, 5/2+)	E		J π : 1485 γ to J<5/2 1612; primary γ from 1/2+ in (n, γ) E=thermal.
3156.78 ^p 14	(29/2-)	D		J π : 319 γ to (27/2-) 2837; 621 γ to (25/2-) 2536; band assignment.
3161.25 ^e 15	(31/2+)	D		J π : 455 γ to (29/2+) 2706; 748 γ to (27/2+) 2413; band assignment.
3210.74 12	(1/2, 3/2, 5/2+)	E		J π : 3164 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
3290.34 ^a 17	31/2-&	D		
3292.48 ^m 18	(31/2-)	D		J π : 360 γ to (29/2-) 2932; band assignment.
3349.37 ⁿ 14	(31/2-)	D	<0.5 ns	J π : D 417 γ to 29/2(-) 2932; 700 γ to (27/2-) 2649. T _{1/2} : from ($^{14}\text{C}, \alpha 3n\gamma$).
3423.79 ^d 17	33/2+	D		J π : 717 γ to 29/2+ 2706; band assignment.
3534.2 6	(1/2, 3/2)	F		J π : 3534 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
3664.45 ⁿ 17	(33/2-)	D		J π : intraband 315 γ to (31/2-) 3349; 732 γ to (29/2-) 2932; band assignment.
3667.3? 5	(1/2, 3/2, 5/2+)	E		J π : 3621 γ to 3/2- 46; primary γ from 1/2+ in (n, γ) E=thermal.
3687.1 5	(1/2, 3/2)	F		J π : 3687 γ to 1/2- g.s.; primary γ from 1/2+ in (n, γ) E=thermal.
3706.39 [@] 23	33/2-&	D		J π : 777 γ to 29/2- 2930; band assignment.

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Adopted Levels, Gammas (continued)

¹⁸³W Levels (continued)

E(level) [†]	Jπ [‡]	XREF	Comments
3709.8 7	(1/2, 3/2)	F	Jπ: 3710γ to 1/2- g.s.; primary γ from 1/2+ in (n,γ) E=thermal.
3786.68 17		E	
3840.1 7	(1/2, 3/2)	F	Jπ: 3840γ to 1/2- g.s.; primary γ from 1/2+ in (n,γ) E=thermal: γγ coin.
3922.85? 22	(1/2, 3/2, 5/2+)	E	Jπ: possible 3715γ to 3/2- 209; primary γ from 1/2+ in (n,γ) E=thermal.
3980.9 ^e 4	(35/2+)	D	Jπ: 820γ to (31/2+) 3161; band assignment.
3993.90? 23	(1/2, 3/2, 5/2+)	E	Jπ: 3994γ to 1/2- g.s.; primary γ from 1/2+ in (n,γ) E=thermal.
3997.85 ⁿ 20	35/2(-)	D	Jπ: 333γ to (33/2-) 3664; band assignment.
4042.1 ^a 3	35/2-&	D	Jπ: 752γ to 31/2- 3290; band assignment.
4196.8 ^d 3	37/2+	D	Jπ: 773γ to 33/2+ 3423; band assignment.
4390.25 22		D	Jπ: 392γ to 35/2(-) 3997; band assignment.
4441.15 22		D	Jπ: 443γ to 35/2(-) 3997; band assignment.
4539.45 22		D	Jπ: 542γ to 35/2(-) 3997; band assignment.
(6190.965 14)	1/2+	EF	E(level): from least-squares fit to Eγ. S(n)=6190.81 5 from 2012Wa38. Jπ: s wave capture by 0+ ¹⁸² W target.

[†] From least-squares fit to Eγ, assigning 1 keV uncertainty to Eγ data for which authors gave no uncertainty and excluding tentatively-placed lines unless all transitions deexciting a given level are of that character. Note that 10 Eγ data differ from the least-squares prediction by at least 5σ and another 12 Eγ data differ by 3σ or 4σ. The reduced χ^2 =1.9 for the fit exceeds χ^2 (critical)=1.1.

[‡] Values given without further justification are based on deduced band structure. Strong primary γ-rays from (n,γ) are presumed to be E1 or M1.

§ From Doppler shift (1992La02) in (Ni,Ni'γ) from Coulomb excitation.

Assigned in Coulomb excitation.

@ (A): 1/2[510], α=+1/2 band. Band parameters: E₀=-4, A=13.0, a=0.19 (J=1/2,3/2,5/2 levels).

& Definite Jπ assigned to members of 1/2[510] band based on progression of level energies and independently-established Jπ(g.s.)=1/2- and mult(46γ)=M1+E2 for J=3/2 to 1/2 transition.

a (B): 1/2[510], α=-1/2 band.

b (C): 3/2[512] band. Band parameters: E₀=183, A=17.0, (J=3/2,5/2,7/2 levels).

c Definite Jπ assigned to members of 3/2[512] band based on progression of level energies and independently-established Jπ(209)=3/2- and mult(85γ)=M1+E2 for J=5/2 to 3/2 transition.

d (D): 11/2[615], α=+1/2 band. Band parameters: E₀=234.3, A=13.8, B=-5.4 (J=13/2 through 37/2 levels).

e (E): 11/2[615], α=-1/2 band. Band parameters: E₀=233.3, A=13.7, B=-3.1 (J=11/2 through 35/2 levels).

f (F): 7/2[503], α=-1/2 band. Band parameters: E₀=398, A=15.9, B=-10.0 (J=13/2 through 17/2 levels).

g Definite Jπ assigned to members of 7/2[503] band based on progression of level energies and independently-established Jπ(453)=7/2- and mult(142γ)=M1+E2 for J=9/2 to 7/2 transition.

h (G): 7/2[503], α=+1/2 band.

i (H): 9/2[624] band. Band parameters: E₀=559, A=14.2, B=-8.1 (J=9/2,11/2,13/2 levels).

j (I): 5/2[512] band. Band parameters: E₀=868, A=14.0 (J=5/2,7/2,9/2).

k (J): 1/2[521] band. Band parameters: E₀=939, A=17.7, a=0.69.

l (K): 7/2[514] band. Band parameters: E₀=1011, A=16.4 (J=7/2,9/2,11/2 levels).

m (L): Kπ=25/2(-) band. Possible configuration: π²(9/2[514]+5/2[402])+ν 11/2[615].

n (M): Kπ=(31/2-) band. Possible configuration: π²(7/2[404]+5/2[402])⊗ 19/2- level.

o (N): Kπ=23/2- band. Possible configuration: ν³(9/2[624]+3/2[512]+11/2[615]).

p (O): Kπ=(19/2-) band. Possible configuration: ν³(9/2[624]-1/2[510]+11/2[615]) with 50% Coriolis-mixed K=21/2 component.

q (P): Kπ=(19/2+) band. Possible configuration: ν³(1/2[510]+7/2[514]+11/2[615]).

r (Q): Band fragment. Feeds levels in 11/2[615] band.

s (R): 3/2[501] band fragments.

t (S): Kπ=3/2-? βγ vibration band.

u (T): 1/2[501] band.

v (U): 9/2[505] band.

w (V): 5/2[503] band.

γ(¹⁸³W)

E(level)	Eγ [‡]	Iγ [‡] §	Mult.#	δ [†] @	α	Comments
46.4838	46.4838 ^a 5	100 ^a	M1+E2	-0.084 13	8.4 3	B(M1)(W.u.)=0.125 5; B(E2)(W.u.)=179 3. Eγ: from IT decay (5.30 s). 47.07 10 from level energy difference in

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	$\delta^{\dagger}@$	α	Comments
99.0791	52.5952 ^a 9	82.0 16	M1+E2	-0.127 21	6.2 4	($^{14}\text{C}, \alpha 3n\gamma$). B(E2)(W.u.): from measured B(E2). B(M1)(W.u.)=0.0154 14; B(E2)(W.u.)=37 13. Other $E\gamma$: 52.596 1 from ϵ decay, 52.73 10 from (n,n' γ), 52.52 5 from (n, γ) E=thermal. I γ : weighted average of 78 8 from β^- decay, 83.1 26 from IT decay (5.30 s) and 81.5 21 from ϵ decay. Other I γ : 100.0 8 from (n, γ) E=thermal.
	99.0793 ^a 17	100.0 14	E2		4.05	B(E2)(W.u.)=119 2. B(E2)(W.u.): from measured B(E2). Other $E\gamma$: 98.90 5 from (n, γ) E=thermal. All other data are consistent with adopted value. I γ : weighted average of 100 7 from β^- decay, 100.0 26 from IT decay (5.30 s) and 100.0 18 from ϵ decay. Other: 90.5 9 from (n, γ) E=thermal.
207.0114	107.9310 ^a 18	100.0 10	M1+E2	-0.31 5	3.73	$E\gamma$: in excellent agreement with 107.933 2 from ϵ decay, 107.91 3 from (n,n' γ) and 107.8 1 from ($^{14}\text{C}, \alpha 3n\gamma$). Other $E\gamma$: 107.86 2 from (n, γ) E=thermal, 107.8 7 from (n, γ) E=4.1 eV. I γ : weighted average of 100 7 from β^- decay, 100.0 16 from IT decay (5.30 s), 100.0 19 from ϵ decay, 100.0 7 from (n, γ) E=thermal. δ : from ϵ decay. Other δ : -0.09 2 from Coulomb excitation.
	160.526 ^a 3	26.98 24	E2		0.659	Other $E\gamma$: 160.532 4 from ϵ decay, 160.63 10 from (n, γ) E=thermal, 160.39 4 from (n,n' γ), 161.0 1 from ($^{14}\text{C}, \alpha 3n\gamma$). I γ : weighted average of 27.5 25 from (n,n' γ), 26.6 7 from β^- decay, 27.0 3 from ϵ decay, 27.1 5 from IT decay (5.30 s). Others: 60 12 from ($^{14}\text{C}, \alpha 3n\gamma$), 41.3 18 from (n, γ) E=thermal, 25.6 11 from Coulomb excitation.
208.8069	109.745 27	11.9 4	M1+E2	+0.139 22	3.62 6	B(M1)(W.u.)=0.0028; B(E2)(W.u.)=1.9. $E\gamma$: unweighted average of 109.8 4 from ($^{14}\text{C}, \alpha 3n\gamma$), 109.81 3 from (n,n' γ), 109.66 4 from (n, γ) E=thermal, 109.726 3 from β^- decay, 109.731 2 from ϵ decay. The weighted average is 109.730 3. I γ : unweighted average of 12.3 9 from (n,n' γ), 10.81 19 from (n, γ) E=thermal, 12.2 7 from β^- decay, 12.42 20 from ϵ decay.
	162.3231 4	100.0 5	M1+E2	+0.41 1	1.115	B(M1)(W.u.)=0.0063; B(E2)(W.u.)=17. $E\gamma$: weighted average of 162.3211 27 from β^- decay and 162.330 5 from ϵ decay. Other $E\gamma$: 162.27 3 from (n,n' γ), 162.27 2 from (n, γ) E=thermal. 162.0 1 from ($^{14}\text{C}, \alpha 3n\gamma$). I γ : from ϵ decay.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	$\delta^{\dagger}@$	α	Comments
208.8069	208.786 22	12.63 12	M1+E2	-0.5 1	0.527 23	B(M1)(W.u.)=0.00035; B(E2)(W.u.)=0.83. E γ : unweighted average of 208.72 3 from (n,n' γ), 208.80 2 from (n, γ) E=thermal, 208.810 7 from β^- decay, 208.812 2 from ϵ decay. The weighted average is 208.811 3. Other E γ : 209.4 7 from (n, γ) E=4.1 eV, 209.8 1 from ($^{14}\text{C},\alpha 3n\gamma$). I γ : unweighted average of 12.6 12 from (n,n' γ), 12.31 13 from (n, γ) E=thermal, 12.5 5 from β^- decay, 12.74 5 from ϵ decay. The weighted average is 12.68 7. Other I γ : 13 7 from from (n, γ) E=4.1 eV, 17 from Coulomb excitation.
291.7236	82.918 ^a 2	11.0 10	M1+E2	+0.64 3	8.21	B(M1)(W.u.)=0.0096 12; B(E2)(W.u.)=240 40. E γ : agrees well with 83.0 2 from ($^{14}\text{C},\alpha 3n\gamma$), 82.80 17 from (n,n' γ) and 82.919 2 from ϵ decay. I γ : unweighted average of 11.4 12 from β^- decay, 9.2 7 from ϵ decay and 12.5 13 from (n, γ) E=thermal (the weighted average is 10.3 10). Other I γ : 26 9 from (n,n' γ), 48 10 from ($^{14}\text{C},\alpha 3n\gamma$).
	84.711 ^a 2	33.0 23	M1+E2	+0.15 1	7.65	B(M1)(W.u.)=0.037 4; B(E2)(W.u.)=49 8. E γ agrees well with 84.1 6 from ($^{14}\text{C},\alpha 3n\gamma$) and 84.712 2 from ϵ decay. I γ : average of 35.3 16 from β^- decay and 30.7 16 from ϵ decay. Others: 68 25 from (n,n' γ), 28 7 from ($^{13}\text{C},\alpha 3n\gamma$), 46 4 from (n, γ) E=thermal.
	192.643 ^a 6	8.92 26	M1+E2	+0.56 5	0.647 16	B(M1)(W.u.)=0.00067 6; B(E2)(W.u.)=2.3 4. E γ : agrees well with 192.63 6 from (n,n' γ), 192.65 7 from (n, γ) E=thermal, 192.646 7 from ϵ decay, 192.9 7 from (n, γ) E=4.1 eV. I γ : unweighted average of 9.3 20 from (n,n' γ), 8.7 3 from (n, γ) E=thermal, 9.4 3 from β^- decay, 8.28 20 from ϵ decay; weighted average is 8.65 26. Other I γ : 11 5 from (n, γ) E=4.1 eV.
	245.239 4	8.7 6	M1		0.380	B(M1)(W.u.)=0.00041 4. E γ : weighted average of 245.2 5 from (n, γ) E=thermal, 245.235 6 from β^- decay, 245.243 6 from ϵ decay. Other: 245.6 7 from (n, γ) E=4.1 eV for doublet; presumed doublet (E γ =245.1 1) in ($^{14}\text{C},\alpha 3n\gamma$). I γ : weighted average of 9.3 22 from (n, γ) E=thermal, 9.7 10 from β^- decay, 8.0 8 from ϵ decay. Other: 8.9 in Coulomb excitation, 68 35 in (n, γ) E=4.1 eV.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	$\delta^{\dagger}@$	α	Comments
291.7236	291.724 ^a 5	100.0 3	E2		0.0924	B(E2)(W.u.)=13.8 10. B(E2)(W.u.): from measured B(E2). Other $E\gamma$: 291.61 3 from (n,n' γ), 291.71 2 from (n, γ) E=thermal, 291.723 7 from ϵ decay, 291.8 7 from (n, γ) E=4.1 eV. Absent in ($^{14}\text{C},\alpha 3n\gamma$). I γ : from ϵ decay.
308.9466	17.2 2	0.0143 5	[E2]		1.64×10^4 10	$E\gamma$: from level energy difference. I γ : from statistical model calculations in (n, γ) E=thermal.
	101.934 ^a 2	7.1 5	M1+E2	-0.21 3	4.46	I γ : unweighted average of 7.1 3 from β^- decay, 6.6 6 from ϵ decay, 8.6 8 and 6.2 6 from Coulomb excitation (the weighted average is 7.0 3). Others: 21 4 from (n, γ) E=thermal, 6.2 from (n,n' γ). δ : from Coulomb excitation.
	209.879 12	100.0 24	E2		0.262	Unweighted average of 209.867 4 from β^- decay and 209.890 7 from ϵ decay. Other $E\gamma$: 209.7 1 from ($^{14}\text{C},\alpha 3n\gamma$), 209.80 3 from (n,n' γ), 209.86 4 from (n, γ) E=thermal.
309.492	102.481 ^a 3	100 ^a	M2		39.2	B(M2)(W.u.)= 4.00×10^{-7} 9. Other $E\gamma$: 102.10 9 from (n,n' γ), presumably for a doublet.
412.0939	103.147 ^a 5	<1.3	[M1,E2]		3.9 5	I γ : from ϵ decay. Other I γ : 7.1 28 from β^- decay, 14 6 from (n, γ) E=thermal.
	120.373 ^a 3	3.06 ^a 19	E2+M1	=0.38	=2.68	Other $E\gamma$: 120.05 21 from (n, γ) E=thermal. Other I γ : 0.74 13 from ϵ decay, 0.84 17 from (n, γ) E=thermal. δ : from β^- decay.
	203.279 7	12.4 28	E2		0.292	$E\gamma$: weighted average of 203.22 6 from (n,n' γ), 203.284 8 from β^- decay, 203.269 12 from ϵ decay, 203.28 5 from (n, γ) E=thermal. Other $E\gamma$: 203.1 1 from ($^{14}\text{C},\alpha 3n\gamma$). I γ : unweighted average of 18.1 5 from β^- decay, 9.6 13 from ϵ decay, 6.04 17 from (n, γ) E=thermal, 15.7 23 from (n,n' γ). The weighted average is 7.4 21.
	205.067 14	33 4	M1+E2	0.18 6	0.611 12	$E\gamma$: unweighted average of 205.02 3 from (n,n' γ), 205.085 7 from β^- decay, 205.081 9 from ϵ decay, 205.05 2 from (n, γ) E=thermal. Other $E\gamma$: 205.1 7 from (n, γ) E=4.1 eV. I γ : unweighted average of 30 5 from ϵ decay, 41.8 15 from β^- decay, 23 11 from (n, γ) E=4.1 eV, 36 3 from (n,n' γ) (the weighted average is 39.7 23). Other I γ : 13.01 17 from (n, γ) E=thermal.
	313.021 5	100.0 21	M1+E2	+0.225 8	0.190	$E\gamma, I\gamma$: from ϵ decay. Other $E\gamma$: 313.005 30 from β^- decay. Doublet in (n,n' γ) and (n, γ) E=thermal, and possibly in (n, γ) E=4.1 eV also. δ : from ϵ decay. Other δ : +0.23 3 from Coulomb excitation.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E_{\gamma}^{\ddagger}$	$I_{\gamma}^{\ddagger\S}$	Mult.#	$\delta^{\dagger@}$	α	Comments
412.0939	365.616 9	15 3	E2		0.0480	<p>E_{γ}: weighted average of 365.62 10 from (n,n'γ), 365.644 30 from β^- decay, 365.614 9 from ϵ decay, 365.61 5 from (n,γ) E=thermal, 365.5 2 from (n,γ) E=4.1 eV.</p> <p>I_{γ}: unweighted average of discrepant data: 19.3 17 from ϵ decay, 22.9 19 from β^- decay, 15.7 34 from (n,n'γ), 7.99 17 from (n,γ) E=thermal, 8.3 17 from (n,γ) E=4.1 eV (the weighted average is 8.2 9).</p>
453.0695	40.976 ^a 1	1.72 ^a 15	M1		11.01	<p>B(M1)(W.u.)=7.9×10^{-5} 9.</p> <p>Other I_{γ}: 1.9 7 from ϵ decay; 2.00 22 from (n,γ) E=thermal.</p>
	144.1217 ^a 24	9.54 25	M1+E2	+0.07 3	1.670	<p>B(M1)(W.u.)=8.8×10^{-6};</p> <p>B(E2)(W.u.)=0.025.</p> <p>Other E_{γ}: 143.8 1 from ($^{14}\text{C}, \alpha 3n\gamma$), 144.12 8 from (n,n'$\gamma$), 144.10 15 from (n,$\gamma$) E=thermal, 144.135 4 from ϵ decay and 143.0 7 from (n,γ) E=4.1 eV.</p> <p>I_{γ}: weighted average of 9.0 19 from (n,n'γ), 10.5 9 from (n,γ) E=thermal, 9.4 3 from β^- decay, 9.7 6 from ϵ decay. Other I_{γ}: 15.3 12 from ($^{14}\text{C}, \alpha 3n\gamma$) and 29 14 from (n,$\gamma$) E=4.1 eV.</p>
	161.3439 ^a 27	45 9	M1+E2	≈ 0.2	≈ 1.194	<p>B(M1)(W.u.)=3.3×10^{-5};</p> <p>B(E2)(W.u.)=0.021.</p> <p>Other E_{γ}: 161.0 1 from ($^{14}\text{C}, \alpha 3n\gamma$), 161.17 5 from (n,n'$\gamma$), 161.342 14 from ϵ decay.</p> <p>I_{γ}: unweighted average of 33.4 13 from β^- decay, 27 4 from ϵ decay, 56 5 from ($^{14}\text{C}, \alpha 3n\gamma$), 64 6 from (n,n'$\gamma$) (weighted average is 35 5).</p>
	244.263 ^a 4	31.8 5	E2		0.1603	<p>B(E2)(W.u.)=0.048 3.</p> <p>Other E_{γ}: 245.1 1 from ($^{14}\text{C}, \alpha 3n\gamma$) for multiplet, 244.26 4 from (n,n'γ), 244.24 13 from (n,γ) E=thermal, 244.266 3 from ϵ decay; 245.6 7 from (n,γ) E=4.1 eV for doublet.</p> <p>I_{γ}: weighted average of 34 2 from (n,n'γ), 32.2 18 from (n,γ) E=thermal, 32.2 9 from β^- decay, 31.2 7 from ϵ decay. Probable doublet in ($^{14}\text{C}, \alpha 3n\gamma$) and (n,$\gamma$) E=4.1 eV.</p>
	246.059 ^a 4	100 ^a 3	M1+E2	-0.069 26	0.375	<p>B(M1)(W.u.)=2.11×10^{-5} 14;</p> <p>B(E2)(W.u.)=0.0007 6.</p> <p>Other E_{γ}: 245.94 3 from (n,n'γ), 246.04 8 from (n,γ) E=thermal, 246.062 2 from ϵ decay. 245.6 7 from (n,γ) E=4.1 eV for doublet; 245.1 1 from ($^{14}\text{C}, \alpha 3n\gamma$) for presumed doublet.</p> <p>I_{γ}: from ϵ decay and β^- decay.</p>

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	$\delta^{\dagger@}$	α	Comments
453.0695	353.989 ^a 6	40.4 9	M1+E2	-0.192 18	0.1373 21	B(M1)(W.u.)=2.78×10 ⁻⁶ 18; B(E2)(W.u.)=0.00034 7. Other E γ : 353.8 1 from (¹⁴ C, α 3n γ), 353.94 3 from (n,n' γ), 354.00 2 from (n, γ) E=thermal, 353.998 5 from ϵ decay and 353.9 2 from (n, γ) E=4.1 eV. I γ : unweighted average of 39 1 from (n,n' γ), 39.0 4 from (n, γ) E=thermal, 42.6 11 from β^- decay, 40.8 7 from ϵ decay; other I γ : 24 12 from (n, γ) E=4.1 eV. And 30.7 25 from (¹⁴ C, α 3n γ) (weighted average =39.7 7). B(E2)(W.u.)=0.00059 18. E γ : weighted average of 406.612 23 from β^- decay, 406.593 16 from ϵ decay and 406.65 21 from (n,n' γ); other E γ : 408.8 1 from (¹⁴ C, α 3n γ), 406.37 10 from (n, γ) E=thermal, 406.4 2 from (n, γ) E=4.1 eV. I γ : data are discrepant: 1.90 8 from β^- decay, 2.5 6 from ϵ decay, 6.8 20 from (n,n' γ), 9.9 4 from (n, γ) E=thermal and 3.8 8 from (n, γ) E=4.1 eV; the unweighted average of these data is 5.0 15 (cf. weighted average =2.2 8). E γ =408.8 1, I γ =14.0 14 from (¹⁴ C, α 3n γ) suggests that γ may be complex there.
	406.599 13	5.0 15	(E2)		0.0358	
475.05	166.1 ^e 1	59.5 ^e 26	(M1+E2)	-0.12 2	1.113	Other E γ (I γ): 166.28 3 (115 12) from (n,n' γ), 166.4 (76.3 15) from Coulomb excitation. Mult., δ : from Coulomb excitation; D+Q intraband γ . Other E γ : 268.18 3 from (n,n' γ), 268.5 from Coulomb excitation, 268.0 3 from (n, γ) E=thermal. E γ : from (n, γ) E=thermal. 175.7 1 from (¹⁴ C, α 3n γ). E γ : from Coulomb excitation. Other E γ (I γ): 259.51 13 (100 7) from (n, γ) E=thermal, 259.4 (100) from Coulomb excitation. E γ ,I γ : from (n, γ) E=thermal. Other E γ (I γ): 344.16 5 (52 9) from (n,n' γ), 344.1 (49 3) from angular correlation; 57 from thick target yield) in Coulomb excitation. Mult., δ : from Coulomb excitation; D+Q γ , $\Delta\pi$ from level scheme. E γ (I γ): weighted average of 452.18 4 (57 4) from (n,n' γ) and 452.09 20 (63 7) from (n, γ) E=thermal. Other: 452.0 (54 thick target yield; 68 5 from angular correlation) in Coulomb excitation).
	268.1 ^e 1	100 ^e 5	[E2]		0.1197	
485.38	175.89 5	100				
551.24	139.2					
	259.48 ^d 4	100 ^d 4	[E2]		0.1325	
	344.38 21	52 7	(M1+E2)	+0.37 10	0.140 6	
	452.18 4	58 3				
557.5	557.4 ^c	100 ^c				
595.338	142.270 ^a 6	100 ^a 9	M1+E2	0.3 1	1.68 5	Other E γ : 142.22 3 from (n,n' γ), 142.25 9 from (n, γ) E=thermal, 142.0 1 from (¹⁴ C, α 3n γ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	$\delta^{\dagger}@$	α	Comments
595.338	286.39 5	3.2 12				E γ : from (n, γ) E=thermal. I γ : average of 3.3 17 from (n, γ) E=thermal and 3.1 16 from β^- decay.
622.60	313.19 10	100	M1		0.195	E γ : average of 313.28 3 from β^- decay and 313.09 3 from (n,n' γ). Other E γ : 314.7 1 from ($^{14}\text{C},\alpha 3n\gamma$).
631.11	155.8 ^b 322.06 ^e 9	12 ^b 4 100 ^e	[E2]		0.0689	Reported in Coulomb excitation only. B(E2)(W.u.)=240 +40-70. E γ : weighted average of 321.86 21 from (n,n' γ) and 322.1 1 from ($^{14}\text{C},\alpha 3n\gamma$). Other: 322.2 from Coulomb excitation.
677.7	468.8 ^c	100 ^c				
687.63	202.2 ^e 1 378.1 ^e 1	100 ^e 3 36.6 ^e 14				
739.95	188.6 ^{bh} 264.81 ^d 12	19 ^d 4				Reported in Coulomb excitation only. Other E γ (I γ): 265.3 8 (100 41) from (n, γ) E=thermal.
	327.77& ^d 9	57 ^d 14				Other E γ (I γ): 327.8 from Coulomb excitation.
	431.05 ^d 5	100 ^d 14				Other E γ (I γ): 431.7 3? (52 4) from (n, γ) E=thermal, 431.0 from Coulomb excitation.
766.30	532.9 ^b 171.0 ^e 1	^b 100 ^e 4				Reported in Coulomb excitation only. Other E γ : 171.6 3 from (n, γ) E=thermal.
776.80	313.0 ^e 1 154.1 2	30.6 ^e 17 ≈67				E γ : from ($^{14}\text{C},\alpha 3n\gamma$). Other E γ (I γ): 153.98 10 (124 35) from (n,n' γ) for doubly-placed γ ; 153.8 19 (≈67) from (n, γ) E=thermal. Placement from ($^{14}\text{C},\alpha 3n\gamma$) and (n,n' γ).
	467.35 14	100 50				E γ , I γ , placement from (n,n' γ). E γ =467.5 9 in (n, γ) E=thermal with γ placed feeding the 9/2- 309 level; γ unobserved in ($^{14}\text{C},\alpha 3n\gamma$).
777.0	323.96 ^h 27	100				E γ : from (n,n' γ). Tentative placement from 1997Pr02; γ unplaced in 1993Pr07.
804.9	596.0 ^c	100 ^c				
808.3	599.4 ^c	100 ^c				
816.5	607.7 ^c	100 ^c				
849.94	218.7 ^e 1	16.5 ^e 9	(M1+E2)	-0.25 7	0.503 13	Other E γ (I γ): 219.4 (27 3) from Coulomb excitation.
	375.0 ^e 1	100 ^e 4	[E2]		0.0447	Mult., δ : from Coulomb excitation; D+Q intraband γ . Other E γ (I γ): 375.2 (100) from Coulomb excitation.
871.9	663.1 ^c	100 ^c				
899.7	608.0 ^c	100 ^c				
903.503	451.9 2	1.7 3				E γ ,I γ : from (n, γ) E=4.1 eV. Other E γ (I γ): 451, I(451 γ):I(857 γ)=1.0=:17 3 from (n, γ) E=4.1 eV.
	491.3 4	2.1 4				
	594.8 12	2.3 10				
	611.75 4	28.7 10				Other E γ (I γ): 611.3 (70 18) from (n, γ) E=thermal: $\gamma\gamma$ coin, 611.98 18 (20 5) from (n,n' γ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	E $\gamma^{\ddagger}$	I $\gamma^{\ddagger\S}$	Mult.#	α	Comments
903.503	694.69 2	100.0 8			Other E γ (I γ): 694.2 (100 21) from (n, γ) E=thermal: $\gamma\gamma$ coin, 695.69 18 (100 20) for doublet in (n,n' γ), 695.4 2 (100 21) from (n, γ) E=4.1 eV; absent in Coulomb excitation.
	804.34 18	10.4 10			Other E γ (I γ): 804.4, I(804 γ):I(857 γ)=100:93 from Coulomb excitation.
	857.0 11	11 6			Other E γ (I γ): 857.6 2 (16.5 35) from (n, γ) E=4.1 eV, 857.0 from Coulomb excitation.
	903.7 12	3 2	[E2]	0.00554	B(E2)(W.u.)=0.35 3. B(E2)(W.u.): from measured B(E2). Other E γ (I γ): 903.0 (605 33) from (n, γ) E=thermal: $\gamma\gamma$ coin.
909.4	700.5 ^c	100 ^c			
914.81	227.1 ^e 1	100 ^e 3			
	429.5 ^e 1	83.8 ^e 28			
926.1	186.3 ^b				
	374.9 ^b	100 ^b	(E2)	0.0447	
	450.9 ^b	22 ^b 5			
	617.3 ^b	10 ^b 2			
934.661	726	=1			
	835.2 13	2 1			
	888.17 2	100.0 4			Other E γ : 888.1 2 (100 19) from (n, γ) E=4.1 eV, 887.5 (100 8) from (n, γ) E=thermal: $\gamma\gamma$ coin, 888.18 11 (100 10) from (n,n' γ).
	935.3 ^h 8	0.96 26			
941.6	895.0 ^c	100 ^c			
949.9	903.3 ^c	100 ^c			
951.3	742.4 ^c	100 ^c			
956.30	333.7 ^e 1	100 ^e	[E2]	0.0622	
963.43	332.25 ^d 17	100 ^d 30			
	488.41 ^d 12	36 ^d 9			
965.13	198.6 ^e 1	100 ^e 4			
	370.0 ^e 1	59.6 ^e 25			
999.60	404.60 ^d 18	44 ^d 13			Other E γ (I γ): 405 (12 4) from (n, γ) E=thermal.
	448	6 3			
	547	=3.0			
	587.43 9	46 4			E γ : E γ (I γ): weighted average of 587.29 13 (47 4) from (n, γ) E=thermal and 587.49 9 (42 8) from (n,n' γ).
	707.79 19	100 9			Other E γ (I γ): 707.85 26 (100 25) from (n,n' γ).
1026.373	615	=0.40			
	734.6 4	0.56 10			Other E γ (I γ): 734.4 2 (0.60 12) from (n, γ) E=4.1 eV.
	817.73 10	11.1 6			Other E γ : 817.4 2 (12.3 25) from (n, γ) E=4.1 eV, 817.1 (22.2 16) from (n, γ) E=thermal: $\gamma\gamma$ coin, 818.0 5 (22 5) from (n,n' γ).
	927.29 2	16.32 14			Other E γ : 927.2 2 (15 3) from (n, γ) E=4.1 eV, 926.8 (7.2 4) from (n, γ) E=thermal: $\gamma\gamma$ coin, 927.8 6 (13 7) from (n,n' γ).
	979.88 2	61.5 3			Other E γ : 979.9 2 (60 12) from (n, γ) E=4.1 eV, 979.4 (54.9 19) from (n, γ) E=thermal: $\gamma\gamma$ coin, 979.82 15 (66 13) from (n,n' γ), 979.8 (45) from Coulomb excitation.
	1026.38 2	100.0 4	(E2)	0.00428	B(E2)(W.u.)=0.081 16. B(E2)(W.u.): from measured B(E2). Other E γ : 1026.4 2 (100 20) from (n, γ) E=4.1 eV, 1025.9 (100.0 20) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1026.19 13 (100 11) from (n,n' γ), 1026.3 (100) from Coulomb excitation.
1053.269	641.4 3	8.9 11			Other E γ (I γ): =640.2 (9.1 18) from (n, γ) E=4.1 eV, 640.8 for sole branch reported in Coulomb excitation.
	761.8 4	3.0 11			

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	α	Comments
1053.269	846.26 3 953.97 ^f 18	100.0 11 15 ^f 3			Other $E\gamma$ ($I\gamma$): 846.1 2 (100 20) from (n, γ) E=4.1 eV. Other $E\gamma$ ($I\gamma$): 953.6 2 (12.1 24) from (n, γ) E=4.1 eV, 953.29 16, I(953 γ):I(1006 γ)=100 25:53 18 from (n,n' γ). Other $E\gamma$: 1006.5 9 from (n,n' γ). B(E2)(W.u.)<0.1. B(E2)(W.u.): from measured B(E2). $E\gamma$: from level-energy difference. B(E2)(W.u.)=200 30. Other $E\gamma$: 431.3 from Coulomb excitation.
	1006.89 17 (1053.26 3)	13.7 16 g	(E2)	0.00406	
1061.99	430.9 ^e 1	100 ^e	[E2]	0.0307	
1069.42	474.67 ^d 15 657.14 14	22 ^d 7 44 11			Other $E\gamma$ ($I\gamma$): 656.65 22 (32 14) from (n,n' γ), 657.4 3 from from (n, γ) E=thermal. Other $E\gamma$ ($I\gamma$): 777.7 5 (100 14) from (n, γ) E=thermal.
	777.34 ^d 15	100 ^d 22			
1096.4	997.2 ^c	100 ^c			
1149.91	697.04 11 738.9 ^h 6 858.1 5 940.77 ^d 15	100 5 2.0 8 36 9 29 ^d 6			Other $E\gamma$ ($I\gamma$): 695.69 18 (100 20) from (n,n' γ). Other $E\gamma$ ($I\gamma$): 858.1? 4 (12 6) from (n,n' γ). Other $E\gamma$ ($I\gamma$): 941.09 3 (66.9 8) from (n, γ) E=thermal, 942.8 (27) from Coulomb excitation.
	1050.4 ^h 8 1103.50 16 1149.94 7	2.7 8 12.4 8 31.3 8	(E2)	0.00342	B(E2)(W.u.)=0.08 3. Other $E\gamma$ ($I\gamma$): 1149.7 6 (12 6) from (n,n' γ), 1149.8 (100) from Coulomb excitation.
1168.74	253.6 ^e 1 481.1 ^e 1	75.5 ^e 25 100 ^e 3			
1188.4?	979.4 ^c	100 ^c			
1190.25	224.9 ^e 1 424.0 ^e 1	96 ^e 3 100 ^e 4	Q		Mult.: from ($^{14}\text{C},\alpha 3n\gamma$). Other $E\gamma$ ($I\gamma$): 802.6 6 (100 27) from (n, γ) E=thermal.
1214.31	802.18 ^d 10 923.2 ^d 4	100 ^d 21 28 ^d 14			Other $E\gamma$ ($I\gamma$): 923.8? 11 (93 40) from (n, γ) E=thermal.
1223.40?	153.98 ^h 10	100			$E\gamma, I\gamma$: from (n,n' γ) for γ with alternative placement.
1226.5	1226.4 ^c	100 ^c			
1229.31	633.95 7 776.21 21 817.36 13 937.58 18	57.4 20 100 5 39 18 50 3			
	1020.4 4	25 5			
1261.4	849.8 13 952.4 5 969.2 15	70 40 100 40 95 30			
1272.2	980.3 ^c	100 ^c			
1275.19	371.6 3 652.59 2 822.12 13	4 1 12 1 100 1			Other $E\gamma$: 821.8? 2 from (n, γ) E=4.1 eV.
	863.6 4	4 1			
1291.67	142.0 6 265.7 4 388	=9 =6 =2			
	1082.8 3 1192.72 9 1245.31 22 1291.8 3	22.9 23 100 8 31.5 19 29.6 23	(E2)	0.00275	B(E2)(W.u.)=0.36 5. Other $I\gamma$: 86 in Coulomb excitation.
1309.409	310 375 406 1017.71 6	=4 7 4 9 4 46.5 8			

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	α	Comments
1309.409	1100.60 2	100.0 6			Other $E\gamma$ ($I\gamma$): 1099.9 (100 15) from (n, γ) E=thermal: $\gamma\gamma$ coin; possibly the $E\gamma=1100.4$ 2 transition placed by 1973Ca02 from the 2127 level in (n, γ) E=4.1 eV; 1100.11 13 (100 18) from (n,n' γ). Other $E\gamma$ ($I\gamma$): 1209.6 (6 3) from (n, γ) E=thermal: $\gamma\gamma$ coin. $E\gamma$: from (n,n' γ). $I\gamma$: from (n, γ) E=thermal: $\gamma\gamma$. Other $I\gamma$: 48 21 from (n,n' γ), 20 9 from (n, γ) E=thermal, 19 from Coulomb excitation, 48 21 from (n,n' γ).
	1210.35 21	19.6 11			
	1262.9 4	22 8			
1309.9?	1309.9bh	100b	(E2)	0.00268	B(E2)(W.u.)=0.62 5. B(E2)(W.u.): from measured B(E2).
1319.63	320.02 18	15 4			$I\gamma$: unweighted average of 83.5 15 and 77 3 in (n, γ) E=thermal.
	416.08 5	80 3			
	697.04 5	76 14			
	724.6 6	9 3			
	767.7 3	13 3			
	866.60 4	100.0 23			
	907.5 6	15 3			
1327.67	265.7 ^e 1	13.0 ^e 7			
	477.7 ^e 1	100 ^e 3			
1331.7?	481.8bh	100b			$E\gamma$: tentative transiton from Coulomb excitation, placed on the basis of band systematics.
1335.42	400.73 14	10.9 8			
	923	5 3			
	1043.73 12	21.8 8			
	1128.39 10	51.6 16			
	1236.34 9	43.2 12			
	1288.96 6	100.0 16			
	1335.8 ^h 3	13.3 20			
1337.8	742.5 8	100			
1372.23	960.06 9	90 3			Other $E\gamma=959.80$ 18, $I\gamma:I(1081\gamma)=100$ 25:48 14 in (n,n' γ).
	1062.9 8	9 3			
	1080.72 19	50 3			
	1163.38 17	100 4			
	1165.35 20	88 4			
1376.41	753.5 5	27 8			
	781.02 12	100 9			
	1067.2 8	38 16			
1412.9	1121.0 ^c	^c			
1417.6	1417.4 ^c	100 ^c			
1432.9	1386.4 ^c	100 ^c 22			
	1432.9 ^c	50 ^c 25			
1437.42	1145.5 ^h 6	20 4			
	1228.60 ^f 13	18 ^f 4			Other $E\gamma$ ($I\gamma$): 1228.3 5 (27.4 22) in (n, γ) E=thermal.
	1338.9 ^f 2	14 ^f 3			Other $E\gamma$ ($I\gamma$): 1338.23 23 (41 3) in (n, γ) E=thermal.
	1390.8 ^f 2	13 ^f 7			Other $E\gamma$ ($I\gamma$): 1390.82 22 (30.2 17) in (n, γ) E=thermal.
	1437.5 ^f 2	100 ^f 20			Other $E\gamma$ ($I\gamma$): 1437.52 23 (100 12) in (n, γ) E=thermal, 1437.8 4 (100 32) from (n,n' γ).
1439.75	271.0 ^e 1	50.6 ^e 17			
	525.1 ^e 1	100 ^e 3			
1439.92	249.7 ^e 1	90 ^e 3			
	475.0 ^e 1	100 ^e 3			
1463.18	1051.0bh	b	E2	0.00408	Measured B(E2) $\uparrow=0.0034$ 4. The sole branch seen in Coulomb excitation and γ is absent in other reaction studies, so placement shown as uncertain here. Mult.: E2 excitation in Coulomb excitation.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	α	Comments
1463.18	1416.78 10	100 12			Other $E\gamma$ ($I\gamma$): 1416.3 (100 27) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1463.4 3	80 10			Other $E\gamma$ ($I\gamma$): 1462.8 (137 30) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1466.7	778.9 ^e 8	32 ^e 16			
	981.4 ^e 5	100 ^e 26			
1471.05	321.17 12	13.1 7			
	1262.6& 3	57 5			Other $E\gamma$ ($I\gamma$): 1262.9 4 (64 27) from (n,n' γ), 1261.8 (48 6) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1424.61 7	100.0 18			Other $E\gamma$ ($I\gamma$): 1423.2? 3 (100 27) from (n,n' γ), 1424.1 (100 6) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1470.75 9	34 4			Other $E\gamma$ ($I\gamma$): 1470.6 (27 4) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1474.77	1022.0 ^d 4	36 ^d 18			
	1062.6 ^d 3	91 ^d 27			
	1182.3 ^d 8	100 ^d 36			
1485.45	581.5 ^b	21 ^b			Other $E\gamma$ ($I\gamma$): 581.7 5 (29 6) from (n, γ) E=thermal. I(1386 γ):I(582 γ)=100 11:29 6 in (n, γ) E=thermal.
	1386.4 3	=72			Absent in (n, γ) E=thermal.
	1438.5 ^b	93 ^b			B(E2)(W.u.)=1.46 16.
	1485.0 ^b	100 ^b			Measured B(E2) $\uparrow$ =0.018 2 from Coulomb excitation. Possibly the 1485.49 γ placed from 3098 level in (n, γ) E=thermal.
1502.1	1455.6 ^c	100 ^c			
1510.4	1098.3 ^b	100 ^b			
	1301.6 ^b	34 ^b			
	(1510.4 7)	g	(E2)	0.00210	B(E2)(W.u.)=0.45 6.
1510.64	1411.56 6	100			
1537.9	1246.1 ^c	100 ^c 55			
	1537.8 ^c	95 ^c 50			
1542.9	639.9 8	100 25			
	1250.9 6	75 13			
1550.52	1343.49 21	100 15			
	1504.04 13	28.8 25			Other $E\gamma$: 1504.0 4 for the only branch seen in (n,n' γ) from 1551 level.
1556.22	326.8 6	11 3			
	406.5 3	15 2			
	652.9				$E\gamma$: from Coulomb excitation.
	1144.3	9.5			$E\gamma, I\gamma$: from Coulomb excitation.
	1264.6 4	21.9 20			Other $E\gamma$ ($I\gamma$): 1264.0 (61 11) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1347.4 3	19 4			Other $E\gamma$ ($I\gamma$): 1346.9 (40 13) from (n, γ) E=thermal: $\gamma\gamma$ coin; 1347.6 (20) from Coulomb excitation.
	1457.2 7	27 4			Other $E\gamma$ ($I\gamma$): 1456.6 (14 3) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1510.2 3	100 6			B(E2)(W.u.)=0.45 6. Other $E\gamma$ ($I\gamma$): 1510.7 5 (100 30) from (n,n' γ), 1509.2 (100 13) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1556.28 9	94 6	(E2)	0.00201	B(E2)(W.u.): from measured B(E2). B(E2)(W.u.)=1.62 16. B(E2)(W.u.): from measured B(E2). Other $E\gamma$ ($I\gamma$): 1557.4 5 (60 30) from (n,n' γ), 1555.7 (169 15) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1569.85	420.2 9	7.0 26			
	1158.1 5	6 3			
	1361.06 14	15.2 13			
	1363	=10			
	1523.37 14	80.4 26			
	1569.80 10	100.0 26			
1586.38	560.08 17	46 6			
	651.7 6	55 10			Other $E\gamma$ ($I\gamma$): 652.41 11 (100 12) from (n,n' γ).
	683.07 16	31 10			
	1294.37 9	37 10			

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
1586.38	1380.2 13	59 17		
	1487.53 23	52 11		
	1540	=17		
	1586.83 12	100 3		Other $E\gamma$ ($I\gamma$): 1586.3 (100 26) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1595.29	533.3 ^e 1	100 ^e		
1612.04	709.4 ^h 6	3.7 16		May be partially a primary transition.
	1320.4 ^{ch}	58 ^c 16		
	1402.8 3	16 3		
	1512.82 21	36 3		
	1565.51 11	67 3		Other $E\gamma$ ($I\gamma$): 1565.6 (33 14) from (n, γ) E=thermal: $\gamma\gamma$ coin, and 1565.9 2 (49 25) from (n, γ) E=4.1 eV.
	1612.16 7	100 3		Other $E\gamma$ ($I\gamma$): 1612.1 (100 14) from (n, γ) E=thermal: $\gamma\gamma$ coin, and 1612.0 2 (100 51) from (n, γ) E=4.1 eV.
1615.2	1323.5 ^c	100 ^c		
1616.9	1517.8 ^c	100 ^c		
1628.22	479.2 5	=1		
	556.0 ^h 19	=1		
	724.7 12	=1		
	1176.5 10	=2		
	1528.68 23	30 2		Other $E\gamma$ ($I\gamma$): 1528.9 (7.4 10) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1528.6 3 (87 43) from (n,n' γ).
	1581.4 3	33 2		Other $E\gamma$ ($I\gamma$): 1581.5 (19.5 24) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1580.6 6 (80 41) from (n,n' γ).
	1628.35 8	100 3		Other $E\gamma$ ($I\gamma$): 1628.0 (100 5) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1627.13 22 (100 30) from (n,n' γ).
1629.85	695.4 ^f 2	100 ^f 21		
	1337.9 ^f 2	4.8 ^f 10		
1633.32	1423.9 4	=10		
	1532 1	16 10		
	1586.9 7	84 14		
	1633.77 23	100 7		Other $E\gamma$ ($I\gamma$): 1632.7 (100 18) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1658.2	1366.3 ^c	100 ^c		
1660.59	1451.5 ^h 7	5 3		
	1561.73 ^h 16	35 3		
	1614 1			
	1660.59 11	100 16		Other $E\gamma$ ($I\gamma$): 1659.5 (100 27) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1663.6	976.0 ^e 3	100 ^e		
1663.64	1371.6 11	9 5		
	1455.2 3	26 8		
	1617.7 6	100 15		Other $E\gamma$ ($I\gamma$): 1615.4 (100 24) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1663.2 3	29 13		
1669.3	1377.6 ^c	100 ^c		
1672.75	522.4 5	=1		
	769.36 19	4 1		
	1262.1 12	2 1		
	1381.09 12	9 1		Other $E\gamma$ ($I\gamma$): 1380.8 (18.1 22) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1464.13 15	11 2		Other $E\gamma$ ($I\gamma$): 1463.7 (27.7 26) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1465.5 4	6 1		
	1573.52 11	12 1		Other $E\gamma$ ($I\gamma$): 1573.4 (8.1 9) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1573.2 3 (104 30) from (n,n' γ).
	1626.29 8	100 3		Other $E\gamma$ ($I\gamma$): 1626.0 (100 5) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1627.2 2 (100 18) from (n, γ) E=4.1 eV, 1627.13 22 (100 30) from (n,n' γ).
	1672.86 11	14 1		Other $E\gamma$ ($I\gamma$): 1672.5 (23.8 26) from (n, γ) E=thermal: $\gamma\gamma$ coin and 1673.1 2 (11.4 23) from (n, γ) E=4.1 eV.
1677.1	1468.1 ^c	100 ^c		
1683.3	1230.2 7	100		
1686.33	1063.72 7	100		
1713.61	273.6 ^e 1	71 ^e 4		
	523.4 ^e 1	100 ^e 6		
1725.65	575.9 3	10 2		
	1516.9 8	18 2		Other $E\gamma$ ($I\gamma$): 1516.1 (148 57) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1725.77 14	100 4		Other $E\gamma$ ($I\gamma$): 1724.9 (100 38) from (n, γ) E=thermal: $\gamma\gamma$ coin.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
1730.48	1277.8 6	6 2		
	1438.9 8	16 5		
	1521.8 4	17 3		Other $E\gamma$ (I γ): 1521.2 (21 8) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1631.52 13	53 6		Other $E\gamma$ (I γ): 1630.9 (18 4) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1684.11 7	100 5		Other $E\gamma$ (I γ): 1683.5 (100 8) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1730.7 3	23 4		Other $E\gamma$ (I γ): 1730.0 (34 6) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1734.73	459.2 7	17 8		
	1112	=9		
	1322.8 3	100 20		
	1441.9 9	70 30		
	1527.9 8	90 30		
1737.2	1284.4 4	100		
1746.11	306.5 ^e 1	55.1 ^e 19		
	307.0 ^e 1	28.0 ^e 13		Other I γ : 55.1 19 from ($^{14}\text{C},\alpha 3n\gamma$).
	555.6 ^e 1	71.0 ^e 24	Q	Mult.: from DCO in ($^{14}\text{C},\alpha 3n\gamma$).
	577.1 ^e 1	67.6 ^e 24		
	830.9 ^e 1	100 ^e 3	D	Mult.: from DCO in ($^{14}\text{C},\alpha 3n\gamma$).
1746.39	306.1 ^e 1	36.9 ^e 14		
	577.6& ^e 1	100 ^e 4		
1746.8	1746.6 ^c	100 ^c		
1785.58	1332.3 15	=15		
	1372.6 3	100 12		
	1492.7 3	45 10		
	1575.8 13	39 15		
1789.76	496.7 ^h 5	8 2		
	1580.6 5	50 20		Other $E\gamma$ (I γ): 1581.5 (123 46) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	1743.60 23			
	1789.5 8	100 33		Other $E\gamma$ (I γ): 1790.3 (100 31) in (n, γ) E=thermal: $\gamma\gamma$ coin.
1811.11	340	=2		
	661.5 4	5 3		
	1519.2 6	17 3		Other $E\gamma$ (I γ): 1519.7 (13 4) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	1602.43 7	99 4		Other $E\gamma$ (I γ): 1602.6 (100 7) in (n, γ) E=thermal: $\gamma\gamma$ coin, 1602.5 2 (100 20) from (n, γ) E=4.1 eV.
	1711.7 15	5 3		
	1764.59 12	100 4		Other $E\gamma$ (I γ): 1764.9 (71 5) in (n, γ) E=thermal: $\gamma\gamma$ coin, 1764.7 2 (87 18) from (n, γ) E=4.1 eV.
	1811.1 5	8 2		
1813.9	1813.7 ^c	100 ^c		
1823.86	1370.89 15	<17		Other $E\gamma$ (I γ): =1370.0 (9 5) from (n, γ) E=4.1 eV.
	1411.68 14	<26		Other $E\gamma$ (I γ): 1411.4 2 (47 27) from (n, γ) E=4.1 eV.
	1532	=1		Other $E\gamma$ (I γ): 1531.8 (4.4 16) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	1615.06 7	100 3		Other $E\gamma$ (I γ): 1614.7 (100 4) in (n, γ) E=thermal: $\gamma\gamma$ coin, 1614.3 4 (100 50) in (n,n' γ), 1615.3 2 (100 20) in (n, γ) E=4.1 eV.
	1777	2 1		Other $E\gamma$ (I γ): 1777.0 (3.2 13) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	1824.0 4	5 1		Other $E\gamma$ (I γ): 1823.5 (6.3 12) in (n, γ) E=thermal: $\gamma\gamma$ coin.
1828.1	1827.9 ^c	100 ^c		
1833.81	1542.08 15	70 19		
	1625.1 11	100 21		Other $E\gamma$ (I γ): 1626.5 (100 30) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1736	28 22		
	1787.8 12	48 10		Other $E\gamma$ (I γ): 1788.8 (49 21) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1834.2 5	27 8		Other $E\gamma$ (I γ): 1835.3 (42 19) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1837.2	1545.0 14	57 25		
	1628.5 6	100 25		
	1837.1 11	72 27		
1840.3	1217.7 3	100		
1866.50	1454.8 ^f 2	100 ^f 50		
	1819.6 ^f 2	63 ^f 33		
1869.69	559.2 16	5 3		
	967	6 3		
	1660.7 4	23 4		
	1824	4 2		
	1869.75 18	100 7		Other $E\gamma$: 1869.3 from (n, γ) E=thermal: $\gamma\gamma$ coin.
1880.6	965.8 ^e 4	100 ^e		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
1886.15	1675.2 ^c	100 ^c 25		
	1837.5 ^c	56 ^c 21		
	1884.0 ^c	100 ^c 25		
1886.81	567.1 3	6 2		
	983.6 ^h 8	3 1		
	1595.09 4	100 3		Other $E\gamma$ ($I\gamma$): 1594.5 (100 6) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1677.2 5	11 2		Other $E\gamma$ ($I\gamma$): 1676.4 2 (15 3) from (n, γ) E=4.1 eV.
	1786.6 12	6 2		
	1839.8 4	15 2		Other $E\gamma$ ($I\gamma$): 1838.7 2 (100 20) from (n, γ) E=4.1 eV.
	1886.5 7	18 2		Other $E\gamma$ ($I\gamma$): 1885.5 2 (61 12) from (n, γ) E=4.1 eV; 1884.0 from (n, γ) E=thermal: $\gamma\gamma$ coin.
1893.82	1602	$\approx$ 10		
	1847.74 14	100 8		Other $E\gamma$ ($I\gamma$): 1847.3 (100 19) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1894.20 24	53 8		
1900.53	153.6 ^{&e} 1	34 ^e 5		
	986.3 ^{&e} 1	100 ^e 9		
1900.84	967.4 ^h 8	12 6		
	996.3 6	8 3		
	1609.4 3	$\approx$ 6		
	1692.1 3	100 12		Other $E\gamma$ ($I\gamma$): 1691.7 (100 24) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1801.4 8	10 7		
	1854.16 18	36 10		Other $E\gamma$ ($I\gamma$): 1854.0 (42 18) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1900.2 23	12 7		
1900.87	573.2 ^e 1	100 ^e		
1915.39	623.3 5	23 9		
	765.1 11	20 10		
	1624.6 9	60 30		
	1707.5 9	45 20		
	1816.2 ^h 3			
	1868.6 9	90 30		
	1915.7 4	100 11		Other $E\gamma$: 1914.9 from (n, γ) E=thermal: $\gamma\gamma$ coin.
1932.1	1885.4 ^c	100 ^c		
1944.31	388.3 4	2 1		
	473.8 3	4 2		
	716	$\approx$ 1		
	794.5 3	3 1		
	918.3 4	3 1		
	1652.9 8	5 1		Other $E\gamma$ ($I\gamma$): 1652.2 (4.0 14) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1653.0 2 (29 14) from (n, γ) E=4.1 eV.
	1735.56 7	100 2		Other $E\gamma$ ($I\gamma$): 1735.1 (100 4) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1735.9 2 (100 19) from (n, γ) E=4.1 eV.
	1844.2 15	2 1		
	1897.88 14	21 2		Other $E\gamma$ ($I\gamma$): 1897.4 (16.3 15) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1898.3 2 (24 5) from (n, γ) E=4.1 eV.
	1944.42 24	8 2		Other $E\gamma$ ($I\gamma$): 1943.9 (2.6 13) from (n, γ) E=thermal: $\gamma\gamma$ coin, 1945.6 2 (14 3) from (n, γ) E=4.1 eV.
1952.5	1952.3 ^c	100 ^c		
1964.72	1062.4 12	10 6		
	1552.1 5	68 15		
	1673.4 20	30 20		
	1757.3 16	43 18		
	1918.3 4	100 8		
	1964.4 5	35 10		Other $E\gamma$ ($I\gamma$): 1964.1 (100 57) from (n, γ) E=thermal: $\gamma\gamma$ coin.
1975.80	700.6 4	51 11		
	825.9 3	100 37		
1982.20	832.9 7	15 5		
	1690.6 3	100 16		Other $E\gamma$ ($I\gamma$): 1691.6 2 (100 20) in $^{182}\text{W}(n,\gamma)$ E=4.1 eV.
	1935.9 4	38 5		
	1982.41 23	90 16		Other $E\gamma$ ($I\gamma$): 1984.0 2 (96 20) in $^{182}\text{W}(n,\gamma)$ E=4.1 eV.
1989.70	243.0 ^e 1	100 ^e		
1990.56	553.3 18	12 7		
	964.5 16	16 9		
	990.9 11	39 9		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	E $\gamma^{\ddagger}$	I $\gamma^{\ddagger\S}$	Mult.#	Comments
1990.56	1086.6 5	27 11		
	1698.93 10	100 15		
	1782.4 3	58 15		
	1784	=16		
	1891	=13		
	1944.6 8	96 16		
	1990.16 23	54 13		Other I γ : 100 44 from (n, γ) E=thermal: $\gamma\gamma$ coin.
2004.4	1795.6 ^c	100 ^c		
2007.89	294.4 ^e 1	72 ^e 5		
	568.0 ^e 1	100 ^e 7		
2022.7	1813.9 ^c	100 ^c		
2028.46	720.0 11	3 2		
	1093.9 3	9 3		
	1737.1 6	46 7		Other E γ (I γ): 1736.6 (35 10) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1819.6 6	17 4		Other E γ (I γ): 1819.5 (17 9) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	1929.0 3	19 4		
	1982.2 10	43 11		Other E γ (I γ): 1981.8 (18 8) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	2028.61 21	100 6		Other E γ (I γ): 2028.3 (100 13) from (n, γ) E=thermal: $\gamma\gamma$ coin.
2043.39	296.9 ^e 1	22.6 ^e 13		
	603.7 ^e 1	100 ^e 3		
2044.6	1945.5 ^c	79 ^c 17		
	1998.1 ^c	100 ^c 46		
2050.61	304.3 ^e 1	100 ^e 3		
	610.6 ^e 17	0.38 ^e 27		
2057.7	2057.5 ^c	100 ^c		
2059.36	830.9 ^{&} 9	20 7		
	1156.3 6	10 6		
	1767.5 4	26 9		
	1850.6 4	100 7		
	1852.6 18	17 8		
	2012.8 4	82 11		
	2059.9 10	50 6		
2091.5	1800	=20		
	1992.4 17	30 20		
	2043.8 12	100 30		
	2092.3 ^h 4	60 30		
2095.5	1886.6 ^c	100 ^c 24		
	2048.9 ^c	51 ^c 22		
2099.28	790.05 21	49 5		
	1164.2 15	16 11		Other E γ (I γ): 1164.9 2 (150 68) from ^{182}W (n, γ) E=4.1 eV; possibly for a complex line.
	1686.3 16	18 9		
	1807.7 19	25 11		
	1890.77 24	100 5		Other E γ (I γ): 1889.9 2 (100 21) from ^{182}W (n, γ) E=4.1 eV. 1890.1 (97 38) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	2052.3 16	24 10		
	2099.3 13	34 16		Other E γ (I γ): 2099.1 2 (88 18) from ^{182}W (n, γ) E=4.1 eV. 2098.9 (100 31) from (n, γ) E=thermal: $\gamma\gamma$ coin.
2101.89	112.1 ^e 1	100 ^e 4		
	355.4 ^e 10	0.4 ^e 10		
2111.6	1902.6 ^c	100 ^c		
2126.35	978 ^h	=4		
	1057.9 12	10 3		
	1192.9 16	8 3		Other E γ (I γ): 1192.3 2 (120 68) in ^{182}W (n, γ) E=4.1 eV.
	1223.3 3	17 4		
	1674	=4		Other E γ (I γ): 1673.1 2 (44 8) in ^{182}W (n, γ) E=4.1 eV.
	1713.7 6	7 3		
	1836	6 3		
	1917.4 12	12 3		Other E γ : 1917.1 from (n, γ) E=thermal: $\gamma\gamma$ coin. I γ : weighted average of 10 4 from (n, γ) E=thermal and 15 6 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	2027.6 6	4.4 16		Other E γ (I γ): 2026.8 (4.4 16) from (n, γ) E=thermal: $\gamma\gamma$ coin. I γ : from (n, γ) E=thermal: $\gamma\gamma$; =4 from (n, γ) E=thermal.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
2126.35	2080.0 3	100 4		Other $E\gamma$ ($I\gamma$): 2080.8 2 (100 20) in $^{182}\text{W}(n,\gamma)$ E=4.1 eV; 2079.4 (100 8) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2126.4 3	27 4		Other $E\gamma$ ($I\gamma$): 2126.5 2 (46 24) in $^{182}\text{W}(n,\gamma)$ E=4.1 eV; 2125.9 (21 4) from (n, γ) E=thermal: $\gamma\gamma$ coin.
2130.2	1921.2 ^c	100 ^c		
2152.9	1943.9 ^c	100 ^c		
2154.20	253.8 ^e 2	100 ^e		
2157.48	1864.7 19	18 12		
	1950.4 14	20 12		
	2059.1 16	50 21		Other $E\gamma$ ($I\gamma$): 2057.9 (100 33) in (n, γ) E=thermal: $\gamma\gamma$ for sole branch from this level seen in that study.
	2111.8 16	50 21		
	2157.7 4	100 22		
2164.82	1138.4 14	6 2		
	1163.4 ^{fh} 2	90 ^f 46		From $^{182}\text{W}(n,\gamma)$ E=4.1 eV only; probably misplaced.
	1230.6 16	5 2		
	1262	=1.2		
	1711.9 4	12 3		
	1752.9 12	6 2		Other $E\gamma$ ($I\gamma$): 1753.2 2 (44 22) from $^{182}\text{W}(n,\gamma)$ E=4.1 eV.
	1872.8 6	10.9 16		Other $E\gamma$ ($I\gamma$): 1871.8 (16 6) in (n, γ) E=thermal: $\gamma\gamma$.
	1956.2 3	30 3		Other $E\gamma$ ($I\gamma$): 1954.7 (51 6) in (n, γ) E=thermal: $\gamma\gamma$.
	2064.4 ^c	3.7 ^c 18		Reported in (n, γ) E=thermal: $\gamma\gamma$ coin only.
	2118.34 8	100 3		Other $E\gamma$ ($I\gamma$): 2117.0 (100 8) in (n, γ) E=thermal: $\gamma\gamma$, 2119.2 2 (100 20) from (n, γ) E=4.1 eV.
	2165.8 7	9 3		Other $E\gamma$ ($I\gamma$): 2170 8 (22 12) from $^{182}\text{W}(n,\gamma)$ E=4.1 eV.
2166.9	1958.1 ^c	100 ^c		
2169.87	850.1 7	62 35		
	894.69 6	100 12		
	1877	=12		
	2072	16 8		
2176.75	606.8 ^h 6	3 1		
	706.9 13	2 1		
	713.4 9	3 1		$E\gamma=713.4$ 11, $I\gamma=18$ 7 in table 1 of 2011Bo09.
	841.8 3	13 2		
	858.3 15	2 1		
	885.56 14	14 2		
	1150.5 10	3 1		
	1243.3 11	4 2		$E\gamma=1243.3$ 7, $I\gamma=26$ 5 in table 1 of 2011Bo09.
	1885.8 12	5 2		
	1968.33 21	14 2		Other $E\gamma$ ($I\gamma$): 1967.6 (29 4) in (n, γ) E=thermal: $\gamma\gamma$.
	2079	=1		
	2129.60& 13	35 6		Other $E\gamma$ ($I\gamma$): 2129.9 (27 3) in (n, γ) E=thermal: $\gamma\gamma$.
	2177.0 5	100 3		Other $E\gamma$ ($I\gamma$): 2176.4 (100 5) in (n, γ) E=thermal: $\gamma\gamma$.
2209.05	933.6 7	7 3		
	1182.6 4	28 6		
	2000.6 14	=10		
	2162.8 5	100 10		Other $E\gamma$: 2162.3 in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2209.2 3	74 11		Other $E\gamma$ ($I\gamma$): 2208.8 (63 14) in (n, γ) E=thermal: $\gamma\gamma$.
2221.79	626.5 ^e 1	100 ^e		
2231.46	286.6 ^h 5	11 3		
	2022.3 7	100 14		
	2184.6 ^h 16	27 10		See comment on 2183.5 γ .
	2231.1 4	21 6		
2233.1?	1941.6 ^{ch}	100 ^c 50		$I\gamma$: 44 14 for γ that may partially or totally deexcite the 2231 level in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2183.5 ^{ch}	c		
2235.72	900.51 24	16 6		
	1302.7 ^h 5	18 7		
	1783	=8		
	1944	13 8		
	2028.1 16	35 9		Other $E\gamma$ ($I\gamma$): 2026.5 (100 21) in (n, γ) E=thermal: $\gamma\gamma$.
	2136.9 5	100 8		Other $E\gamma$ ($I\gamma$): 2136.2 (33 8) in (n, γ) E=thermal: $\gamma\gamma$. $E\gamma=2133.8$ also reported in (n, γ) E=thermal; $\gamma\gamma$ coin.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
2235.72	2236.2 7	83 10		Other $E\gamma$ ($I\gamma$): 2235.3 (85 20) in (n, γ) E=thermal: $\gamma\gamma$.
2239.1	2030.1 ^c	100 ^c		
2248.08	956.8 7	5 3		
	974.2 9	10 3		
	1957.3 16	13 3		
	2039.2 23	7 3		
	2201.71 9	100 3		Other $E\gamma$: 2201.3 in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2248.8 12	15 3		
2253.37	263.4 ^e 1	100 ^e 3		
	507.2 ^e 1	27.7 ^e 20		
2257.6	2211.1 ^c	100 ^c		
2262.9	2053.9 ^c	100 ^c		
2266.30	1975.3 4	32 8		
	2056.6 8	14 4		Other $E\gamma$ ($I\gamma$): 2057.0 (95 32) in (n, γ) E=thermal: $\gamma\gamma$.
	2266.1 3	100 14		Other $E\gamma$ ($I\gamma$): 2265.8 (100 30) in (n, γ) E=thermal: $\gamma\gamma$.
2269.69	167.7 ^e 1	44.0 ^e 15	D	From DCO in ($^{14}\text{C}, \alpha 3n\gamma$).
	219.1 ^e 1	100 ^e 3		Mult.: intensity balance in ($^{14}\text{C}, \alpha 3n\gamma$) rules out pure M1.
2282.97	812.5 12	7 3		
	1133.3 3	24 5		
	1257	=5		
	1348	=5		
	1831	7 4		
	1872	=5		
	1992.0 16	9 3		
	2074.2 4	38 13		Other $E\gamma$ ($I\gamma$): 2074.0 (78 10) in (n, γ) E=thermal: $\gamma\gamma$.
	2183.3 18	6 4		
	2236.46 9	100 6		Other $E\gamma$ ($I\gamma$): 2235.3 (100 11) in (n, γ) E=thermal: $\gamma\gamma$.
	2283.1 16	6 4		Other $E\gamma$ ($I\gamma$): 2282.8 (19 9) in (n, γ) E=thermal: $\gamma\gamma$.
2292.59	2246.26 23	70 13		Other $E\gamma$ ($I\gamma$): 2245.7 (92 22) in (n, γ) E=thermal: $\gamma\gamma$.
	2292.9 3	100 11		Other $E\gamma$ ($I\gamma$): 2292.2 (100 24) in (n, γ) E=thermal: $\gamma\gamma$.
2303.91	1154.5 12	7 3		
	1370.2 12	10 3		
	2013.6 13	11 3		Other $E\gamma$ ($I\gamma$): 2012.2 (24 7) in (n, γ) E=thermal: $\gamma\gamma$.
	2097	=5		
	2203	=5		Other $E\gamma$ ($I\gamma$): 2204.8 (5.6 26) in (n, γ) E=thermal: $\gamma\gamma$.
	2258.01 21	27 5		Other $E\gamma$ ($I\gamma$): 2257.4 (47 6) in (n, γ) E=thermal: $\gamma\gamma$.
	2304.18 12	100 4		Other $E\gamma$ ($I\gamma$): 2303.9 (100 9) in (n, γ) E=thermal: $\gamma\gamma$.
2311.8	2212.5 ^c	100 ^c		
2324.67	317.2 ^e 2	46 ^e 5		
	610.9 ^e 1	100 ^e 6		
2325.6	1015.9 8	16 4		
	2034.5 4	18 11		
	2278.5 4	23 8		
	2325.9 8	100 14		Other $E\gamma$ ($I\gamma$): 2324.5 (100 14) in (n, γ) E=thermal: $\gamma\gamma$.
2340.33	289.7 ^e 1	100 ^e		
2359.74	2313.1 ^c	100 ^c		
2366.4	2156.9 ^c	100 ^c 40		
	2321.2 ^c	60 ^c 30		
	2365.9 ^c	90 ^c 30		
2367.40	2077.3 16	39 11		
	2158.6 2	=20		Other $E\gamma$ ($I\gamma$): 2157.6 (90 34) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2268 2	35 11		
	2319.8 ^h 6	=5		
	2366 2	=100		Other $E\gamma$ ($I\gamma$): 2366.4 (100 32) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2369.05	2080 ^h 2	22 11		Possibly the 2081.5 γ reported in (n, γ) E=thermal: $\gamma\gamma$ coin deexciting a 2373 level, so placement shown as uncertain here.
	2162.0 6	86 13		Other $E\gamma$ ($I\gamma$): 2160.0 (100 15) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2271 2	22 9		Other $E\gamma$ ($I\gamma$): 2269.7 (9 5) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2323.3 11	57 11		Other $E\gamma$ ($I\gamma$): 2322.3 (63 14) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2369 2	=100		
2373.2	2081.5 ^c	100 ^c		
2384.09	1064.5 12	41 9		
	1109.4 3	56 8		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
2384.09	2093.2 18	26 7		
	2176.3 12	66 10		
	2285.8 8	100 10		
	2337.4 7	84 10		This is the only branch reported in (n, γ) E=thermal: $\gamma\gamma$ coin where $E\gamma=2336.9$.
	2383.2 ^h 5	87 26		
2392.71	2100.6 7	12 3		
	2184.02 8	100.0 25		Other $E\gamma$ ($I\gamma$): 2183.3 (100 6) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2346.2 3	26 3		Other $E\gamma$ ($I\gamma$): 2345.6 (18 10) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2392.7 4	25 5		Other $E\gamma$ ($I\gamma$): 2392.1 (32 5) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2413.25	369.8 ^e 1	20.2 ^e 18		
	666.9 ^e 1	100 ^e 5		
2417.48	1125.9 6	23 5		
	2417.93 20	100 10		
2418.1	2126.4 ^c	100 ^c 26		
	2209.3 ^c	79 ^c 25		
2428.04	2136.4 ^c	100 ^c 20		Absent in (n, γ) E=thermal.
	2380.6 4	69 16		$I\gamma$: for 2381.6 γ in (n, γ) E=thermal: $\gamma\gamma$ coin.
2429.79	275.6 ^e 1	100 ^e		
2431.1	2222.1 ^c	100 ^c		
2433.2	2224.4 ^c	88 ^c 42		
	2386.7 ^c	100 ^c 33		
2433.63	761.8 11	7.8 28		
	1098.3 ^h 8	18 4		
	1407.3 3	100 32		
2447.7	2401.0 ^c	100 ^c		
2450.4	2241.6 ^c	59 ^c 11		
	2403.9 ^c	100 ^c 12		
2450.56	1300.5 4	34 6		
	2242.2 4	100 18		
2460.10	2460.08 ^h 22	100		
2475.0	2266.0 ^c	100 ^c		
2481.46	1545.3 ^h 3	91 12		
	2189.5 6	95 37		
	2273.5 5	57 17		
	2434.9 ^h 3	47 10		
	2482.02 15	100 7		
2485.60	2438.9 3	100		
2492.98	2394.8 ^h 9	33 13		
	2446.5 4	=12		Other $E\gamma$ ($I\gamma$): 2447.4 (55 32) from (n, γ) E=thermal: $\gamma\gamma$ coin may be a doublet deexciting both the 2493 and 2494 levels.
	2492.71 10	100 5		
2493.9	2285.1 ^c	100 ^c 34		
	2447.4 ^c	55 ^c 32		$I\gamma$: may be an overestimate; see comment on 2446.5 γ .
2503.25	1273.7 10	33 8		Absent in (n, γ) E=thermal: $\gamma\gamma$ coin.
	1350.5 ^h 4	15 5		
	2211.3 8	26 9		Other $E\gamma$ ($I\gamma$): 2211.1 (18 8) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2407.2 ^{ch}	41 ^c 14		
	2457.12 19	100 4		Other $E\gamma$ ($I\gamma$): 2457.2 (100 12) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2502.5 3	29 3		Other $E\gamma$ ($I\gamma$): 2505.2? (62 21) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2516.6	1366.5 ^h 6	47 6		
	2307.8 ^h 4	100 8		
2517.67	2471.3 ^h 3	64 16		Other $E\gamma$ ($I\gamma$): 2470.8 (102 26) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	2517.78 ^h 16	100 10		Other $E\gamma$ ($I\gamma$): 2517.3 (100 21) from (n, γ) E=thermal: $\gamma\gamma$ coin.
2522.50	1618.8 ^h 7	79 18		
	2110.1 ^h 8	100 23		
	2423.2 ^h 3	97 31		
2523.04	1085.66 6	46.0 17		
	1187.5 3	22.4 29		
	1231.7 ^h 20	12 7		
	1293.7 7	41 5		
	1454.2 8	27 13		
	2314.3 4	10.9 29		Other $I\gamma$: 25 9 from (n, γ) E=thermal: $\gamma\gamma$ coin for 2313.7 γ .

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
2523.04	2476.38 15	92.5 29		Other $I\gamma$: 102 12 from (n, γ) E=thermal: $\gamma\gamma$ coin for 2476.0 γ .
	2523.00 6	100 4		Other $I\gamma$: 100 10 from (n, γ) E=thermal: $\gamma\gamma$ coin for 2522.5 γ .
2530.1	2529.9 ^c	100 ^c		
2535.16	1306.5 5	20 6		
	2327.4 ^h 3	100 16		Other $E\gamma$: 2326.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	2488.42 11	95 4		Other $I\gamma$: 69 12 from (n, γ) E=thermal: $\gamma\gamma$ coin.
2536.15	282.8 ^e 1	100 ^e 4		
	546.5 ^e 1	62 ^e 3		
2547.6	2500.9 ^c	100 ^c		
2550.3	2341.3 ^c	100 ^c		
2552.8	2552.6 ^c	100 ^c		
2559.83	659.3 ^e 1	100 ^e		
2567.9	2567.7 ^c	100 ^c		
2574.0	2365.1 ^c	72 ^c 33		
	2573.9 ^c	100 ^c 26		
2591.24	321.5 ^e 1	100 ^e	D	Mult.: from DCO in ($^{14}\text{C}, \alpha 3n\gamma$).
2593.39	2593.3 4	100		
2597.8	2551.1 ^c	100 ^c		
2608.53	2609.51 ^h 18	100		
2611.2	1233.7 5	29 4		γ absent in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2402.6 ^c	102 ^c 25		
	2565.0 3	100 8		
2612.7	1543.3 ^h 7	98 44		
	1678.0 5	100 13		
	2612.4 ^{ch}	c		This is the only branch reported in (n, γ) E=thermal: $\gamma\gamma$ coin so placement is shown here as uncertain.
2615.79	1589.8 3	72 10		$E\gamma$: absent in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2406.8 ^c	65 ^c 20		γ reported in (n, γ) E=thermal: $\gamma\gamma$ coin only.
	2568.9 3	100 11		
	2617.4 ^h 4	46 11		Other $E\gamma$ ($I\gamma$): 2621.0 (107 40) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2623.03	2332.2 6	78 12		
	2413.6 3	100 12		
	2624.6 ^h 4	42 8		
2629.17	1694.6 3	100 21		
	2630.1 ^h 3	71 9		
2649.42	308.8 ^e 1	100 ^e 4		
	598.9 ^e 1	35.2 ^e 25		
2655.47	329.7 ^e 6	19 ^e 7		
	647.6 ^e 1	100 ^e 10		
2655.8	2609.3 ^c	100 ^c		
2656.26	2656.18 14	100		
2668.4	2621.3 ^c	79 ^c 33		
	2667.8 ^c	100 ^c 36		
2687.77	2479.3 3	100 8		Other $E\gamma$ ($I\gamma$): 2481.6? (100 40) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2640.9 ^h 3	100 10		Other $E\gamma$ ($I\gamma$): 2640.7 (43 11) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2697.0	1762.3 ^h 4	100		
2699.16	1795.76 10	100 4		
	2652.9	=12		From (n, γ) E=thermal: $\gamma\gamma$ coin only. $I\gamma$ from I(2700 γ)=19 3 and I(2700 γ):I(2653 γ)=100 27:64 24 in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2700.3 ^h 3	19 9		Other $E\gamma$ =2699.4 in (n, γ) E=thermal: $\gamma\gamma$ coin for principal branch from level.
2706.59	293.3 ^e 3	11.8 ^e 16		
	663.2 ^e 1	100 ^e 4		
2708.11	1478.5 ^h 4	112 29		$E\gamma, I\gamma$: for possible doublet in (n, γ) E=thermal; γ absent in (n, γ) E=thermal: $\gamma\gamma$ coin, so placement shown as tentative here.
	2498.6 ^c	84 ^c 26		
	2662.0 3	98 18		Other $E\gamma$ ($I\gamma$): 2660.9 (53 16) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2708.2 3	100 22		Other $E\gamma$ ($I\gamma$): 2707.4 (100 21) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2715.51	2262.3 ^h 4	11 6		Absent in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2669.01 22	100 7		Other $E\gamma$ ($I\gamma$): 2669.0 (100 38) in (n, γ) E=thermal: $\gamma\gamma$ coin.
	2715.53 16	93 5		Other $E\gamma$ ($I\gamma$): 2715.5 (210 45) in (n, γ) E=thermal: $\gamma\gamma$ coin.
2722.74	1818.88 ^h 20	100 6		
	2676.25 11	86 6		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
2722.74	2722.5 5	10 5		
2723.26	293.5 ^e 2	65 ^e 13		
	569.3 ^e 3	100 ^e 18		
2738.0	2691.5 ^c	100 ^c		
2741.4	2695.2 ^c	39 ^c 20		
	2741.3 3	100 23		
2744.0	2535.0 ^c	100 ^c		
2765.2	2718.5 ^c	100 ^c		
2768.56	1742.4 3	100 7		
	2767.2 ^h 3	59 6		$E\gamma=2769.5$ from (n, γ) E=thermal: $\gamma\gamma$ coin may be for doublet.
2770.0	2560.7 ^c	100 ^c 19		
	2723.0 ^c	56 ^c 14		
	2769.5 ^{ch}	≤ 54 ^c		$I\gamma$: 39 15 from (n, γ) E=thermal: $\gamma\gamma$ coin for possible doublet.
2772.9	1746.1 4	100		
2782.32	2735.1 ^c	100 ^c		
2783.33	2574.50 16	100		Other $E\gamma$: 2574.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
2804.96	2758.48 9	100 5		Other $E\gamma$: 2758.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	2805.5 ^h 3	41 6		Other $E\gamma$: 2804.7? from (n, γ) E=thermal: $\gamma\gamma$; placement from 1989Bo30, γ absent in 2005Su29, so placement considered uncertain..
2813.31	1504.06 7	100.0 25		
	1876.2 ^h 6	11.0 20		
	2764.4 3	10.0 20		Other $E\gamma$: 2766.0 for sole branch reported in (n, γ) E=thermal: $\gamma\gamma$ coin.
				$E\gamma$ fits placement poorly.
2815.8?	2815.8 ^h 3	100		
2817.3	2608.5 ^c	100 ^c		
2832.85	2832.75 18	100		Other $E\gamma$: 2834.8 from (n, γ) E=thermal: $\gamma\gamma$ coin.
2833.91	2786.3 ^c	100 ^c		
2837.73	301.5 ^e 1	100 ^e 5		
	584.3 ^e 1	81 ^e 5		
2839.4	2630.4 ^c	100 ^c		
2843.3	2843.1 ^c	100 ^c		
2846.41	2847.4 ^c	100 ^c		
2856.0	2647.0 ^c	100 ^c		
2874.09	167.5 ^e 2	100 ^e		
2881.2	2672.4 ^c	100 ^c		
2884.11	2836.35 ^h 23	100		
2898.7	2898.7 ^h 3	100		
2910.3	2910.1 ^c	100 ^c		
2915.12?	2868.63 ^h 23	100		Other $E\gamma$: 2867.9 from (n, γ) E=thermal: $\gamma\gamma$ coin.
2929.89	708.1 ^e 1	100 ^e		
2932.56	341.3 ^e 1	100 ^e 3		
	662.8 ^e 2	5.9 ^e 7		
2945.6	2898.9 ^c	100 ^c		
2954.6	2954.4 ^c	100 ^c		
2966.7	2966.5 ^c	100 ^c		
2977.78	328.1 ^e 1	100 ^e 5		
	637.7 ^e 1	42 ^e 4		
2979.08	2932.7 ^c	58 ^c 16		
	2979.2 ^c	100 ^c 16		
3010.9	686.2 ^e 4	100 ^e		
3015.3?	2916.0 ^{ch}	100 ^c		
3031.0	2984.3 ^c	100 ^c		Possibly the $E\gamma=2982.5$ to 2985.0 primary γ reported by 1989Bo30.
3042.5	3042.3 ^c	100 ^c		
3054.5	3054.3 ^c	100 ^c		
3071.0	3024.3 ^c	100 ^c		
3078.7	3032.1 ^c	90 ^c 35		
	3078.6 ^c	100 ^c 39		
3083.9	3083.7 ^c	100 ^c		
3096.5	3050.0 ^c	100 ^c		
3097.57	1485.49 12	100		
3156.78	318.9 ^e 1	93 ^e 4		
	620.8 ^e 1	100 ^e 4		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	E $\gamma^{\ddagger}$	I $\gamma^{\ddagger\ddagger}$	Mult.#	Comments
3161.25	454.7 ^e 3	19 ^e 4		
	748.0 ^e 1	100 ^e 7		
3210.74	1364.0 3	21 2		
	3164.11 16	100 4		
3290.34	730.5 ^e 1	100 ^e		
3292.48	359.9 ^e 1	100 ^e		
3349.37	192.6 ^e 1	32.9 ^e 12		
	416.8 ^e 1	100 ^e 3	D	Mult.: from DCO in ($^{14}\text{C}, \alpha 3n\gamma$).
	700.2 ^e 2	5.9 ^e 7		
	758.1 ^e 1	17.1 ^e 10		
3423.79	717.2 ^e 1	100 ^e		
3534.2	3325.3 ^c	56 ^c 21		
	3534.1 ^c	100 ^c 18		
3664.45	315.1 ^e 1	100 ^e 3		
	371.6 ^e 4	2.5 ^e 6		
	731.7 ^e 17	2.9 ^e 7		
3667.3?	3620.8 ^h 5	100		
3687.1	3478.2 ^c	34 ^c 39		
	3640.5 ^c	71 ^c 32		
	3687.0 ^c	100 ^c 34		
3706.39	776.5 ^e 1	100 ^e		
3709.8	3501.0 ^c	100 ^c 44		
	3709.8 ^c	74 ^c 38		
3840.1	3793.6 ^c	71 ^c 31		
	3840.1 ^c	100 ^c 27		
3922.85?	3714.5 ^h 3	100		
3980.9	819.6 ^e 3	100 ^e		
3993.90?	3993.85 ^h 23	100		
3997.85	333.4 ^e 1	100 ^e		
4042.1	751.8 ^e 2	100 ^e		
4196.8	773.0 ^e 2	100 ^e		
4390.25	392.4 ^e 1	100 ^e		
4441.15	443.3 ^e 1	100 ^e		
4539.45	541.6 ^e 1	100 ^e		
(6190.965)	2196.68 ^h 22	0.56 4		
	2268.6 3	0.55 5		Multiplet in (n, γ) E=thermal; other placement unknown.
	2350.5 ^c			
	2404.29 ^h 17	1.78 8		Multiplet in (n, γ) E=thermal; other placement unknown.
	2503.6 ^c			
	2656.5 ^c			
	2980.08 16	1.02 6		
	3093.35 8	2.04 5		Other E γ : 3094.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3106.9 ^c			
	3112.0 ^c			
	3119.8 ^c			
	3136.3 ^c			
	3148.3 ^c			
	3159.8 ^c			
	3175.5 ^c			
	3211.86 6	2.42 5		
	3224.1 ^c			Other E γ : 3211.32 13 (1993Pr09) in (n, γ) E=thermal; 3211.4 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3236.2 ^c			
	3245.2 ^c			
	3276.2 ^c			
	3280.5 ^c			
	3306.71 7	1.03 4		Other E γ : 3309.4 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3334.8 ^c			
	3344.53 7	2.01 9		Other E γ : 3343.2 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3347.5 ^c			
	3351.4 ^c			
	3355.8 ^c			
	3357.01 9	1.72 13		Other E γ : 3357.8 from (n, γ) E=thermal: $\gamma\gamma$ coin.

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
(6190.965)	3375.11 ^h 19	1.19 19		Other $E\gamma$: 3373.3 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3379.3 5	0.48 11		Other $E\gamma$: 3378.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3386.05 16	0.40 3		
	3408.59 17	1.91 17		Other $E\gamma$: 3407.7 and 3409.0 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3417.6 4	0.50 6		Other $E\gamma$: 3418.4 3 (1993Pr09) in (n, γ) E=thermal.
	3420.5 6	0.68 24		Other $E\gamma$: 3421.1 from (n, γ) E=thermal: $\gamma\gamma$ coin possibly for doublet.
	3422.6 3	1.58 27		Other $E\gamma$: 3422.42 19 (1993Pr09) in (n, γ) E=thermal; 3421.1 from (n, γ) E=thermal: $\gamma\gamma$ coin, possibly for doublet.
	3425.6 ^c			
	3446.8 ^c			
	3448.94 ^h 16	0.79 4		
	3467.74 14	1.40 5		Other $E\gamma$: 3468.06 17 (1993Pr09) in (n, γ) E=thermal.
	3475.43 9	1.89 5		Other $E\gamma$: 3475.03 13 (1993Pr09) also in (n, γ) E=thermal, and 3475.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3482.87 10	1.65 5		Other $E\gamma$: 3483.2 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3491.96 13	1.61 7		Other $E\gamma$: 3491.2 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3503.37 23	1.01 12		Complex line. Other $E\gamma$: 3503.18 9 (1993Pr09) in (n, γ) E=thermal.
	3522.3 5	0.57 13		
	3534.4 3	0.62 14		$E\gamma$: for complex line. Other $E\gamma$: 3535.04 27 (1993Pr09) in (n, γ) E=thermal. And 3534.8 from (n, γ) E=thermal: $\gamma\gamma$ coin.
				$I\gamma$: after correction for escape-peak contamination.
	3561.78 13	1.04 9		
	3567.87 8	1.61 5		
	3575.0 ^c			Other $E\gamma$ ($I\gamma$): 3575.56 9 (1.60 5) from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3578.2 ^c			$E\gamma$ =3579.15 7, $I\gamma$ =1.75 5 for complex line that probably feeds both the 2611 and 2613 levels in (n, γ) E=thermal.
	3583.13 ^h 14	0.59 4		
	3593.0 ^c			
	3597.53 12	0.78 4		
	3616.7 ^c			
	3622.9 ^c			
	3638.0 ^c			
	3640.5 ^c			
	3643.2 ^c			
	3655.71 6	2.11 4		
	3660.7 ^c			
	3668.42 4	3.90 5		Other $E\gamma$: 3668.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3673.34 11	1.10 4		
	3687.68 8	2.39 8		Other $E\gamma$: 3688.11 16 (1993Pr09) in (n, γ) E=thermal; 3686.9 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3697.78 8	0.88 4		Other $E\gamma$: 3696.7 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3705.19 24	0.39 4		Other $E\gamma$: 3706.8 5 (1993Pr09) in (n, γ) E=thermal.
	3709.76 10	1.29 5		Other $E\gamma$: 3710.8 5 (1993Pr09) in (n, γ) E=thermal.
	3715.8 ^c			
	3731.3 ^h 3	0.54 13		Uncertain assignment to ^{183}W .
	3740.37 6	2.50 9		
	3743.1 ^c			
	3757.30 6	1.33 3		
	3759.7 ^c			
	3762.83 10	1.09 6		Other $E\gamma$: 3762.5 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3773.50 7	1.20 3		Other $E\gamma$: 3772.5 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3798.29 6	3.02 9		Other $E\gamma$: 3798.5 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3807.03 16	1.57 7		Other $E\gamma$: 3807.43 13 (1993Pr09) in (n, γ) E=thermal; 3772.8 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3818.4 ^h 4	0.22 4		
	3821.89 5	2.18 4		Complex line in (n, γ) E=thermal.
	3824.2 ^c			
	3831.18 23	0.40 4		
	3841.2 4	0.17 4		
	3866.24 9	2.08 8		Other $E\gamma$: 3867.87 25 (1993Pr09) in (n, γ) E=thermal.
	3875.94 23	0.33 7		
	3879.0 ^c			
	3887.09 5	2.68 4		Other $E\gamma$: 3886.7 from (n, γ) E=thermal: $\gamma\gamma$ coin.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\ddagger}$	$I\gamma^{\ddagger\S}$	Mult.#	Comments
(6190.965)	3898.45 13	1.01 4		
	3907.98 8	2.30 4		
	3924.67 22	0.23 2		
	3927.9 ^c			
	3931.3 ^h 4	0.11 3		Other E γ : 3933.0 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3943.04 10	1.65 5		Other E γ : 3942.8 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3951.7 ^c			
	3955.30 12	1.42 4		Other E γ : 3955.76 17 (1993Pr09) in (n, γ) E=thermal.
	3959.35 19	0.35 3		Other E γ : 3960.6 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	3981.89 10	1.28 5		
	4014.19 7	6.44 13		Mult.: strength in (n, γ) E=thermal favors E1.
	4021.5 4	0.47 4		Other E γ : 4023.7 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4026.16 9	3.32 4		Other E γ : 4027.1 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4033.56 22	0.53 4		Other E γ : 4034.0 4 (1993Pr09) in (n, γ) E=thermal.
	4037.9 ^c			
	4060.6 ^c			
	4064.61 7	2.83 6		
	4079.2 ^c			
	4092.07 22	1.37 12		
	4095.2 ^c			
	4099.1 7	0.18 3		
	4131.60 14	1.11 4		
	4133.1 ^c			
	4162.47 7	2.30 5		
	4200.50 12	0.90 4		
	4208.79 10	0.36 4		
	4216.8 ^h 3	0.22 4		
	4226.12 23	0.37 4		Other E γ : 4226.5 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4238.3 ^c			
	4246.72 6	8.30 6		Mult.: strength in (n, γ) E=thermal favors E1.
	4258.7 ^c			
	4275.7 3	0.25 3		
	4289.95 16	0.85 4		
	4297.64 14	0.73 4		Other E γ : 4296.8 in (n, γ) E=thermal: $\gamma\gamma$ coin.
	4304.72 8	4.21 6		
	4321.26 12	1.04 3		
	4345.4 ^h 13	0.06 3		
	4353.8 5	0.25 5		
	4357.4 3	0.43 5		
	4362.7 ^c			
	4367.06 5	4.73 5		
	4376.9 ^c			
	4379.87 5	3.48 4		Other E γ : 4379.2 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4401.35 21	0.41 3		Other E γ : 4402.8 5 (1993Pr09) in (n, γ) E=thermal; 4400.3 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4406.33 24	0.33 3		
	4444.0 ^c			
	4454.6 7	0.41 7		
	4460.52 5	2.39 4		
	4465.76 24	0.27 3		Other E γ : 4467.2 6 (1993Pr09) in (n, γ) E=thermal.
	4474.3 6	0.13 3		
	4492.7 3	0.16 2		
	4513.7 ^c			
	4518.18 4	7.94 7		Mult.: strength in (n, γ) E=thermal favors E1.
	4528.0 12	=0.44		
	4530.8 10	=0.27		
	4532.6 ^c			
	4557.65 15	0.74 4		
	4562.72 5	5.72 5		
	4579.09 12	0.83 4		E γ : 4578.5 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4604.67 11	0.80 3		
	4620.9 3	0.23 4		
	4634.73 6	2.86 4		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{W})$ (continued)

E(level)	$E\gamma^{\dagger}$	$I\gamma^{\ddagger}\S$	Mult.#	Comments
(6190.965)	4652.8 ^c			
	4705.3 4	0.10 4		
	4719.78 5	3.61 4		
	4727.94 14	0.57 4		
	4753.1 12	0.27 12		Othr $E\gamma$: 4757.7 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4773.2 ^c			
	4777.9 ^c			
	4818.1 5	0.10 3		
	4855.4 4	0.13 3		
	4881.36 7	1.04 4		$E\gamma$: 4881.9 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	4899.2 ^h 9	=0.08		
	4918.6 ^c			
	4964.2 ^c			
	5002.4 ^c			
	5040.9 3	0.16 3		
	5094.3 ^c			
	5164.62 9	36.3 29		Mult.: strength in (n, γ) E=thermal favors E1.
	5239.4 ^c			
	5240.8 ^c			
	5249.1 ^c			
	5256.19 4	2.38 4		Other $E\gamma$: 5256.6 from (n, γ) E=thermal: $\gamma\gamma$ coin.
	5281.3 ^c			
	5382.4 ^c			
	5385.8 ^c			
	5513.0 ^c			
	5633.2 ^c			
	5981.70 22	0.59 4		
	6091.2 3	0.23 3		
	6144.15 4	36.9 8	D	Other $E\gamma$: 6144.28 6 from (n, γ) E=thermal: $\gamma\gamma$ coin. Mult.: from (pol n, γ).
	6190.60 4	100.0 22	D	Other $E\gamma$: 6190.78 6 from (n, γ) E=thermal: $\gamma\gamma$ coin; 6193 3 from (n, γ) E=4.1 eV. Mult.: from (pol n, γ); strength in (n, γ) E=thermal favors E1.

[†] If no value is given, it has been assumed that $\delta=1.00$ for E2/M1, $\delta=1.00$ for E3/M2 and $\delta=0.10$ for the other mixed multipolarities.

[‡] From (n, γ) E=thermal, except as noted.

[§] Branching from (n, γ) E=thermal, except as noted.

From β^- decay, except as noted.

@ From ε decay, except as noted.

& $E\gamma$ deviates from least-squares prediction by at least 5σ .

a From ^{183}Ta β^- decay.

b From Coulomb excitation; uncertainty unstated by authors.

c From (n, γ) E=thermal: $\gamma\gamma$ coin.

d From (n,n' γ).

e From ($^{14}\text{C},\alpha 3n\gamma$).

f From (n, γ) E=4.1 eV.

g Transition unobserved. Branching negligible relative to other transitions from the same parent level. Existence inferred from Coulomb excitation.

h Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)

Bands for ¹⁸³W

¹⁸³W
₇₄109

^{183}Ta β^- Decay **1975Bo05,1965Ed01,1965Gr16**

Parent ^{183}Ta : $E=0.0$; $J\pi=7/2+$; $T_{1/2}=5.1$ d 1; $Q(\text{g.s.})=1071.1$ 17; $\%\beta^-$ decay=100.

Other references: 1955Mu19, 1962Se10, 1964Da15, 1965Al08, 1970Gr13, 1970Ne11, 1972Bb21.

Total energy release for this decay scheme is 1038 30 cf. $Q_{\text{xBR}}=1071.1$ 17.

 ^{183}W Levels

$E(\text{level})^\dagger$	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0	1/2-		
46.4839 8	3/2-		
99.0792 10	5/2-		
207.0107 15	7/2-		
208.8051 17	3/2-		
291.7224 17	5/2-		
308.9457 20	9/2-		
309.492 4	11/2+	5.30 s 8	$\%IT=100$. $T_{1/2}$: from Adopted Levels.
412.0928 20	7/2-		
453.0685 19	7/2-	18.6 ns 4	$T_{1/2}$: unweighted average of 18.4 ns 4 (1967Ma28), 18.0 ns 4 (1967Me01), and 19.5 ns 3 (1971Ho14) (the weighted average of these data is 18.8 ns 5).
595.339 7	9/2-		
622.77 3	(9/2)+		

† From least-squares fit to E_γ .

‡ From Adopted Levels.

 β^- radiations

$E\beta^-$	$E(\text{level})$	$I\beta^{-\ddagger}$	$\text{Log } ft$	Comments
470 30	622.77	6.2 9	7.67 6	$E\beta^-$: from 1966Mo17.
(475.8 17)	595.339	0.94 11	8.47 4	
615 10	453.0685	93 6	6.88 4	$E\beta^-$: from 1966Mo17.
(659.0 17)	412.0928	0.5 10	9.2 9	

† From intensity imbalance at level.

‡ Absolute intensity per 100 decays.

 $\gamma(^{183}\text{W})$

I_γ normalization: assuming $\%I\beta=100$ for β feeding to levels at 453-, 595-, and 623-keV; this is consistent with non-observance of β 's to g.s. ($\Delta J=3$) (1955Mu19) and the intensity balances through the $E\leq 412$ levels. I_γ normalization=0.308 24 based on $\Sigma(I(\gamma+\text{ce})$ to g.s.)=100.

$E\gamma^\dagger$	$E(\text{level})$	$I\gamma^{\ddagger a}$	Mult. §	$\delta^\#$	α	Comments
40.976 1	453.0685	1.72 15	M1		11.01	E_γ : from 1965Gr16. I_γ : weighted average of 1.76 18 (1964Da15), 1.6 3 (1965Ed01). Mult.: L1:L3=11.5:0.8 (1955Mu19); L1:L3=10:0.32 (1965Al08).
46.4838 8	46.4839	19.2 24	M1+E2	-0.084 13	8.4 3	Relative E_γ : 46.48384 16 (1975Bo05). Other E_γ : 46.484 2 (1970Ne11). I_γ : unweighted average of 21.5 15 (1964Da15), 16.8 10 (1965Ed01). Mult.: L1:L2:L3=100:12.8:4.8 (1972Bb21); L1:L2:L3=87:12.7:6.0 (1965Al08); L1:L2:L3=7.4:1.05:0.5, $\alpha(\text{M1})_{\text{exp}}=1.5$, $\alpha(\text{N1})_{\text{exp}}=0.45$ (1955Mu19). $\%I_\gamma=5.9$ 4 assuming adopted decay scheme normalization.

Continued on next page (footnotes at end of table)

^{183}Ta β^- Decay 1975Bo05,1965Ed01,1965Gr16 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\ddagger a}$	Mult. [§]	$\delta^{\#}$	α	Comments
52.5952 9	99.0792	19.4 21	M1+E2	-0.127 21	6.2 4	Relative E_{γ} : 52.59515 12 (1975Bo05). Other E_{γ} : 52.599 3 (1970Ne11). I γ : unweighted average of 21.5 12 (1964Da15), 17.3 11 (1965Ed01). Mult.: L1:L2:L3=100:15.7:9.6 (1972Bb21); L1:L2:L3=60:10.7:6.9 (1965Al08); L1:L2:L3=3.8:0.9:0.55, $\alpha(\text{M1})_{\text{exp}}=0.9$, $\alpha(\text{N1})_{\text{exp}}=0.25$ (1955Mu19); L1:L2:L3=2.3:28:25 (1965Al08).
82.918 2	291.7224	1.61 17	M1+E2	+0.64 3	8.21	E_{γ} : from 1965Gr16. I γ : unweighted average of 1.44 8 (1964Da15), 1.78 13 (1965Ed01). Mult.: L1:L2=80:100 (1972Bb21); $\alpha(\text{L1})_{\text{exp}}=1.4$ (1955Mu19); L1:L2=0.94:1.1 (1965Al08).
84.711 2	291.7224	4.98 23	M1+E2	+0.15 1	7.65	E_{γ} : from 1965Gr16. I γ : weighted average of 5.1 4 (1964Da15), 4.9 3 (1965Ed01). Mult.: L1:L2:L3=100:21:15 (1972Bb21); $\alpha(\text{L1})_{\text{exp}}=1.1$, $\alpha(\text{M1})_{\text{exp}}=0.2$ (1955Mu19). L1:L2=4.1:0.75 (1965Al08).
99.0793 17	99.0792	24.9 18	E2		4.05	Relative E_{γ} : 99.07932 9 (1975Bo05). I γ : unweighted average of 26.6 15 (1964Da15), 23.1 14 (1965Ed01). Mult.: $\alpha(\text{K})_{\text{exp}}=1.4$, L2:L3=1.55:1.45, $\alpha(\text{M3})_{\text{exp}}=0.7$, $\alpha(\text{L23})_{\text{exp}}=0.2$ (1955Mu19); L1:L2:L3=8.2:100:89 (1972Bb21).
101.934 2	308.9457	1.21 5	M1+E2	-0.21 3	4.46	E_{γ} : from 1965Gr16. I γ : weighted average of 1.22 7 (1964Da15), 1.3 1 (1965Ed01), 1.12 9 (1965Gr16). Mult.: $\alpha(\text{K})_{\text{exp}}=5.4$, L2:L3=1.55:1.45 (1955Mu19).
102.481 3	309.492	0.57 7	M2		39.2	E_{γ} : from 1965Gr16. I γ : unweighted average of 0.51 3 (1964Da15), 0.71 8 (1965Ed01), 0.48 4 (1965Gr16). Mult.: K:L1:L3=13.0 2:2.8 2:0.6 1 (1972Bb21); $\alpha(\text{K})_{\text{exp}}=35$, K:L1=35:6.0 (1955Mu19); L1:L3=4.4:1.1 (1965Al08). $\delta(\text{M2},\text{E3})=0.000$ 18 from subshell ratios from 1972Bb21.
103.147 5	412.0928	0.57 22	[M1, E2]		3.9 5	E_{γ} : from 1965Gr16. I γ : unweighted average of 0.35 2 (1964Da15), 1.02 11 (1965Ed01), 0.35 4 (1965Gr16).
107.9310 18	207.0107	41 3	M1+E2	-0.31 5	3.73	Relative E_{γ} : 107.93096 11 (1975Bo05). I γ : unweighted average of 44.1 22 (1964Da15), 37.2 22 (1965Ed01). Mult.: L1:L2=100:20.1 (1972Bb21); $\alpha(\text{K})_{\text{exp}}=3.8$, K:L1=3.8:0.6, $\alpha(\text{M1})_{\text{exp}}=0.15$, $\alpha(\text{N1})_{\text{exp}}=0.04$ (1955Mu19); L1:L2:L3=16.3:3.4:1.2 (1965Al08).
109.726 3	208.8051	2.23 13	M1+E2	+0.139 22	3.62 6	E_{γ} : from 1965Gr16. I γ : weighted average of 2.36 12 (1964Da15), 2.10 12 (1965Ed01). L1:L2=1.3:0.17 (1965Al08).
120.373 3	412.0928	0.245 15	M1+E2	=0.38	=2.68	E_{γ} : from 1965Gr16. I γ : weighted average of 0.23 2 (1964Da15), 0.26 2 (1965Ed01). Mult., δ : from $\alpha(\text{K})_{\text{exp}}=2.1$ (1955Mu19).
142.270 6	595.339	1.28 12	M1+E2	0.3 1	1.68 5	E_{γ} : from 1965Gr16. I γ : unweighted average of 1.40 6 (1964Da15), 1.03 6 (1965Ed01), 1.4 1 (1965Gr16). Mult.: $\alpha(\text{L1})_{\text{exp}}=0.35$ (1955Mu19); L1:L2=0.19:0.034 (1965Al08).

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^{183}Ta β^- Decay $^{1975}\text{Bo05}, ^{1965}\text{Ed01}, ^{1965}\text{Gr16}$ (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\ddagger a}$	Mult. [§]	$\delta^{\#}$	α	Comments
144.1217 24	453.0685	9.4 3	M1+E2	+0.07 3	1.670	Relative E_{γ} : 144.12172 28 (1975Bo05). I γ : weighted average of 9.5 4 (1964Da15), 9.3 6 (1965Ed01). Mult.: $\alpha(K)\text{exp}=1.65$, $K:L1=1.65:0.30$, $\alpha(M1)\text{exp}=0.10$ 1 (1955Mu19). L1:L2=1.85:0.18 (1965Al08).
160.5260 27	207.0107	10.9 3	E2		0.659	Relative E_{γ} : 160.5260 5 (1975Bo05). I γ : weighted average of 11.1 4 (1964Da15), 10.7 5 (1965Ed01). Mult.: L1:L2:L3=20.2:100:74.2 (1972Bb21); $\alpha(K)\text{exp}=0.4$ (1955Mu19); L1:L2:L3=0.35:1.35:0.96 (1965Al08).
161.3439 27	453.0685	33.4 13	M1+E2	≈ 0.2	≈ 1.194	Relative E_{γ} : 161.34391 7 (1975Bo05). I γ : weighted average of 34.6 14 (1964Da15), 32.0 15 (1965Ed01). Mult.: L1:L2=100:15.4 (1972Bb21); $\alpha(K)\text{exp}=1.15$ (1955Mu19); L1:L2=4.30:0.50 (1965Al08).
162.3211 27	208.8051	18.3 7	M1+E2	+0.41 1	1.115	Relative E_{γ} : 162.32112 27 (1975Bo05). I γ : weighted average of 18.9 8 (1964Da15), 17.6 8 (1965Ed01). Mult.: L1:L2=100:20.2 (1972Bb21); $\alpha(K)\text{exp}=1.10$ (1955Mu19); L1:L2:L3=1.8:0.37:0.20 (1965Al08).
192.643 6	291.7224	1.33 4	M1+E2	+0.56 5	0.647 16	E_{γ} : from 1965Gr16. I γ : weighted average of 1.35 4 (1964Da15), 1.25 8 (1965Ed01). Mult.: $\alpha(K)\text{exp}=0.65$ (1955Mu19); L1:L2:L3=0.06:0.02:0.01 (1965Al08).
203.284 8	412.0928	1.45 4	E2		0.292	E_{γ} : from 1965Gr16. I γ : weighted average of 1.47 5 (1964Da15), 1.40 9 (1965Ed01). Mult.: $\alpha(K)\text{exp}=0.65$ (1955Mu19); L1:L2=0.026:0.056 (1965Al08).
205.085 7	412.0928	3.34 12	M1+E2	0.18 6	0.611 12	E_{γ} : from 1965Gr16. I γ : weighted average of 3.4 1 (1964Da15), 3.1 2 (1965Ed01). Mult.: $\alpha(K)\text{exp}=0.6$, $K:L1=0.6:0.13$ (1955Mu19); L1:L3=0.20:0.006 (1965Al08).
208.810 7	208.8051	2.28 9	M1+E2	-0.5 1	0.527 23	E_{γ} : from 1965Gr16. I γ : weighted average of 2.28 9 (1964Da15), 2.3 4 (1965Ed01). Mult.: $\alpha(K)\text{exp}=0.7$ (1955Mu19); L1:L2:L3=0.14:0.03:0.02 (1965Al08).
209.867 4	308.9457	17.0 5	E2		0.262	Relative E_{γ} : 209.8669 4 (1975Bo05). I γ : weighted average of 17.2 5 (1964Da15), 16.0 10 (1965Ed01). Mult.: $\alpha(K)\text{exp}=0.22$, $K:L2:L3=0.22:0.065:0.03$ (1955Mu19); L1:L2:L3=0.25:0.56:0.39 (1965Al08).
244.263 4	453.0685	32.2 9	E2		0.1603	I γ : weighted average of 32.0 10 (1964Da15), 32.9 20 (1965Ed01). Relative E_{γ} : 344.2630 5 (1975Bo05). Mult.: $\alpha(K)\text{exp}=0.15$ (1955Mu19); L1:L2=0.38:0.79 (1965Al08).
245.235 6	291.7224	1.37 14	M1		0.380	E_{γ} : from 1965Gr16. I γ : unweighted average of 1.23 8 (1964Da15), 1.50 7 (1964Da15).
246.059 4	453.0685	100 3	M1+E2	-0.069 26	0.375	Relative E_{γ} : 246.05851 21 (1975Bo05). I γ : from 1964Da15; 100 from (1965Ed01). Mult.: $\alpha(L1)\text{exp}=0.07$ (14955mu19); L1:L2:L3=4.3:0.34:0.041 (1965Al08).
286.4	595.339	0.04 2				E_{γ}, I_{γ} : from 1965Al08 only.

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^{183}Ta β^- Decay 1975Bo05,1965Ed01,1965Gr16 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^{\ddagger a}$	Mult. [§]	$\delta^\#$	α	Comments
291.724 5	291.7224	14.1 4	E2		0.0924	Relative $E\gamma$: 291.7236 7 (1975Bo05). I γ : weighted average of 14.1 4 (1964Da15), 14.5 9 (1965Ed01). Mult.: $\alpha(\text{K})\text{exp}=0.07$, $\alpha(\text{L}2)\text{exp}=0.023$ (1955Mu19); L1:L2:L3=0.09:0.13:0.02 (1965Al08).
313.005 30	412.0928	8.0 [@] 25	M1+E2&	+0.225 8	0.190	$E\gamma$: from 1965Gr16. I γ : weighted average of 27.1 8 (1964Da15) and 27.4 17 (1965Ed01) for doublet is 27.2 7. Mult.: $\alpha(\text{K})\text{exp}=0.22$, $\alpha(\text{L}1)\text{exp}=0.035$ (1955Mu19); L1:L2:L3=0.58:0.05:0.006 (1965Al08).
313.276 30	622.77	19.2 [@] 24	M1&		0.195	$E\gamma$: from 1965Gr16. I γ : the weighted average of 27.1 8 (1964Da15) and 27.4 17 (1965Ed01) for the doublet is 27.2 7.
353.989 6	453.0685	42.6 11	M1+E2	-0.192 18	0.1373 21	Relative $E\gamma$: 353.9887 3 (1975Bo05). I γ : weighted average of 43.2 13 (1964Da15), 40.5 24 (1965Ed01). Mult.: $\alpha(\text{K})\text{exp}=0.14$, $\alpha(\text{L}1)\text{exp}=0.025$ (1955Mu19). L1:L2:L3=0.59:0.05:<0.006 (1965Al08).
365.644 30	412.0928	1.83 15	E2		0.0480	$E\gamma$: from 1965Gr16. I γ : unweighted average of 1.97 9 (1964Da15), 1.68 10 (1965Ed01).
406.612 23	453.0685	1.90 8	(E2)		0.0358	$E\gamma$: from 1965Gr16. I γ : weighted average of 1.91 12 (1964Da15), 1.90 11 (1965Ed01).

[†] Curved crystal spectrometer data from 1975Bo05, except as noted; $E\gamma=411.794$ 7 from ^{198}Au decay used as reference (cf. current value of 411.80205 17), and absolute uncertainties are dominated by that of the reference line. These data are consistent with those from 1962Se10 (9 lines, uncertainties 1–10 eV), 1965Gr16 (31 lines, uncertainties 1–30 eV) and 1970Gr13 (10 recommended $E\gamma$, uncertainties 1–8 eV, $\text{W}(\text{K}\alpha_1$ x ray) reference, data primarily from 1965Gr16), and have superior relative uncertainties (0.07–6 eV).

[‡] From 1965Ed01, 1964Da15, except as noted. Note that the intensities of Schult and Graber quoted in 1965Ed01 appear to be systematically high for low energy γ -rays so were not included in averages.

[§] From ce measurements by 1955Mu19, 1965Al08, 1972Bb21, except as noted.

[#] From Adopted Gammas, except as noted.

[@] Total intensity of 313.0+313.3 keV γ is 27.2 7 relative to $\text{I}(246\gamma)=100$. In the absence of a $\Delta J=2$, $\Delta\pi=\text{no } \beta^-$ branch to the 11/2+ 309 level, $\text{I}(\gamma+\text{ce})(313.3\gamma)=\text{I}(\gamma+\text{ce})(102.5\gamma)$, so $\text{I}\gamma(313.3)=19.2$ 24; this leaves $\text{I}\gamma=8.0$ 25 for the 313.0 γ .

& From 1965Al08, L1:L2:L3=58:5:0.6 for 313.0 γ +313.3 γ . Also, $\text{I}(\text{ce}(\text{K}))(313.3)/\text{I}(\text{ce}(\text{K}))(313.0)=1.08$ 4 (1972Bb21), ≈ 1 (1966Mo17). If both transitions are M1(+E2) this yields $\delta=0.08$. The small admixture cannot be apportioned between the individual transitions and is neglected here.

^a For absolute intensity per 100 decays, multiply by 0.272 15.

^{183}Ta β^- Decay 1975Bo05,1965Ed01,1965Gr16 (continued)

 ^{183}W IT Decay (5.30 s) 1961Sc05,1961Ga06,1955Po26

Parent ^{183}W : E=309.491 4; $J^\pi=11/2+$; $T_{1/2}=5.30$ s 8; %IT decay=100.

Other references: 1963Ka34, 1965BuZZ, 1972Jo05.

1961Ga06: source from $^{180}\text{Ta}(n,\gamma)$ followed by chemical separation; Xe proportional counter and NaI scin; measured E_γ , $\gamma\gamma$ coin, isomer $T_{1/2}$.

Total energy release for this decay scheme is 239.0 24 cf. QxBR=309.492 4.

 ^{183}W Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0	1/2-		
46.4838 5	3/2-		
99.0791 9	5/2-		
207.0101 17	7/2-		
308.491 4	11/2+	5.30 s 8	%IT=100.

$T_{1/2}$: unweighted average of 5.3 s 2 (1961Ga06), 5.1 s 2 (1961Sc05), 5.4 s 1 (1963Ka34), 5.14 s 2 (1965BuZZ), and 5.56 s 25 (1972Jo05). The weighted average of these data is 5.15 s 3.

An E=211 4 γ deexciting this level was reported by 1961Sc05. This transition was not observed in the spectrum obtained by 1961Ga06, and the evaluator attributes it to the sum peaks (102.5 γ +107.9 γ), (107.9 γ +99.1 γ), and (160.5 γ +46.5 γ).

[†] From least-squares fit to E_γ .

[‡] From Adopted Levels.

 $\gamma(^{183}\text{W})$

E_γ [†]	E(level)	I_γ ^{‡§}	Mult. [†]	δ [†]	α	I(γ +ce) [§]	Comments
46.4838 5	46.4838	6.13 17	M1+E2	-0.084 13	8.4 3		I(46 γ)/I(K α x ray, W)=0.1 (1961Ga06).
52.5952 9	99.0791	6.76 21	M1+E2	-0.127 21	6.2 4		
99.0793 17	99.0791	8.14 21	E2		4.05		
101.481 3	308.491	2.40 3	M2		40.6	100	I γ : from I(γ +ce) and α .
107.9310 18	207.0101	18.9 3	M1+E2	-0.31 5	3.73		
160.526 3	207.0101	5.12 9	E2		0.659		

Footnotes continued on next page

^{183}W IT Decay (5.30 s) $^{1961}\text{Sc}05, ^{1961}\text{Ga}06, ^{1955}\text{Po}26$ (continued) $\gamma(^{183}\text{W})$ (continued)

† From Adopted Gammas.

‡ Calculated by the evaluator from adopted branching ratios and intensity balance from the decay scheme.

§ Absolute intensity per 100 decays.

Decay Scheme

Intensities: I(γ +ce) per 100
parent decays
%IT=100

^{183}Re ϵ Decay $^{1977}\text{Br}22, ^{1974}\text{Ta}ZX, ^{1972}\text{Br}55$ Parent ^{183}Re : E=0.0; $J\pi=5/2+$; $T_{1/2}=70.0$ d 14; Q(g.s.)=556 8; % ϵ decay=100. ^{183}Re - $\epsilon\epsilon$ decay: Assuming $\Sigma(I(\gamma+\text{ce})$ to g.s.)=98.3 6 based on g.s. ϵ feeding of 1.7 6 ($^{1977}\text{Br}22$).

Other references: 1962Ha24, 1970Ag06, 1973Kr01, 1974HeYW, 1980Ar22.

Total energy release for this decay scheme is 546 49 cf. Q $\times$ BR=556 8. ^{183}W Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0	1/2-		
46.4841 9	3/2-		
99.0802 11	5/2-		
207.0153 16	7/2-		
208.8114 14	3/2-		
291.7286 18	5/2-		
308.950 4	9/2-		
412.1017 20	7/2-		
453.0779 19	7/2-	18.2 ns 5	$T_{1/2}$: from 1967Me01. Other measurement 19 ns (1966Ho13).

† From least-squares fit to $E\gamma$.

‡ From Adopted Levels.

 β^+, ϵ Data

$E\epsilon$	E(level)	$I\epsilon^{\ddagger}$	Log ft	$I(\epsilon+\beta^+)^{\dagger\ddagger}$	Comments
(103 8)	453.0779	4.7 5	6.78 14	4.7 5	
(144 8)	412.1017	0.59 14	8.18 13	0.59 14	
(247 8)	308.950	0.08 3	8.95 ^{1u} 18	0.08 3	
(264 8)	291.7286	15.6 15	7.50 6	15.6 15	
(347 8)	208.8114	69 7	7.15 6	69 7	
(349 8)	207.0153	0.8 6	9.1 4	0.8 6	
(457 8)	99.0802	4.4 13	8.63 13	4.4 13	
(510 8)	46.4841	4 8	8.8 9	4 8	
(556 8)	0.0	1.7 6	9.22 ^{1u} 16	1.7 6	$I(\epsilon+\beta^+)$: from 1977Br22 based on measured $I(\text{K x ray})/I\gamma$. The log ft

Continued on next page (footnotes at end of table)

^{183}Re ϵ Decay $^{1977}\text{Br}22, ^{1974}\text{Ta}2\text{X}, ^{1972}\text{Br}55$ (continued) **β^+, ϵ Data (continued)**

E ϵ	E(level)	I $\epsilon^{\ddagger}$	Log ft	I($\epsilon+\beta^+$) ‡†	Comments	
is comparable to that for the unique first-forbidden transition to the 309 level.						
‡ From intensity imbalance at level.						
‡† Absolute intensity per 100 decays.						
$\gamma(^{183}\text{W})$						
E $\gamma^{\dagger}$	E(level)	I $\gamma^{\ddagger@}$	Mult. §	δ	α	Comments
40.976 1	453.0779	0.8 3	M1		11.01	I γ : from 1977Br22. Mult.: L1:M1=0.98 25:0.22 5, $\alpha(\text{L1})_{\text{exp}}=9$ 3 (1980Ar22). $\delta(\text{M1},\text{E2})\leq 0.6$ from $\alpha(\text{L1})_{\text{exp}}$.
46.484 1	46.4841	235 22	M1+E2	-0.084 13	8.4 3	Mult.: L1/L2=6.8 4, L2/L3=15.6 11, L2/L3=2.30 25, M1/M2=6.5 6, M1/M3=14.6 14, M2/M3=2.2 3 (1970Ag06); L1:L2:L3:M:N=3000:490:220:950:280 (1962Ha24); L1:L2:M1:M2:M3:N:O=180 20:26 3:12 2:42 4:7.0 10:3.5 5:10 1:2.0 3, $\alpha(\text{L1})_{\text{exp}}=5.1$ 6 (1980Ar22). %I γ =8.0 3 assuming adopted decay scheme normalization. δ : 0.084 13 from subshell ratios from 1980Ar22; -0.05 8 from $\gamma\gamma(\theta)$ (1973Kr01). Other: ≤ 0.45 from $\alpha(\text{L1})_{\text{exp}}$.
52.596 1	99.0802	69.8 18	M1+E2	-0.127 21	6.2 4	Mult.: L1/L2=5.3 4, L2/L3=8.6 7, L2/L3=1.60 17 (1970Ag06); L1:L2:L3:M:N=870:155:100:260:65 (1962Ha24), L1:L2:L3:M1:M2:M3:N:O=36 3:7.0 7:4.2 4:8.5 8:2.5 4:1.0 2:2.1 2, $\alpha(\text{L1})_{\text{exp}}=3.6$ 3 (1980Ar22). δ : 0.127 21 from subshell ratios from 1980Ar22; -0.16 9 from $\gamma\gamma(\theta)$ (1973Kr01); <0.36 from $\alpha(\text{L1})_{\text{exp}}$.
82.919 2	291.7286	9.2 7	M1+E2	+0.64 3	8.21	I γ : unweighted average of 8.0 1 (1977Br22), 10.4 4 (1974TaZX), 9.3 6 (1972Br55). Mult.: K:L1:L2:M= >50:27:27: =12 (1962Ha24); L1:L2=1.0 2:0.75 14, $\alpha(\text{L1})_{\text{exp}}=0.76$ 16 (1980Ar22). I γ : unweighted average of 27.5 6 (1977Br22), 32 2 (1974TaZX), 9.3 6 (1972Br55). δ : sign from $\gamma\gamma(\theta)$ 1973Kr01, magnitude from analysis of earlier ce data by 1973Kr01; 0.6 3 from $\alpha(\text{L1})_{\text{exp}}$.
84.712 2	291.7286	30.7 16	M1+E2	+0.15 $^{\#}$ 1	7.65	Mult.: K:L1:L2:L3:M:N=>250:<120:9:=5:20:5 (1962Ha24); L1:L2=3.8 5:0.5 1, $\alpha(\text{L1})_{\text{exp}}=0.87$ 12 (1980Ar22). Other δ : 0.25 +27-25 from $\alpha(\text{L1})_{\text{exp}}$.
99.080 2	99.0802	85.7 15	E2		4.05	Mult.: K:L1:L2:L3:M:N=175:18:270:240:120:30 (1962Ha24); K:L1:L2:L3=10.6 15:1.1 1:14.3 6:13.4 5, $\alpha(\text{L2})_{\text{exp}}=1.19$ 7 (1980Ar22). $\delta(\text{M1},\text{E2})>3.5$ from $\alpha(\text{L2})_{\text{exp}}$.
101.93 4	308.950	0.55 5	M1+E2	-0.21 3	4.46	I γ : from 1977Br22. Mult.: K/L1=4.6 7, L1/L3=4.7 7 (1972Bb21). δ : from Adopted Gammas.
103.10 10	412.1017	<0.17	[M1,E2]		3.9 5	I γ : <0.12 5 from 1977Br22. Other I γ : 0.3 1 (1974TaZX).
107.933 2	207.0153	68.8 13	M1+E2	-0.31 5	3.73	Mult.: K:L1:M:N=470:70:19:=6 (1962Ha24); $\alpha(\text{K})_{\text{exp}}=3.0$ 3 (1980Ar22). Other δ : -0.22 10 (1973Kr01); <0.49 from $\alpha(\text{K})_{\text{exp}}$.

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^{183}Re ϵ Decay $^{1977}\text{Br}22, ^{1974}\text{Ta}2\text{X}, ^{1972}\text{Br}55$ (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger @}$	Mult. ^{$\S$}	δ	α	Comments
109.731 2	208.8114	91.5 15	M1+E2	+0.139 [#] 22	3.62 6	Mult.: K:L1:L2:M=530:80:10:20 (1962Ha24); $\alpha(\text{K})\text{exp}=3.0$ 3 (1980Ar22). Other δ : 0.09 +32-9 from $\alpha(\text{K})\text{exp}$. I γ : from 1977Br22. Other I γ : <0.5 (1974TaZX). δ : from Adopted Gammas.
120.37 9	412.1017	0.098 17	E2+M1	=0.38	=2.68	I γ : unweighted average of 3.66 7 (1977Br22), 4 1 (1974TaZX), 4.5 3 (1974TaZX).
144.135 4	453.0779	4.05 24	M1+E2	+0.07 3	1.669	Mult.: K:L1=13:1.9, L2 weak (1962Ha24); $\alpha(\text{K})\text{exp}=1.44$ 19 (1980Ar22). δ : from $\gamma\gamma(0)$ (1973Kr01). Other: ≤ 0.40 from $\alpha(\text{K})\text{exp}$.
160.532 4	207.0153	18.6 2	E2		0.659	I γ : from 1977Br22.
161.342 14	453.0779	11.4 15	M1+E2	=0.2	=1.194	Mult.: K:L2:M=12:<9:2.2 (1962Ha24). I γ : from 1977Br22. Other I γ : 22 3 from 1974TaZX.
162.330 5	208.8114	737 4	M1+E2	+0.41 1	1.115	Mult.: K:L1=24:<9 (1962Ha24); $\alpha(\text{K})\text{exp}=0.66$ 19 (1980Ar22). δ : 1.0 +8-4 from $\alpha(\text{K})\text{exp}$. I γ : from 1977Br22.
192.646 7	291.7286	8.28 20	M1+E2	+0.56 [#] 5	0.647 16	Mult.: K:L1:L2:L3:M:N=1300:220:=45:21:58:17 (1962Ha24); $\alpha(\text{K})\text{exp}=0.960$ 20 (1980Ar22). δ : sign from 1973Kr01; 0.22 8 from $\alpha(\text{K})\text{exp}$. Mult.: K:L1:L2:L3:M=8:1.6:=0.5:=0.3:0.5 (1962Ha24); $\alpha(\text{K})\text{exp}=0.51$ 9 (1980Ar22). Other δ : 0.6 3 from $\alpha(\text{K})\text{exp}$.
203.269 12	412.1017	1.27 17	E2		0.292	I γ : unweighted average of 1.44 8 (1977Br22) and 1.1 2 (1974TaZX).
205.081 9	412.1017	3.9 6	M1+E2	0.18 6	0.611 12	I γ : unweighted average of 3.5 1 (1977Br22), 5 1 (1974TaZX), 3.2 2 (1974TaZX). Mult.: K:L1=3.8<0.8, M weak (1962Ha24); $\alpha(\text{K})\text{exp}=0.51$ 6 (1980Ar22).
208.812 2	208.8114	93.9 4	M1+E2	-0.5 1	0.527 23	δ : 0.13 +34-13 from $\alpha(\text{K})\text{exp}$. Mult.: K:L1:M:N=100:18:4.8:1.3 (1962Ha24); $\alpha(\text{K})\text{exp}=0.46$ 4 (1980Ar22). Other δ : -0.29 4 (1973Kr01); 0.32 +20-32 from $\alpha(\text{K})\text{exp}$.
209.890 7	308.950	8.29 20	E2		0.262	I γ : weighted average from 1977Br22 and 1974TaZX.
244.266 3	453.0779	13.0 3	E2		0.1603	Mult.: K:L3=2.4:<1.4 (1962Ha24); $\alpha(\text{K})\text{exp}=0.146$ 26 (1980Ar22). $\delta(\text{M1},\text{E2})\geq 3.8$.
245.243 6	291.7286	8.0 8	M1		0.380	Mult.: K:L3=3.4:<5.4 (1962Ha24); $\alpha(\text{K})\text{exp}=0.099$ 17 (1980Ar22). $\delta(\text{M1},\text{E2})\geq 3.4$ from $\alpha(\text{K})\text{exp}$.
246.062 2	453.0779	41.7 11	M1+E2	-0.069 [#] 26	0.375	I γ : weighted average from 1977Br22 and 1974TaZX.
291.723 7	291.7286	100.0 3	E2		0.0924	Mult.: K:L1=29:<5.4 (1962Ha24); $\alpha(\text{K})\text{exp}=0.31$ 3 (1980Ar22). Other δ : ≤ 0.42 from $\alpha(\text{K})\text{exp}$. I γ : from 1977Br22.
313.021 5	412.1017	13.19 27	M1+E2	+0.225 [#] 8	0.190	Mult.: K:L2:L3:M:N=14:3.2:1.6:1.5:0.45 (1962Ha24). Mult.: K:L1:M=5.5:0.9:0.25 (1962Ha24); $\alpha(\text{K})\text{exp}=0.16$ 4 (1980Ar22).
353.998 5	453.0779	17.0 3	M1+E2	-0.192 [#] 18	0.1373 21	Other δ : ≤ 0.78 from $\alpha(\text{K})\text{exp}$. Mult.: K:L1:M=4.4:0.8:0.2 (1962Ha24); $\alpha(\text{K})\text{exp}=0.11$ 3 (1980Ar22). Other δ : ≤ 0.93 from $\alpha(\text{K})\text{exp}$.

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¹⁸³Re ε Decay 1977Br22,1974TaZX,1972Br55 (continued)

 $\gamma(^{183}\text{W})$ (continued)

E $\gamma^{\dagger}$	E(level)	I $\gamma^{\ddagger}$ @	Mult.§	α	Comments
365.614 9	412.1017	2.54 22	E2	0.0480	I γ : unweighted average of 2.13 9 (1977Br22), 2.9 5 (1974TaZX), 2.6 2 (1974TaZX).
406.593 16	453.0779	1.03 24	(E2)	0.0358	I γ : unweighted average of 0.79 5 (1977Br22), 1.5 2 (1972Br55), 0.8 4 (1974TaZX).

[†] From 1977Br22.

[‡] intensity relative to I(291 γ)=100; weighted average of data from 1977Br22, 1974TaZX and 1972Br55, except as noted. Other I γ : 1974HeYW.

[§] From subshell ratios, α , and $\gamma\gamma(\theta)$ measurements of 1962Ha24, 1970Ag06, 1980Ar22, except where noted. Conversion coefficients attributed to 1980Ar22 were calculated by the evaluator using I(ce) from 1980Ar22 and I γ adopted here, normalized so $\alpha(K)\text{exp}(99)=\alpha(K)(\text{E2 theory})=0.893$ and $\alpha(K)\text{exp}(292)=\alpha(K)(\text{E2 theory})=0.0613$.

[#] From $\gamma\gamma(\theta)$ measurements (1973Kr01).

[@] For absolute intensity per 100 decays, multiply by 0.034 3.

Decay Scheme

Intensities: I(γ +ce) per 100 parent decays

¹⁷⁶Yb(¹⁴C, α 3n γ) 1999Sa60

E=68 MeV; measured E γ , I γ , $\gamma\gamma$ coin, α - γ coin, $\gamma\gamma(\theta)$ (DCO) ($\theta=37^\circ$, 79°) and lifetimes by beam-pulsing; NORDBALL Ge detector array and a 30-detector Si ball; blocked BCS theory calculations.

¹⁸³W Levels

E(level) †	J $\pi^{\ddagger}$	T $_{1/2}$	E(level) †	J $\pi^{\ddagger}$	T $_{1/2}$	E(level) †	J $\pi^{\ddagger}$	T $_{1/2}$
0.0 §	1/2-		595.04 $^{\@}$ 13	9/2-		1190.05 $^{\&}$ 14	15/2-	
47.07 $^{\#}$ 10	3/2-		624.35 e 17	9/2+		1328.22 $^{\#}$ 15	19/2-	
99.50 § 9	5/2-		631.63 § 13	13/2-		1439.68 $^{\@}$ 14	17/2-	
207.75 $^{\#}$ 10	7/2-		687.71 d 15	15/2+		1439.89 c 15	21/2+	
209.40 a 9	3/2-		766.12 $^{\&}$ 13	11/2-		1466.8 b 5		
292.16 a 11	5/2-		778.4 e 3	11/2+		1595.83 § 18	21/2-	
309.34 § 11	9/2-		850.52 $^{\#}$ 14	15/2-		1663.7 b 4		
309.65 d 14	11/2+		914.93 c 14	17/2+		1713.46 $^{\&}$ 15	19/2-	
412.50 a 14	7/2-		958.05 e 20	13/2+		1745.87 i 14	19/2-	12.7 ns 20
453.10 $^{\&}$ 10	7/2-	21.5 ns 20	964.90 $^{\@}$ 13	13/2-		1746.27 d 16	23/2+	
475.70 $^{\#}$ 13	11/2-		1062.53 § 15	17/2-		1880.7 b 5		
485.43 c 15	13/2+		1168.74 d 15	19/2+		1901.23 j 18	(19/2+)	<3.0 ns

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176Yb(14C,α3nγ) 1999Sa60 (continued)**183W Levels (continued)**

E(level) [†]	Jπ [‡]	T _{1/2}	E(level) [†]	Jπ [‡]	T _{1/2}	E(level) [†]	Jπ [‡]	T _{1/2}
1901.42 [#] 18	23/2-		2560.72 [#] 21	27/2-		3291.97 ^f 21	31/2(-)	
1989.18 ⁱ 16	21/2-		2590.72 ^f 18	27/2(-)		3348.86 ^g 18	31/2(-)	<0.5 ns
2007.70 [@] 15	21/2-		2648.90 ^h 18	27/2-		3423.77 ^c 21	33/2+	
2043.38 ^c 16	25/2+		2655.27 [@] 18	25/2-		3663.93 ^g 20	33/2(-)	
2050.09 ^h 17	23/2-	<1.5 ns	2706.56 ^c 19	29/2+		3706.93 [§] 25	33/2-	
2101.37 17	23/2(+)		2724.2 ^j 4	(25/2+)		3980.8 ^d 4	35/2+	
2155.0 ^j 3	(21/2+)		2837.22 ⁱ 17	27/2-		3997.33 ^g 23	35/2(-)	
2222.33 [§] 21	25/2-		2874.1 3			4043.0 [#] 3	35/2-	
2252.85 ⁱ 16	23/2-		2930.43 [§] 23	29/2-		4196.8 ^c 3	37/2+	
2269.17 ^f 17	25/2(-)	<3.0 ns	2932.04 ^f 19	29/2(-)		4389.74 25		
2324.49 ^{&} 17	23/2-		2977.26 ^h 19	29/2-		4440.64 25		
2339.82 ^h 18	25/2-		3010.7 ^{&} 5	27/2-		4538.94 25		
2413.19 ^d 17	27/2+		3156.27 ⁱ 17	29/2-				
2430.6 ^j 3	(23/2+)		3161.20 ^d 19	31/2+				
2535.63 ⁱ 17	25/2-		3291.23 [#] 23	31/2-				

[†] From least-squares fit to E_γ (by evaluator), omitting the 153.6γ, 307.0γ, 408.8γ which fit their placements particularly poorly; this reduces χ^2 from 16.7 (with 10 E_γ at least 5σ from expected value) to 4.9 (cf. χ^2 (critical)=1.5) for the fit. It would appear that the precision of E_γ data from 1999Sa60 may have been overestimated.

[‡] Authors' values based on observed band structure.

[§] (A): v 1/2[510] band, α=+1/2.

[#] (B): v 1/2[510] band, α=-1/2.

[@] (C): v 7/2[503] band, α=+1/2.

[&] (D): v 7/2[503] band, α=-1/2.

^a (E): v 3/2[512] band.

^b (F): Band fragment. Feeds levels in 11/2[615] band.

^c (G): v 11/2[615] band, α=+1/2.

^d (H): v 11/2[615] band, α=-1/2.

^e (I): v 9/2[624] band.

^f (J): Kπ=25/2(-) band. Possible configuration: π²(9/2[514]+5/2[402])+v11/2[615].

^g (K): Kπ=31/2(-) band. Possible configuration: π²(7/2[404]+5/2[402])⊗ 19/2-.

^h (L): Kπ=23/2- band. Possible configuration: v³(9/2[624]+3/2[512]+11/2[615]).

ⁱ (M): Kπ=19/2- band. Possible configuration: v³(9/2[624]-1/2[510]+11/2[615]) with 50% Coriolis-mixed K=21/2 component.

^j (N): Kπ=(19/2+) band. Possible configuration: v³(1/2[510]+7/2[514]+11/2[615]).

γ(183W)

E _γ	E(level)	I _γ	Mult. [†]	Comments
(47.07 10)	47.07			E _γ : from level energy difference; transition not reported by 1999Sa60.
83.0 2	292.16	4.2 9		
84.1 6	292.16	2.4 6		
99.1 1	99.50	4.3 4		
107.8 1	207.75	5.7 12		
109.8 4	209.40	1.4 12		
112.1 1	2101.37	12.2 5		
142.0 1	595.04	14.3 7		
143.8 1	453.10	1.33 10		
153.6 [‡] 1	1901.23	1.20 16		
154.1 2	778.4	1.49 20		
161.0 1	207.75	3.4 7		E _γ : 160.68 14 expected from level energy difference.
	453.10	4.9 4		
162.0 1	209.40	6 6		
166.1 1	475.70	6.9 3		
167.5 2	2874.1	1.04 13		
167.7 1	2269.17	11.4 4	D	Mult.: DCO=1.54 11 (ΔJ=2 322γ in gate).
171.0 1	766.12	18.0 7		
175.7 1	485.43	47.2 16		
192.6 1	3348.86	4.94 18		
198.6 1	964.90	16.1 6		
202.2 1	687.71	80.3 26		
203.1 1	412.50	6.6 7		

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$^{176}\text{Yb}(^{14}\text{C},\alpha 3n\gamma)$ 1999Sa60 (continued) $\gamma(^{183}\text{W})$ (continued)

E_γ	E(level)	I_γ	Mult. [†]	Comments
209.7 1	309.34	19.9 16		
209.8 1	209.40	4 4		E γ : 209.40 9 expected from level energy difference.
218.7 1	850.52	3.59 19		
219.1 1	2269.17	25.9 8		Mult.: intensity balance rules out pure M1.
224.9 1	1190.05	15.7 5		
227.1 1	914.93	57.5 18		
243.0 1	1989.18	24.8 8		
245.1 § 1	292.16	8.7 § 6		Second placement of 245 γ suggested by evaluator, consistent with Adopted Levels, Gammas; see comment on 245 γ from 453 level.
	453.10	8.7 § 6		E γ : 245.35 14 expected from level energy difference. Note that, in Adopted Levels, two transitions of similar energy deexcite the 453 and 292 levels, so the 245 γ here is probably a doublet, consistent with the inordinately large branching implied if all I_γ is placed from this level.
249.7 1	1439.68	7.9 3		
253.6 1	1168.74	27.7 9		
253.8 2	2155.0	0.55 22		
263.4 1	2252.85	8.6 3		
265.7 1	1328.22	2.28 13		
268.1 1	475.70	11.6 6		
271.0 1	1439.89	11.9 4		
273.6 1	1713.46	2.79 17		
275.6 1	2430.6	0.83 12		
282.8 1	2535.63	6.8 3		
289.7 1	2339.82	13.1 5		
293.3 3	2706.56	0.80 11		
293.5 2	2724.2	0.51 10		
294.4 1	2007.70	2.15 16		
296.9 1	2043.38	3.35 19		
301.5 1	2837.22	3.92 19		
304.3 1	2050.09	54.9 17		
306.1 1	1746.27	6.94 27		
306.5 1	1745.87	11.4 4		E γ : 306.19 22 expected from level energy difference.
307.0 ‡ 1	1745.87	5.80 26		E γ : 306.64 22 expected from level energy difference.
308.8 1	2648.90	8.1 3		
313.0 1	766.12	5.5 3		
314.7 1	624.35	7.0 5		
315.1 1	3663.93	15.4 5		
317.2 2	2324.49	1.35 15		
318.9 1	3156.27	5.88 24		
321.5 1	2590.72	30.8 10	D	Mult.: DCO=1.12 6 ($\Delta J=1$ 219 γ in gate).
322.1 1	631.63	33.5 12		
328.1 1	2977.26	3.46 17		
329.7 6	2655.27	0.28 11		
333.4 1	3997.33	7.7 3		
333.7 1	958.05	8.0 5		
341.3 1	2932.04	21.9 7		
353.8 1	453.10	2.67 22		
355.4 10	2101.37	0.05 12		
359.9 1	3291.97	1.66 13		
369.8 1	2413.19	1.76 16		
370.0 1	964.90	9.6 4		
371.6 4	3663.93	0.38 9		
375.0 1	850.52	21.8 8		
378.1 1	687.71	29.4 11		
392.4 1	4389.74	4.45 18		
408.8 ‡ 1	453.10	1.22 12		E γ : 406.55 14 expected from level energy difference, much closer to values reported in decay and (n, γ) studies; also branching here is significantly larger than adopted value. Possibly this γ is contaminated in ($^{14}\text{C},\alpha 3n\gamma$).
416.8 1	3348.86	15.0 5	D	Mult.: DCO=1.00 7 ($\Delta J=1$ 341 γ in gate).
424.0 1	1190.05	16.3 6	Q	Mult.: DCO=0.94 11 (gated on $\Delta J=2$ 556 γ).
429.5 1	914.93	48.2 16		
430.9 1	1062.53	28.5 10		
443.3 1	4440.64	4.72 19		

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{14}\text{C},\alpha 3n\gamma)$ 1999Sa60 (continued) $\gamma(^{183}\text{W})$ (continued)

E_γ	E(level)	I_γ	Mult. [†]	Comments
454.7 3	3161.20	0.53 10		
475.0 1	1439.68	8.8 3		
477.7 1	1328.22	17.5 6		
481.1 1	1168.74	36.7 12		
507.2 1	2252.85	2.38 17		
523.4 1	1713.46	3.95 23		
525.1 1	1439.89	23.5 8		
533.3 1	1595.83	17.7 6		
541.6 1	4538.94	1.65 11		
546.5 1	2535.63	4.20 20		
555.6 1	1745.87	14.7 5	Q	Mult.: DCO=1.04 9 ($\Delta J=2$ 304 γ in gate).
568.0 1	2007.70	2.98 20		
569.3 3	2724.2	0.78 14		
573.2 1	1901.42	13.4 5		
577.1 1	1745.87	14.0 5		
577.6 1	1746.27	18.8 7		
584.3 1	2837.22	3.19 18		
598.9 1	2648.90	2.85 20		
603.7 1	2043.38	14.8 5		
610.6 17	2050.09	0.21 15		
610.9 1	2324.49	2.94 19		
620.8 1	3156.27	6.32 26		
626.5 1	2222.33	11.0 4		
637.7 1	2977.26	1.44 15		
647.6 1	2655.27	1.50 15		
659.3 1	2560.72	9.5 4		
662.8 2	2932.04	1.29 15		
663.2 1	2706.56	6.8 3		
666.9 1	2413.19	8.7 4		
686.2 4	3010.7	0.45 12		
700.2 2	3348.86	0.88 10		
708.1 1	2930.43	5.64 23		
717.2 1	3423.77	3.09 18		
730.5 1	3291.23	4.62 20		
731.7 17	3663.93	0.45 11		
748.0 1	3161.20	2.81 19		
751.8 2	4043.0	0.64 9		
758.1 1	3348.86	2.56 15		
773.0 2	4196.8	0.76 10		
776.5 1	3706.93	1.41 11		
778.9 8	1466.8	0.6 3		
819.6 3	3980.8	0.68 12		
830.9 1	1745.87	20.7 7	D	Mult.: DCO=0.60 9 ($\Delta J=2$ 430 γ in gate), 1.8 3 ($\Delta J=2$ 304 γ in gate).
965.8 4	1880.7	1.2 3		
976.0 3	1663.7	1.6 3		
981.4 5	1466.8	1.9 5		
986.3 1	1901.23	3.5 3		

[†] Based on DCO ratio measurements, except as noted.[‡] Omitted from least-squares fit to determine level energies.[§] Multiply placed; undivided intensity given.

¹⁸²W(n,γ) E=thermal 2011Bo09,1993Pr09,1997Pr02

Others: 1953Ki45, 1958Gr01, 1962Tr04, 1966Ma52, 1966Vo04, 1967Ma20, 1967Pr09, 1967Sp03, 1969MuZQ, 1969Sa01, 1970Or05, 1972St06, 1987Kn08, 2007ChZX, 2012HuZZ, 2014Hu02.

2014Hu02: 274 mg, 92.7% ⁹ isotopically-enriched ¹⁸²W WO₂ target (%183W=2.0 3, %184W=4.8 9, %186W=0.5 1) suspended in vacuum in teflon bag; T=120 K, E=4.2 MeV supermirror-guided near-thermal n beam; low-background environment; closed-end coaxial n-type HPGe detector 23 cm from target; measured E_γ (0.05 – 11 MeV), I_γ (corrected for self attenuation in target); monte carlo statistical decay calculations using DICEBOX code; deduced level scheme is complete for E(level)≤490, σ_n=20.5 b 14 and S(n)=6190.88 6. Partial level scheme (43 transitions). See also 2012HuZZ.

2011Bo09: 91.6% isotopically-enriched ¹⁸²W target; neutrons from LWR-15 reactor at Rez; 2 HPGe detectors (FWHM=2 keV at 1.3 MeV, ≈4.5 keV at 6 MeV), one with Pb shield between target and detector; energy calibration from ¹⁵²Eu and ¹³³Ba sources and from ³⁵Cl(n,γ); absolute I_γ determined using activation lines from β decay of ¹⁸⁷W target contaminant; measured E_γ, I_γ (782 transitions, many of which remain unplaced), γγ coin.

2007ChZX: this evaluation includes new elemental photon cross section data measured at the Budapest reactor; E_γ, I_γ reported for ≈53 transitions.

1997Pr02: analysis and discussion of the data reported by 1993Pr09.

1993Pr09: metallic target enriched in ¹⁸²W to 94.5% (γ singles) or 91.6% (γγ coin); Ge detectors (FWHM=2.0 keV at 1.3 MeV for singles spectrum); x-ray detector for 46γ gate in γγ coin; measured singles and coincidence γ spectra; deduced S(n)(¹⁸³W). 428 transitions reported.

σ_n=19.9 3 (2006MuZX) cf. 19.6 3 (1987Kn08), 20.0 6 (2011Bo09), 20.5 14 (2014Hu02).

¹⁸³W Levels

E(level) [†]	Jπ [‡]	Comments
0.0 ^{\$}	1/2-	
46.515 ^{\$} 15	3/2-	
99.042 ^{\$} 14	5/2-	
206.986 ^{\$} 20	7/2-	
208.777 [#] 13	3/2-	
291.681 [#] 17	5/2-	
308.92 ^{\$} 4	9/2-	
309.39 6	11/2+	
412.109 [#] 19	7/2-	
453.023 [@] 22	7/2-	
475.0 ^{\$} 3	11/2-	
485.1		
551.28 [#] 10	9/2-	
595.33 [@] 7	9/2-	
622.54 ^{&} 6	9/2+	
740.3 [#] 9	11/2-	
766.9 [@] 3	11/2-	
774.4 ^{&} 20	11/2+	
776.8 9	7/2+	
903.464 ^a 20	5/2-	
934.693 ^b 23	1/2-	
999.47 ^a 11	7/2-	
1026.372 ^b 14	3/2-	
1053.26 ^b 4	5/2-	
1069.38 ^c 24	7/2-	
1149.89 ^d 3	3/2-	
1214.9 ^c 6	9/2-	Band assignment from 1997Pr02 and 2011Bo09; 1993Pr09 nominated a 1223 level instead for the J=9/2 band member.
1229.31 ^d 7	5/2-	
1261.4 5		
1275.13 6	5/2+	
1291.65 7	3/2-	
1309.391 ^e 22	3/2-	
1319.58 4	5/2+	Jπ: (≤5/2+) proposed by 1997Pr02, 5/2+ by 2011Bo09. No primary γ feeds level. However, 768γ and 725γ feed 9/2- levels, implying M2 multipolarity for each, and this seems improbable. The evaluator adopts (9/2-).
1335.42 4		
1337.8 ^d 8	7/2-	
1372.23 ^e 7	5/2-	
1376.43 13	7/2+	
1437.35 7	3/2	Jπ: proposed by 1997Pr02.
1463.21 8	1/2	Jπ: proposed by 1997Pr02.
1471.07 ^f 4	1/2-	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) **^{183}W Levels (continued)**

E(level) [†]	$J\pi^{\ddagger}$	Comments
1485.45 22	(1/2, 3/2)	$J\pi$: suggested by 1997Pr02.
1510.61 7		
1542.9 5		
1550.56g 13	5/2-	
1556.24f 5	3/2-	
1569.86 7		
1586.52 7	(1/2-, 3/2-)	$J\pi$: from 1993Pr09.
1612.06 5		
1628.24d 5	3/2-	
1633.33 12	1/2-, 3/2-	$J\pi$: suggested by 1997Pr02.
1660.59 11		
1663.63 20		
1672.76 4	1/2-, 3/2-	$J\pi$: proposed by 1997Pr02.
1683.2 7		
1686.26 9		
1698.2 3		
1716.6 6		
1725.65 12		$J\pi$: 1/2-, 3/2- proposed by 1997Pr02 for 1723.7 6 level; presumed here to be the same as the 1725.62 level from 2011Bo09.
1730.50 4	1/2-, 3/2-	$J\pi$: proposed by 1997Pr02.
1734.72 25	5/2+	
1737.2 4		
1784.58 16	5/2+	
1789.55 19		
1811.12f 4	1/2-	
1823.87f 5	1/2-	
1833.78 13		
1837.2 4		
1840.2 3		
1846.8 4		
1869.70 10		
1886.66 4	(1/2-, 3/2-)	$J\pi$: proposed by 1997Pr02.
1893.84 10		
1900.85 11		
1915.40 20		
1944.31d 5	3/2-	
1964.74 17		
1975.77 25		
1982.22d 9	3/2-	
1990.54 7	1/2-, 3/2-	$J\pi$: proposed by 1997Pr02.
2028.48 7	1/2-, 3/2-	
2059.37 12	1/2-, 3/2-	$J\pi$: proposed by 1997Pr02.
2091.5 5		
2098.1 5		
2099.27 13	1/2, 3/2	$J\pi$: proposed by 1997Pr02.
2126.38d 7	3/2-	
2157.50 19		
2164.85 6	1/2-, 3/2-	$J\pi$: suggested by 1997Pr02.
2169.81 8		
2176.77 6	1/2-, 3/2-	$J\pi$: proposed by 1997Pr02.
2209.07 9	1/2+, 3/2+	
2231.48 17		
2235.73 11	(3/2, 5/2)	$J\pi$: proposed by 1997Pr02.
2248.10 7		
2259.6 4		
2266.31 16		
2282.99 6		
2292.61 11		
2303.94 5		
2315.01 23		
2324.81 9		
2349.7 4		
2359.77 23		

Continued on next page (footnotes at end of table)

$^{182}\text{W}(n,\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) **^{183}W Levels (continued)**

E(level) [†]	$J\pi^{\ddagger}$	Comments
2367.4	10	
2369.07	6	
2372.5	4	
2384.09	14	
2392.71	5	
2417.50	7	
2428.06	10	
2433.65	6	
2450.59	6	
2460.5	3	
2481.47	9	
2485.63	19	
2493.00	7	
2503.28	8	
2517.50	11	
2517.67	10	
2522.53	5	
2523.01	5	
2535.18	6	
2593.42	12	
2609.53	18	
2611.76	7	
2612.7	5	
2615.46	9	
2623.05	8	
2629.19	12	
2656.26	13	
2668.7	5	
2687.68	19	
2697.0	4	
2699.22	8	
2708.12	9	
2715.53	8	
2722.94	9	
2741.3	3	
2768.57	22	
2770.5	6	
2772.9	3	
2782.86	12	
2805.04	15	
2813.42	8	
2815.8	3	
2833.95	10	
2846.43	8	
2884.13	7	
2898.7	3	
2915.17	23	
2979.10	7	
3097.60	7	
3210.77	12	
3667.4	5	
3786.68	17	
3922.4	3	
3993.90	23	
(6190.992 16)	1/2+	E(level): from least-squares fit to $E\gamma$. S(n)=6190.81 5 from 2012Wa38. $J\pi$: s wave capture by $0+^{182}\text{W}$ target.

[†] From least-squares fit to $E\gamma$, excluding uncertainly-placed γ -rays, unless all transitions associated with a given level are of that character.

[‡] Values recommended by 2011Bo09, except as noted.

§ (A): 1/2[510] band.

(B): 3/2[512] band.

@ (C): 7/2[503] band.

Footnotes continued on next page

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) **^{183}W Levels (continued)**

& (D): 9/2[624] band.
a (E): 5/2[512] band.
b (F): 1/2[521] band.
c (G): 7/2[514] band.
d (H): 3/2[501] band.
e (I): $K\pi=3/2^-?$ $\beta\gamma$ vibration band.
f (J): 1/2[501] band.
g (K): 5/2[503] band.

 $\gamma(^{183}\text{W})$

Coincidence information is taken from 1997Pr02; weak or uncertain coincidences are not indicated. The $\gamma\gamma$ coin data from 1997Pr02 are presumed to supersede those from 1993Pr09, where several additional coincidences are reported. See fig. 1 of 2011Bo09 for γ spectrum gated on the 313-keV doublet.
 $I\gamma$ normalization: to convert $I\gamma/10^5$ captures to $I\gamma/100$ n captures. This gives $I(6145\gamma)=4.12$ 9 cf. 4.8 (1953Ki45 and 2014Hu02), 5.6 (1958Gr01), 6.6 (1962Tr04) and 3.39 22 (2007ChZX). With this normalization, $\Sigma(\text{primary } I\gamma)=36.0$ 5 and $\Sigma(I(\gamma+\text{ce}) \text{ to g.s.})=77.2\%$ 3.

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger f}$	Mult.	α	Comments
17.2 4	308.92	0.0527 20	[E2]	1.64×10^4 21	$E\gamma$: from level energy difference. $E\gamma=17.2$ 2 in 2014Hu02 probably deduced similarly because γ was not, in fact, observed. $I\gamma$: from 2014Hu02 for unobserved γ ; existence proposed based on DICEBOX statistical model calculations alone.
40.976 10	453.023	9.1 10	M1	11.01	$E\gamma, I\gamma$: unobserved γ -ray proposed by 2014Hu02; $E\gamma$, mult and branching from Adopted Gammas.
46.36 5	46.515	5260 450			$E\gamma$: from 2014Hu02. Transition used as gate in $\gamma\gamma$ coin measurements by 1993Pr09, but $E\gamma$ not stated there.
52.52 5	99.042	1488 12			$I(\gamma+\text{ce}): \geq(I(\gamma+\text{ce}) \text{ to } 47 \text{ level})=22.3\%$.
82.79 5	291.681	120 12			$E\gamma, I\gamma$: from 2014Hu02.
84.56 5	291.681	442 34			$E\gamma, I\gamma$: from 2014Hu02.
*97.91 ^e 12		198 42			
98.90 5	99.042	1347 13	[E2]	4.08	Other $E\gamma$ ($I\gamma$): 99.09 1 (3754 198) (1993Pr09); 98.94 9 (2007ChZX), 98.90 1 (1668 59) (2014Hu02). Unweighted average $E\gamma$ from 2014Hu02, 2011Bo09 and 1993Pr09 is 99.00 5.
102.2 3	308.92	58 10			$E\gamma$: see comment on 103 γ from 412 level.
102.481 3	309.39				$I\gamma$: other: 27.3 19 (2014Hu02).
103.06 ^e 12	412.109	166 73			$E\gamma$: from Adopted Gammas; not resolved by 2014Hu02 from 102 γ or from a 101.8 γ arising from the ^{186}W target impurity.
					Placement from 1997Pr02. 2011Bo09 report only $E\gamma=102.2$ 3, placed (as in (n,n' γ)) from 309 level. Implied branchings for both placements exceed adopted values so observed transitions may be complex. γ absent in 2007ChZX and a multiplet in 2014Hu02 (with component energies assumed from the literature) and $I\gamma(\text{doublet})=51$ 9.
107.86 2	206.986	1176 8			Other $E\gamma$ ($I\gamma$): 107.93 1 (3546 187) (1993Pr09). 107.75 11 (1566 83) (2014Hu02).
109.66 4	208.777	405 7			Other $E\gamma$ ($I\gamma$): 109.74 1 (1154 73) (1993Pr09); 109.63 12 (365 29) (2007ChZX); 109.55 5 (552 29) (2014Hu02).
*118.4 6		18 5			
120.05 21	412.109	9.9 20			$E\gamma, I\gamma$: from 2014Hu02.
*126.0 5		25 5			
142.0& 6	1291.65				$I\gamma: I(1193\gamma)=9:100$ 1 (2011Bo09).
142.25 9	595.33	77 4			Other $E\gamma$ ($I\gamma$): 142.24 2 (146 31) (1993Pr09); 141.3 3 (137 27) (2007ChZX); 142.11 5 (85 5) (2014Hu02).
144.10 15	453.023	48 4			Other $E\gamma$ ($I\gamma$): 144.16 4 (86 18) (1993Pr09); 143.97 6 (51 4) (2014Hu02).
153.8 ^{b g} 19	776.8	=4			

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	α	Comments
160.63 10	206.986	486 21	[E2]	0.657	Other $E\gamma$ ($I\gamma$): 160.67 2 (759 125) for multiplet (1993Pr09); 160.39 11 (348 22) (2007ChZX); 160.36 5 (485 30) (2014Hu02).
161.17 5	453.023	171 11			$E\gamma, I\gamma$: from 2014Hu02 alone.
162.27 2	208.777	3746 28			Other $E\gamma$ ($I\gamma$): 162.32 1 (6864 728; corrected for background γ contaminant) (1993Pr09); 162.21 9 (3409 91) (2007ChZX); 162.11 5 (4795 132) (2014Hu02).
166.39 15	475.0	21.4 21			$E\gamma, I\gamma$: from 2014Hu02.
^x 166.4 6		10 3			
171.6 3	766.9	23 3			
175.89 5	485.1	8 3			$E\gamma, I\gamma$: from 2014Hu02.
192.65 7	291.681	84 3			Other $E\gamma$ ($I\gamma$): 192.62 2 (104 10) (1993Pr09); 192.79 25 (62 20) (2007ChZX); 192.49 5 (102 5) (2014Hu02).
203.28 5	412.109	71 2			Other $E\gamma$ ($I\gamma$): 203.26 2 (87 8) (1993Pr09); 203.10 5 (83 4) (2014Hu02).
205.05 2	412.109	153 2			Other $E\gamma$ ($I\gamma$): 205.09 1 (208 21) (1993Pr09); 204.91 5 (236 10) (2014Hu02).
208.80 2	208.777	461 5			Other $E\gamma$ ($I\gamma$): 208.81 1 (562 31) (1993Pr09); 208.81 11 (397 44) (2007ChZX); 208.64 5 (560 21) (2014Hu02).
209.86 4	308.92	278 5	[E2]	0.262	Other $E\gamma$ ($I\gamma$): 209.88 1 (333 21) (1993Pr09); 209.79 16 (204 42) (2007ChZX); 209.69 5 (369 14) (2014Hu02).
^x 218.9 4		7 2			
^x 221.7 3		8 2			
244.24 13	453.023	147 8			Other $E\gamma$ ($I\gamma$): 244.26 2 (177 10) (1993Pr09); 244.13 14 (193 18) (2007ChZX); 244.25 5 (226 10) (2014Hu02).
245.2 5	291.681	89 21			Other $E\gamma$ ($I\gamma$): 245.13 7 (94 10) (1993Pr09); 245.24 5 (132 9) (2014Hu02).
246.04 8	453.023	456 22			Other $E\gamma$ ($I\gamma$): 246.06 2 (562 31) (1993Pr09); 245.92 10 (514 22) (2007ChZX); 245.88 5 (521 26) (2014Hu02).
259.51 13	551.28	27 2			Other $E\gamma$ ($I\gamma$): 259.66 9 (33 5) (1993Pr09); 259.44 9 (38 5) (2014Hu02).
265.3 8	740.3	27 11			Other $E\gamma$ ($I\gamma$): 265.36 8 (24 4) (1993Pr09).
265.7 ^{&} 4	1291.65				$I\gamma: I(1193\gamma)=6:100$ 1 (2011Bo09).
268.0 3	475.0	11 2			Other $E\gamma$ ($I\gamma$): 268.29 10 (16 3) (1993Pr09); 268.7 3 (57 22) (2007ChZX); 267.92 18 (21 5) (2014Hu02).
^x 278.98 ^e 11		14 3			
^x 284.9 7		6 2			
286.39 5	595.33	2.5 13			$E\gamma, I\gamma$: reported by 2014Hu02 for unobserved transition; $E\gamma$ and branching taken by authors from the literature.
286.6 ^g 5	2231.48	8 2			$I\gamma: I(2022\gamma)=11$ 3:100 14 (2011Bo09).
291.71 2	291.681	961 14	[E2]	0.0925	Other $E\gamma$ ($I\gamma$): 291.68 4 (1040 52) (1993Pr09); 291.64 9 (848 35) (2007ChZX); 291.57 5 (1224 45) (2014Hu02).
^x 308.96 ^e 16		9 4			Tentative placement by 1997Pr02 from 1628 level unconfirmed by other studies.
310 ^a	1309.391	=19			$I\gamma$: from $I\gamma: I(1101\gamma)=4:100$ 8 in table 2 and $I(1101\gamma)$ in table 1 of 2011Bo09.
313.15 ^{#@} 2	412.109	1176 [#] 10			Presumably deexcites 623 level also, as in Adopted Levels, Gammas.
	622.54	1176 10			Other $E\gamma$ ($I\gamma$): 313.06 5 (1290 62) (1993Pr09); 313.14 9 (985 73) (2007ChZX); 313.02 5 (1600 88) for doublet in 2014Hu02.
					$E\gamma$: 312.72 5 (1600 88) for doublet (2014Hu02).
					Placement from 2014Hu02; see comment on 313 γ from 412 level.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger\text{f}}$	Mult.	Comments
320.02 18	1319.58	40 3		$E\gamma$: unresolved by 1993Pr09 from 321 γ .
321.17 12	1471.07	59 3		$I\gamma$: I(867 γ)=15 4:100 3 (2011Bo09).
$^{\times}325.3^{\text{e}}$ 3		7 3		Other $E\gamma$ ($I\gamma$): 320.97 8 (77 5) (1993Pr09); may include 320.0 γ .
326.8 6	1556.24	29 8		$I\gamma$: I(1425 γ)=18 2:100 4 (2011Bo09).
				Placed by 1997Pr02 from 1229 level.
340 ^a	1811.12	=5		$I\gamma$: I(1510 γ)=8 3:100 6 (2011Bo09).
344.38 21	551.28	14 2		Other $E\gamma$ ($I\gamma$): 326.55 8 (23 4; $I\gamma$ corrected for background γ)
				(1993Pr09); 325.50 25 (71 31) (2007ChZX).
				$I\gamma$: from $I\gamma$: I(1765 γ)=2:100 4 in table 2 and I(1765 γ) in table 1 of 2011Bo09.
				Other $E\gamma$ ($I\gamma$): 344.19 14 (14 4) (1993Pr09); 344.02 13 (24 5) (2014Hu02).
$^{\times}347.7$ 8		5 2		
354.00 2	453.023	178 2		Other $E\gamma$ ($I\gamma$): 353.88 10 (177 10) (1993Pr09); 353.84 5 (241 11) (2014Hu02).
365.61 5	412.109	94 2		Other $E\gamma$ ($I\gamma$): 365.56 8 (99 6) (1993Pr09); 365.44 11 (283 27) (2007ChZX); 365.39 5 (138 8) (2014Hu02).
$^{\times}367.4$ 5		10 2		
371.6 3	1275.13	17 2		$I\gamma$: I(653 γ)=4 1:100 1 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 371.59 16 (14 3) (1993Pr09).
$^{\times}373.2$ 8		7 2		
375 ^a	1309.391	33 19		$I\gamma$: from $I\gamma$: I(1101 γ)=7 4:100 8 in table 2 and I(1101 γ) in table 1 of 2011Bo09.
$^{\times}384.0$ 3		15 2		Other $E\gamma$ ($I\gamma$): 384.41 17 (17 3) (1993Pr09); placed from 1438 level by 1997Pr02.
388 ^a	1291.65			$I\gamma$: I(1193 γ)=2:100 1 (2011Bo09).
388.3 4	1944.31	12 2		$I\gamma$: I(1736 γ)=2 1:100 2 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 388.31 20 (10 3) (1993Pr09).
400.73 14	1335.42	27 2		$I\gamma$: I(1289 γ)=11 2:100 4 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 400.86 25 (30 3) (1993Pr09). Tentatively placed by 1997Pr02 from 1551 level but placement not adopted.
405 ^a	999.47	9 3		$I\gamma$: from $I\gamma$: I(708 γ)=12 4:100 7 in table 2 and I(708 γ) in table 1 of 2011Bo09.
406 ^a	1309.391	43 19		$I\gamma$: from $I\gamma$: I(1101 γ)=9 4:100 8 in table 2 and I(1101 γ) in table 1 of 2011Bo09.
				Other $E\gamma$ ($I\gamma$): 406.55 27 (43 3) for doublet (1993Pr09). 1997Pr02 estimate $I\gamma$ =31 for this placement.
406.37 [#] @ 10	453.023	45 [#] 2		Other $E\gamma$ ($I\gamma$): 406.55 27 (43 3) for doublet (1993Pr09); 405.8 3 (78 26) (2007ChZX); 406.23 7 (55 5) (2014Hu02). 1997Pr02 estimate $I\gamma$ =8 for this placement.
406.5& 3	1556.24			$I\gamma$: I(1510 γ)=15 2:100 6 (2011Bo09).
$^{\times}414.0$ 7		5 2		
416.08 5	1319.58	111 2		$I\gamma$: I(867 γ)=77 3:100 3 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 416.4 3 (115 1) (1993Pr09).
$^{\times}417.5$ 9		7 2		
420.2 9	1569.86	16 6		$I\gamma$: I(1570 γ)=7 3:100 5 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 420.3 3 (23 3) (1993Pr09).
431.7g 3	740.3	14 1		
448 ^a	999.47	4.6 23		$I\gamma$: from $I\gamma$: I(708 γ)=6 3:100 7 in table 2 and I(708 γ) in table 1 of 2011Bo09.
451 ^a	903.464	=5.3		$I\gamma$: from $I\gamma$: I(695 γ)=1:100 3 in table 2 and I(695 γ) in table 1 of 2011Bo09.
452.09 20	551.28	17 2		Other $E\gamma$ ($I\gamma$): 453.0 5 (20 3) (1993Pr09); 451.62 14 (2007ChZX); 452.37 9 (25 3) (2014Hu02).
459.2& 7	1734.72			$I\gamma$: I(1323 γ)=17 8:100 20 (2011Bo09).
465.3 [#] @g 20	774.4	=16 [#]		
467.5g 9	776.8	6 3		
473.8 3	1944.31	6 3		$I\gamma$: I(1736 γ)=4 2:100 2 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 473.9 5 (22 3) (1993Pr09); 474.60 8 (2007ChZX). Placed from 1069 level by 1997Pr02 and 2007ChZX.
479.2& 5	1628.24			$I\gamma$: I(1628 γ)=1:100 3 (2011Bo09).
$^{\times}480.3^{\text{e}}$ 5		22 3		

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger\text{f}}$	Mult.	Comments
491.3 4	903.464	11 2		$I\gamma$: I(695 γ)=6 2:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 491.9 5 (11 3) (1993Pr09; $I\gamma$ corrected for background γ); 365.44 11 (283 27) (2007ChZX).
496.7 g 5	1789.55	8 2		$I\gamma$: I(1626 γ)=1:100 3 (2011Bo09).
522.4 $\&$ 5	1672.76			Other $E\gamma$ ($I\gamma$): 533.62 10 (25 5) (1993Pr09).
$\times$ 533.78 22		16 2		$I\gamma$: from $I\gamma$: I(708 γ)=3:100 7 in table 2 and I(708 γ) in table 1 of 2011Bo09.
547 ^a	999.47	=2. 3		$I\gamma$: I(1699 γ)=12 7:100 15 (2011Bo09).
553.3 $\&$ 18	1990.54			Placement from table 1; branch absent in table 2 of 2011Bo09.
556.0 b g 19	1628.24	=5		$I\gamma$: I(1870 γ)=5 3:100 7 (2011Bo09).
559.2 $\&$ 16	1869.70			Other $E\gamma$ ($I\gamma$): 559.91 6 (47 4) (1993Pr09). Placed by 1997Pr02 from 1463 level.
560.08 17	1586.52	46 3		$I\gamma$: I(1587 γ)=46 6:100 23 (2011Bo09).
567.1 3	1886.66	15 2		$I\gamma$: I(1595 γ)=6 2:100 3 (2011Bo09).
$\times$ 569.1 4		11 2		Other $E\gamma$ ($I\gamma$): 566.86 13 (14 3) (1993Pr09).
$\times$ 571.1 5		10 2		
575.9 $\&$ 3	1725.65			$I\gamma$: I(1726 γ)=10 2:100 4 (2011Bo09). $E\gamma$ =575.7 4, $I\gamma$ =17 3 in table 1 of 2011Bo09.
581.7 5	1485.45	10 2		Other $E\gamma$ ($I\gamma$): 575.42 10 (18 3) (1993Pr09).
$\times$ 585.2 6		6 2		Other $E\gamma$ ($I\gamma$): 581.59 20 (8 3) (1993Pr09).
587.29 13	999.47	36 3		$I\gamma$: I(708 γ)=43 3:100 7 (2011Bo09).
$\times$ 591.1 3		15 4		Other $E\gamma$ ($I\gamma$): 587.11 9 (30 4) (1993Pr09).
$\times$ 593.0 7		8 5		Other $E\gamma$ ($I\gamma$): 591.03 17 (10 3) (1993Pr09).
594.8 12	903.464	12 5		
$\times$ 598.9 6		6 3		$I\gamma$: I(695 γ)=2:100 3 (2011Bo09).
$\times$ 602.71 16		27 3		Other $E\gamma$ ($I\gamma$): 602.65 6 (25 4) (1993Pr09; for multiplet).
606.8 g 6	2176.77	14 3		$I\gamma$: I(2177 γ)=3 1:100 3 (2011Bo09).
611.75 4	903.464	152 5		$I\gamma$: I(695 γ)=26 2:100 3 (2011Bo09).
615 ^a	1026.372	=11. 5		Other $E\gamma$ ($I\gamma$): 611.61 6 (156 10) (1993Pr09).
$\times$ 620.6 6		9 3		$I\gamma$: from $I\gamma$: I(1026 γ)=0.4:100.0 8 in table 2 and I(1026 γ) in table 1 of 2011Bo09.
623.3 5	1915.40	9 3		
$\times$ 630.1 12		6 3		$I\gamma$: I(1916 γ)=23 9:100 11 (2011Bo09).
633.95 7	1229.31	58 2		Placement from table 2 of 2011Bo09.
$\times$ 636.0 4		5 3		$I\gamma$: I(776 γ)=57 3:100 5 (2011Bo09).
639.9 8	1542.9	16 4		Other $E\gamma$ ($I\gamma$): 633.80 7 (61 5) (1993Pr09).
641.4 $\&$ 3	1053.26	33 4		
$\times$ 642.33 ^e 16		15 3		Other $E\gamma$ ($I\gamma$): 640.83 10 (24 3) (1993Pr09).
651.7 $\&$ 6	1586.52			$E\gamma$ =641.3 6 from table 1 of 2011Bo09.
652.59 $\&$ 2	1275.13			$I\gamma$: I(846 γ)=9 1:100 1 (2011Bo09).
				Placement by 1997Pr02 from 935 level not confirmed by 2011Bo09.
				$I\gamma$: I(1587 γ)=55 10:100 23 (2011Bo09).
				$E\gamma$ =652.22 2, $I\gamma$ =406 3 in table 1 for complex line that primarily deexcites the 1275 level. The adopted $E\gamma$ is presumably from coincidence data, although table 2 of 2011Bo09 does not indicate this.
				Other $E\gamma$ ($I\gamma$): 652.11 6 (426 21) (1993Pr09). Placed by 1997Pr02 from an otherwise unknown 1064 level. Coincident with 313 γ (1993Pr09, 1997Pr02, 2011Bo09).
$\times$ 655.9 7		5 3		
657.4 3	1069.38	16 4		Placement taken from 1997Pr02 and table 2 of 2011Bo09.
661.5 $\&$ 4	1811.12			Other $E\gamma$ ($I\gamma$): 657.14 14 (16 3) (1993Pr09).
$\times$ 665.3 5		11 2		$I\gamma$: I(1765 γ)=5 3:100 4 (2011Bo09).
$\times$ 673.2 3		14 2		
$\times$ 681.5 7		13 3		

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
683.07 16	1586.52	54 3		$I\gamma$: I(1587 γ)=31 10:100 23 (2011Bo09). Other $E\gamma$ ($I\gamma$): 682.72 8 (48 5) (1993Pr09).
694.69 2	903.464	529 4		Other $E\gamma$ ($I\gamma$): 694.65 7 (551 31) (1993Pr09).
697.04& 11	1149.89	402 20		$E\gamma$ =696.78 3, $I\gamma$ =478 5 in table 1 for complex line dominated by this placement (2011Bo09). $I\gamma$: see comment on 697 γ from 1320 level. Other $E\gamma$ ($I\gamma$): 696.71 7 (510 21) (1993Pr09); 696.56 10 (552 44) (2007ChZX).
697.04& 5	1319.58	101 19		$E\gamma$ =696.78 3, $I\gamma$ =478 5 in table 1 for complex line (2011Bo09). $I\gamma$: from $I\gamma$: I(867 γ)=76 14:100 3 in table 2 and I(867 γ) of 2011Bo09. This leaves $I\gamma$ =402 20 for placement from 1150 level.
700.6 4	1975.77	18 4		Other $E\gamma$ ($I\gamma$): 700.40 14 (21 4) (1993Pr09).
706.9& 13	2176.77			$I\gamma$: I(2177 γ)=2 1:100 3 (2011Bo09).
707.79& 19	999.47	76 7		Other $E\gamma$ ($I\gamma$): 707.74 7 (74 6) (1993Pr09); 706.42 11 (839 55) (2007ChZX; γ appears to be contaminated and/or misplaced).
709.4& 6	1612.06	7 3		Other $E\gamma$ ($I\gamma$): 709.34 21 (14 3) (1993Pr09).
713.4& 9	2176.77			$I\gamma$: I(2177 γ)=3 1:100 3 (2011Bo09). $E\gamma$ =713.4 11, $I\gamma$ =18 7 in table 1 of 2011Bo09.
716 ^a	1944.31	$\approx$ 8		Other $E\gamma$ ($I\gamma$): 713.30 10 (23 3) (1993Pr09). $I\gamma$: from $I\gamma$: I(1736 γ)=1:100 2 in table 2 and I(1736 γ) in table 1 of 2011Bo09.
720.0 11	2028.48	5 2		$I\gamma$: I(2029 γ)=3 2:100 6 (2011Bo09).
^x 723.83 ^e 13		8 4		
724.6& 6	1319.58			$I\gamma$: I(867 γ)=9 3:100 3 (2011Bo09).
724.7& 12	1628.24			$I\gamma$: I(1612 γ)=1:100 5 (2011Bo09). Other $E\gamma$ ($I\gamma$): 723.83 13 (9 4; corrected for background contribution) (1993Pr09).
726 ^a	934.693	$\approx$ 11		$I\gamma$: from $I\gamma$: I(888 γ)=1:100 2 in table 2 and I(888 γ) in table 1 of 2011Bo09. $E\gamma$ =726.2 4, $I\gamma$ =15 2 for complex line (2011Bo09). Other $E\gamma$ ($I\gamma$): 725.78 22 (12 4) (1993Pr09). Other $E\gamma$ ($I\gamma$): 727.3 3 (9 4) (1993Pr09).
^x 728.0 12		9 3		
^x 729.6 16		6 3		
734.6 4	1026.372	16 3		$I\gamma$: I(1026 γ)=0.5 1:100.0 8 (2011Bo09). Other $E\gamma$ ($I\gamma$): 734.79 12 (23 5) (1993Pr09).
738.9& 6	1149.89	8 3		$I\gamma$: I(697 γ)=1:100 12 (2011Bo09).
^x 740.5 8		12 3		
742.5 8	1337.8	10 2		
^x 744.4 5		16 2		
^x 751.7 16		6 3		
753.5& 5	1376.43			$I\gamma$: I(781 γ)=27 8:100 9 (2011Bo09). $E\gamma$ =753.4 9, $I\gamma$ =9 3 in table 1 of 2011Bo09. Other $E\gamma$ ($I\gamma$): 753.15 22 (8 3) (1993Pr09). $E\gamma$ =761.8 11 from table 1 of 2011Bo09.
761.8& 4	1053.26	11 4		$I\gamma$: I(846 γ)=3 1:100 1 (2011Bo09).
761.8 11	2433.65	11 4		
^x 763.2 7		7 4		Other $E\gamma$ ($I\gamma$): 762.50 18 (12 4) (1993Pr09).
765.1& 11	1915.40			$I\gamma$: I(1916 γ)=20 10:100 11 (2011Bo09).
767.7& 3	1319.58			$I\gamma$: I(867 γ)=13 3:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 768.82 14 (14 3) (1993Pr09).
769.36 19	1672.76	31 3		$I\gamma$: I(1626 γ)=4 1:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 768.82 14 (14 3) (1993Pr09).
776.21 21	1229.31	101 5		Other $E\gamma$ ($I\gamma$): 776.25 6 (106 7) (1993Pr09); 774.97 19 (2007ChZX).
777.7 5	1069.38	36 5		Other $E\gamma$ ($I\gamma$): 777.77 9 (42 4) (1993Pr09); 777.8 4 (109 73) (2007ChZX).
781.02& 12	1376.43			$E\gamma$ =781.3 3, $I\gamma$ =34 3 in table 1 of 2011Bo09. Other $E\gamma$ ($I\gamma$): 781.00 8 (32 4) (1993Pr09).
^x 782.96 ^e 13		20 3		
790.05 21	2099.27	39 4		Other $E\gamma$ ($I\gamma$): 790.43 10 (32 4) (1993Pr09).
794.5 3	1944.31	19 3		$I\gamma$: I(1736 γ)=3 1:100 2 (2011Bo09). Other $E\gamma$ ($I\gamma$): 794.57.12 (23 4) (1993Pr09).
^x 799.6 11		5 3		
802.6 6	1214.9	15 4		Other $E\gamma$ ($I\gamma$): 802.90 17 (21 3) (1993Pr09). Placement tentative in 2011Bo09 but definite in 1997Pr02.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
804.34 18	903.464	55 5		$I\gamma$:I(695 γ)=6 2:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 804.48 9 (43 5) (1993Pr09).
$^{\times}807.4$ 5		13 7		
$^{\times}810.7$ 3		19 2		
812.5& 12	2282.99			$I\gamma$:I(1133 γ)=7 3:24 5 (2011Bo09).
$^{\times}813.8$ 3		4 2		
817.36& 13	1229.31	39 18		$I\gamma$:I(776 γ)=44 5:100 5 (2011Bo09). $E\gamma$ =817.49 4, $I\gamma$ =358 5 in table 1 of 2011Bo09 for complex line. $I\gamma$: see comment on 817 γ from 1026 level.
817.73& 10	1026.372	319 17		$E\gamma$ =817.49 4, $I\gamma$ =358 5 in table 1 for complex line dominated by this placement (2011Bo09). Other $E\gamma$ ($I\gamma$): 817.59 5 (374 52) (1993Pr09). $I\gamma$: from $I\gamma$:I(1026 γ)=11.1 6:100.0 8 in table 2 and I(1026 γ) in table 1 of 2011Bo09. This leaves $I\gamma$ =39 18 to be placed from 1229 level.
822.12 13	1275.13	50 3		$I\gamma$:I(653 γ)=12 1:100 1 (2011Bo09). Other $E\gamma$ ($I\gamma$): 822.16 8 (47 4) (1993Pr09).
$^{\times}824.5$ 22		=14		Other $E\gamma$ ($I\gamma$): 824.39 22 (19 4) (1993Pr09).
825.9 3	1975.77	35 13		Other $E\gamma$ ($I\gamma$): 825.85 12 (38 5) (1993Pr09).
830.9& 9	2059.37			$I\gamma$:I(1851 γ)=20 7:100 7 (2011Bo09).
832.9& 7	1982.22			$I\gamma$:I(1691 γ)=15 5:100 16 (2011Bo09). $E\gamma$ =834.2 11, $I\gamma$ =31 20 in table 1 of 2011Bo09.
835.2 13	934.693	=30		Other $E\gamma$ ($I\gamma$): 834.53 16 (36 8) (1993Pr09).
841.8 3	2176.77	41 10		$I\gamma$:I(888 γ)=2 1:100 2 (2011Bo09). $I\gamma$:I(2177 γ)=13 2:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 841.84 9 (41 4) (1993Pr09).
$^{\times}843.9$ 8		13 5		
846.26 3	1053.26	373 4		Other $E\gamma$ ($I\gamma$): 846.34 6 (374 21) (1993Pr09); 846.06 12 (403 40) (2007ChZX).
849.8& 13	1261.4			$I\gamma$:I(952 γ)=70 40:100 40 (2011Bo09).
850.1 7	2169.81	16 9		$I\gamma$:I(895 γ)=60 30:100 13 (2011Bo09).
$^{\times}852.10$ 19		42 8		Other $E\gamma$ ($I\gamma$): 852.04 10 (33 4) (1993Pr09).
$^{\times}855.2$ 7		17 8		
857.0 11	903.464	59 34		$I\gamma$:I(695 γ)=14 2:100 3 (2011Bo09).
858.1 5	1149.89	145 37		$I\gamma$:I(697 γ)=37 6:100 12 (2011Bo09). Other $E\gamma$ ($I\gamma$): 858.06 7 (218 10) (1993Pr09).
858.3& 15	2176.77			$I\gamma$:I(2177 γ)=2 1:100 3 (2011Bo09).
$^{\times}860.9$ 5		23 8		
863.6 4	1275.13	18 4		$I\gamma$:I(653 γ)=4 1:100 1 (2011Bo09).
866.60 4	1319.58	133 3		Other $E\gamma$ ($I\gamma$): 866.49 8 (166 10) (1993Pr09).
$^{\times}872.2$ 8		7 3		
$^{\times}873.8$ 9		12 3		
$^{\times}877.3$ 3		8 2		
$^{\times}882.0$ 6		7 4		
885.56 14	2176.77	72 3		$I\gamma$:I(2177 γ)=14 2:100 3 (2011Bo09).
888.17 2	934.693	1143 4		Other $E\gamma$ ($I\gamma$): 888.07 3 (1196 62) (1993Pr09); 888.17 9 (1440 73) (2007ChZX).
894.69 6	2169.81	26 3		
900.51 24	2235.73	29 3		$I\gamma$:I(2137 γ)=16 6:100 8 (2011Bo09).
903.7& 12	903.464			$I\gamma$:I(695 γ)=3 2:100 3 (2011Bo09).
907.5 6	1319.58	20 4		$I\gamma$:I(867 γ)=14 3:100 3 (2011Bo09).
$^{\times}912.4$ 5		14 4		
918.3& 4	1944.31			$I\gamma$:I(1736 γ)=3 1:100 2 (2011Bo09).
$^{\times}922.0$ 25		=7		
923 ^a	1335.42	12 7		$I\gamma$: from $I\gamma$:I(1289 γ)=5 3:100 4 in table 2 and I(1289 γ) in table 1 of 2011Bo09.
923.8& 11	1214.9	14 6		
927.29 2	1026.372	469 4		$I\gamma$:I(1026 γ)=16.3 3:100.0 8 (2011Bo09). Other $E\gamma$ ($I\gamma$): 927.30 4 (447 21) (1993Pr09); 927.04 9 (438 22) (2007ChZX).
933.6& 7	2209.07			$I\gamma$:I(2163 γ)=7 3:100 10 (2011Bo09).
935.3& 8	934.693	11 3		$I\gamma$:I(888 γ)=3 2:100 2 (2011Bo09).
937.58 18	1229.31	51 3		$I\gamma$:I(776 γ)=51 3:100 5 (2011Bo09). Other $E\gamma$ ($I\gamma$): 937.1 4 (61 11) (1993Pr09).

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$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\pm f}$	Mult.	Comments
941.09 3	1149.89	269 3		I_{γ} : I(697 γ)=62 6:100 12 (2011Bo09). Other E_{γ} (I_{γ}): 941.17 9 (281 21) (1993Pr09).
952.4& 5	1261.4			
^x 952.8 12		26 11		
954.3 6	1053.26	58 11		I_{γ} : I(846 γ)=15 3:100 1 (2011Bo09). Other E_{γ} (I_{γ}): 953.9 5 (63 17) (1993Pr09); 955.0 6 (109 73) (2007ChZX).
956.8& 7	2248.10			I_{γ} : I(2202 γ)=5 3:100 5 (2011Bo09). E_{γ} =957.6 4, I_{γ} =27 4 in table 1 of 2011Bo09.
960.06 9	1372.23	121 4		I_{γ} : I(1163 γ)=89 3:100 4 (2011Bo09). Other E_{γ} (I_{γ}): 959.97 25 (125 21) (1993Pr09); 959.8 3 (190 40) (2007ChZX).
964.5& 16	1990.54			I_{γ} : I(1699 γ)=16 9:100 15 (2011Bo09).
^x 965.6@ 7		15 8		
967 ^a	1869.70	10 5		I_{γ} : from I_{γ} : I(1870 γ)=6 3:100 7 in table 2 and I(1870 γ) in table 1 of 2011Bo09.
967.4& 8	1900.85	12 6		Placed from 1901 level in table 1 of 2011Bo09 but omitted from table 2 of 2011Bo09.
969.2& 15	1261.4			I_{γ} : I(952 γ)=95 30:100 40 (2011Bo09).
^x 970.1 4		24 8		Other E_{γ} (I_{γ}): 969.5 10 (30 16) (1993Pr09).
974.2& 9	2248.10			I_{γ} : I(2202 γ)=10 3:100 5 (2011Bo09).
978 ^a	2126.38	$\approx$ 9		I_{γ} : from I_{γ} : I(2080 γ)=4:100 4 in table 2 and I(2080 γ) in table 1 of 2011Bo09.
979.88 2	1026.372	1766 8		I_{γ} : I(1026 γ)=61.5 7:100.0 8 (2011Bo09). Other E_{γ} (I_{γ}): 979.87 3 (1747 94) (1993Pr09); 979.58 9 (1896 73) (2007ChZX).
983.6& 8	1886.66	18 7		I_{γ} : I(1595 γ)=3 1:100 3 (2011Bo09).
^x 989.6@ 7		18 4		
990.9& 11	1990.54			I_{γ} : I(1699 γ)=39 9:100 15 (2011Bo09).
996.3& 6	1900.85			I_{γ} : I(1692 γ)=8 3:100 12 (2011Bo09). E_{γ} =995.62 8, I_{γ} =73 3 in table 1 for unplaced γ (2011Bo09). Other E_{γ} (I_{γ}): 995.9 8 (51 22) (1993Pr09).
1006.89 17	1053.26	51 6		I_{γ} : I(846 γ)=14 2:100 1 (2011Bo09). Placement taken from table 2 of 2011Bo09.
1015.9 8	2324.81	18 4		Other E_{γ} (I_{γ}): 1007.3 15 (29 19) (1993Pr09).
1017.71 6	1309.391	221 4		I_{γ} : I(2326 γ)=16 4:100 14 (2011Bo09). I_{γ} : I(1101 γ)=63 7:100 8 (2011Bo09).
1020.4 4	1229.31	25 5		Other E_{γ} (I_{γ}): 1018.07 15 (302 31) (1993Pr09). Placed by 1997Pr02 from an otherwise unknown 1064 level.
1026.38 2	1026.372	2873 12		I_{γ} : I(776 γ)=25 5:100 5 (2011Bo09). Other E_{γ} (I_{γ}): 1026.37 3 (2870 146) (1993Pr09); 1026.17 8 (2990 109) (2007ChZX).
^x 1034.2 8		10 3		
^x 1040.8 6		11 3		
1043.73 12	1335.42	54 2		I_{γ} : I(1289 γ)=21 3:100 4 (2011Bo09). Other E_{γ} (I_{γ}): 1043.78 20 (55 8) (1993Pr09).
^x 1047.7 8		13 4		
1050.4& 8	1149.89	11 3		I_{γ} : I(697 γ)=3 1:100 12 (2011Bo09).
^x 1055.1 11		13 4		
1057.9& 12	2126.38			E_{γ} : presumably from coincidence data, but not so indicated in table 2; E_{γ} =1057.1 11, I_{γ} =24 5 from table 1 of 2011Bo09.
^x 1058.8 21		13 5		I_{γ} : I(2080 γ)=10 3:100 4 (2011Bo09).
^x 1060.6 19		10 4		Other E_{γ} (I_{γ}): 1057.6 3 (34 7) (1993Pr09).
1062.4& 12	1964.74			I_{γ} : I(1918 γ)=10 6:100 8 (2011Bo09).
1062.9& 8	1372.23			I_{γ} : I(1163 γ)=9 3:100 4 (2011Bo09). Other E_{γ} (I_{γ}): 1064.0 6 (50 18) for doublet (1993Pr09). Placed instead by 1997Pr02 from an otherwise unknown 1064 level.
1063.72 [#] @g 7	1686.26	47 [#] 3		
1064.5& 12	2384.09			I_{γ} : I(2286 γ)=41 9:100 10 (2011Bo09). Other E_{γ} (I_{γ}): 1064.0 6 (50 18) for doublet (1993Pr09).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
1067.2& 8	1376.43			$I\gamma$:I(781 γ)=38 16:100 9 (2011Bo09). $E\gamma$ =1066.7 5, $I\gamma$ =52 7 in table 1 of 2011Bo09. Other $E\gamma$ ($I\gamma$): 1066.8 7 (40 16) (1993Pr09).
^x 1068.3 15		17 7		
1080.72 19	1372.23	68 4		$I\gamma$:I(1163 γ)=50 3:100 4 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1080.90 17 (104 10) (1993Pr09).
1082.8 3	1291.65	61 6		$I\gamma$:I(1193 γ)=23 2:100 1 (2011Bo09).
1085.66#& 6	2523.01	80# 3		Other $E\gamma$ ($I\gamma$): 1085.15 18 (125 10) (1993Pr09).
1086.6& 5	1990.54			$I\gamma$:I(1699 γ)=27 11:100 15 (2011Bo09).
^x 1090.4 6		11 4		
1093.9 3	2028.48	24 3		$I\gamma$:I(2029 γ)=9 3:100 6 (2011Bo09).
1098.3& 8	2433.65	25 5		
1100.60 2	1309.391	475 3		Other $E\gamma$ ($I\gamma$): 1100.74 7 (530 31) (1993Pr09); 1100.21 14 (438 91) (2007ChZX). γ indicated as a multiplet by 1997Pr02 but not by 1993Pr09; no alternative placement(s) given. 1997Pr02 estimate $I\gamma$ =129 for this placement.
1103.50 16	1149.89	50 3		$I\gamma$:I(697 γ)=13 4:100 12 (2011Bo09).
^x 1107.7 5		18 4		Other $E\gamma$ ($I\gamma$): 1108.1 4 (40 8) (1993Pr09); apparently for 1107.7 γ +1109.4 γ doublet.
1109.4 3	2384.09	19 4		$I\gamma$:I(2286 γ)=56 8:100 10 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1108.1 4 (40 8) (1993Pr09); apparently for 1107.7 γ +1109.4 γ doublet.
1112 ^a	1734.72	=2		$I\gamma$: from $I\gamma$:I(1323 γ)=9:100 20 in table 2 and I(1323 γ) in table 1 of 2011Bo09.
^x 1115.48 11		45 3		Other $E\gamma$ ($I\gamma$): 1115.25 18 (87 9) (1993Pr09).
^x 1121.33 17		11 3		
1125.9 6	2417.50	18 4		
1128.39 10	1335.42	128 4		$I\gamma$:I(1289 γ)=48 4:100 4 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1128.40 12 (146 10) (1993Pr09).
^x 1130.6 9		13 3		
1133.3 3	2282.99	32 3		$I\gamma$:I(2236 γ)=24 5:100 6 (2011Bo09).
1138.4& 14	2164.85			$I\gamma$:I(2118 γ)=6 2:100 3 (2011Bo09). $E\gamma$ =1138.4 4, $I\gamma$ =13 4 in table 1 for complex line (2011Bo09).
^x 1140.2@ 3		23 4		
1145.5& 6	1437.35	35 7		$I\gamma$:I(1438 γ)=19 4:100 12 (2011Bo09).
1149.94 7	1149.89	126 3		$I\gamma$:I(697 γ)=34 6:100 12 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1149.88 17 (85 12) (1993Pr09); 1151.0 5 (108 46) (2007ChZX).
1150.5& 10	2176.77			$I\gamma$:I(2177 γ)=3 1:100 3 (2011Bo09).
1154.5& 12	2303.94			$I\gamma$:I(2304 γ)=7 3:100 4 (2011Bo09).
1156.3 6	2059.37			$I\gamma$:I(1851 γ)=10 6:100 7 (2011Bo09). $E\gamma$: presumably from coincidence data, but not so indicated in table 2. $E\gamma$ =1158.3 4, $I\gamma$ =17 3 in table 1 for complex line that primarily deexcites a 1570 level (2011Bo09).
1158.1& 5	1569.86	14 7		$E\gamma$ =1158.3 4, $I\gamma$ =17 3 in table 1 for complex line (2011Bo09). $I\gamma$: from $I\gamma$:I(1570 γ)=6 3 in table 2 and I(1570 γ). This leaves $I\gamma$ =3 8 for placement elsewhere.
1163.38 17	1372.23	135 6		
1164.2& 15	2099.27			$I\gamma$:I(1891 γ)=16 11:100 15 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1164.28 9 (198 42) for multiplet (1993Pr09); probably for 1163.4 γ to 1165.4 γ multiplet.
1165.35 20	1372.23	119 6		$I\gamma$:I(1163 γ)=88 4:100 4 (2011Bo09).
1176.5& 10	1628.24			$I\gamma$:I(1612 γ)=2:100 5 (2011Bo09).
^x 1179.5 4		31 5		
1182.6 4	2209.07	87 25		$I\gamma$:I(2163 γ)=28 6:100 10 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1182.70 26 (80 16) (1993Pr09).
1187.5 3	2523.01	39 5		
^x 1192.0 3		83 20		
1192.72 9	1291.65	267 21		Other $E\gamma$ ($I\gamma$): 1192.46 7 (312 31) (1993Pr09); probably for 1192.0 γ +1192.7 γ doublet.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
1192.9& 16	2126.38			$E\gamma$: presumably from coincidence data, but not so indicated in table 2. Possibly the unplaced $E\gamma=1192.0$ 3, $I\gamma=83$ 20 line from table 1 of 2011Bo09. $I\gamma$: I(2080 γ)=8 3:100 4 (2011Bo09).
^x 1204.7@ 3		20 3		
1210.35 21	1309.391	93 5		$I\gamma$: I(1101 γ)=19 6:100 8 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1210.80 14 (90 16) (1993Pr09); 1210.19 23 (140 36) (2007ChZX).
^x 1214.0 3		23 3		
1217.7 3	1840.2	32 4		
1223.3 3	2126.38	34 4		$I\gamma$: I(2080 γ)=17 4:100 4 (2011Bo09).
^x 1226.2 7		21 4		Other $E\gamma$ ($I\gamma$): 1226.6 7 (38 12) (1993Pr09).
1228.3 5	1437.35	49 4		$I\gamma$: I(1438 γ)=27 4:100 12 (2011Bo09).
1230.2 7	1683.2	67 12		Other $E\gamma$ ($I\gamma$): 1229.8 4 (72 14) (1993Pr09).
1230.6& 16	2164.85			$I\gamma$: I(2118 γ)=5 2:100 3 (2011Bo09).
1231.7& 20	2523.01	21 12		
1233.7 5	2611.76	31 4		
1236.34 9	1335.42	107 3		$I\gamma$: I(1289 γ)=42 4:100 4 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1235.53 15 (94 9) (1993Pr09); may include 1233.7 γ .
^x 1240.6 6		23 7		
1243.3& 11	2176.77			$I\gamma$: I(2177 γ)=4 2:100 3 (2011Bo09). $E\gamma=1243.3$ 7, $I\gamma=26$ 5 in table 1.
1245.31# 22	1291.65	84# 5		$I\gamma$: I(1193 γ)=25 2:100 1 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1245.31 17 (70 9) (1993Pr09).
1250.9 6	1542.9	12 2		
1257 ^a	2282.99	=7		$I\gamma$: from $I\gamma$: I(1133 γ)=5:24 5 in table 2 and I(1133 γ) in table 1 of 2011Bo09.
1262 ^a	2164.85	=3		$I\gamma$: from $I\gamma$: I(2118 γ)=1:100 3 in table 2 and I(2118 γ) in table 1 of 2011Bo09.
1262.1& 12	1672.76			$I\gamma$: I(1626 γ)=2 1:100 3 (2011Bo09).
1262.6 3	1471.07	259 23		$I\gamma$: I(1425 γ)=44 3:100 4 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1262.55 7 (322 21) for doublet (1993Pr09), $I\gamma=164$ estimated for this placement by 1997Pr02; 1262.37 18 (328 44) (2007ChZX). May include 1262.1 γ .
1263.1& 6	1309.391	95 42		$E\gamma=1261.2$ 12, $I\gamma=52$ 23 in table 1 for complex line (2011Bo09). $I\gamma$: from $I\gamma$: I(1101 γ)=20 8:100 8 in table 2 and $I\gamma$ (1101 γ) of 2011Bo09 this leaves no $I\gamma$ for placement elsewhere. Other $E\gamma$ ($I\gamma$): 1262.55 7 (322 21) for doublet (1993Pr09); 1997Pr02 estimate $I\gamma=38$ for this placement.
1264.6 4	1556.24	56 5		$I\gamma$: I(1510 γ)=21 4:100 6 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1262.55 7 (322 21) for doublet (1993Pr09); 1997Pr02 estimate $I\gamma=120$ for this placement.
^x 1271.7 12		11 4		
1273.7 10	2503.28	43 10		Other $E\gamma$ ($I\gamma$): 1274.8 4 (48 9) (1993Pr09); placed from 2209 by 1997Pr02.
1277.8 6	1730.50	16 3		$I\gamma$: I(1684 γ)=6 2:100 5 (2011Bo09).
1284.4 4	1737.2	40 7		Other $E\gamma$ ($I\gamma$): 1283.18 28 (77 9) (1993Pr09).
^x 1286.0 15		=9		
1288.96 6	1335.42	248 4		Other $E\gamma$ ($I\gamma$): 1289.09 8 (322 21) (1993Pr09).
1291.8 3	1291.65	79 6		$I\gamma$: I(1193 γ)=30 2:100 1 (2011Bo09).
1293.7# 7	2523.01	72# 9		
1294.2& 10	1586.52			$I\gamma$: I(1587 γ)=37 10:100 23 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1294.37 9 (146 21; $I\gamma$ corrected for background-peak contamination) (1993Pr09).
^x 1295.5 3		129 11		Other $E\gamma$ ($I\gamma$): 1294.37 9 (146 21) (1993Pr09); possibly for 1294 γ to 1296 γ multiplet.
1300.5 4	2450.59	22 4		Other $E\gamma$ ($I\gamma$): 1300.3 4 (51 9) (1993Pr09).
1302.7& 5	2235.73	22 4		$I\gamma$: I(2137 γ)=18 7:100 8 (2011Bo09).
1306.5 5	2535.18	19 6		
^x 1311.1 4		25 7		
^x 1320.17 16		77 6		Other $E\gamma$ ($I\gamma$): 1321.1 3 (53 11) (1993Pr09); may include 1322.8 γ .
1322.8 3	1734.72	27 5		
1332.3& 15	1784.58			$I\gamma$: I(1373 γ)=15:100 12 (2011Bo09).

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$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
$^{x}1332.91^{\text{e}}_9$		52 17		$E\gamma, I\gamma$: for multiplet.
1335.8 $^{\text{g}}_3$	1335.42	33 5		
1338.23 23	1437.35	74 5		$I\gamma$: I(1438 γ)=42 6:100 12 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1338.2 3 (92 9) (1993Pr09). γ indicated as a multiplet by 1997Pr02 but not by 1993Pr09; no alternative placement(s) given.
				Placement from table 2 of 2011Bo09.
1343.49 21	1550.56	80 12		Other $E\gamma$ ($I\gamma$): 1343.5 4 (78 11) (1993Pr09). Placement is shown in parentheses in table 1 of 2011Bo09, but shown as definite by 1997Pr02.
$^{x}1346.8_5$		33 20		
1347.4 $^{\&}_3$	1556.24			$I\gamma$: I(1510 γ)=19 4:100 6 (2011Bo09).
				$E\gamma$ =1348.1 5, $I\gamma$ =58 22 from table 1.
				Other $E\gamma$ ($I\gamma$): 1347.6 3 (99 11) (1993Pr09; possibly for 1347 γ to 1348 γ multiplet); 1347.19 25 (346 44) (2007ChZX; apparently for contaminated γ).
1348 $^{\text{a}}$	2282.99	=7		$I\gamma$: from $I\gamma$: I(1133 γ)=5:24 5 in table 2 and I(1133 γ) in table 1 of 2011Bo09.
1350.5 $^{\text{g}}_4$	2503.28	19 6		
$^{x}1354.3_4$		20 3		
1361.06 14	1569.86	35 3		$I\gamma$: I(1570 γ)=15 3:100 5 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1363.0 5 (43 14) (1993Pr09); possibly for 1361 γ to 1364 γ multiplet.
1363 $^{\text{a}}$	1569.86	=23		$I\gamma$: from $I\gamma$: I(1570 γ)=10:100 5 in table 2 and I(1570 γ) in table 1 of 2011Bo09.
1364.0 3	3210.77	21 2		Other $E\gamma$ ($I\gamma$): 1363.0 5 (43 14) (1993Pr09); possibly for 1361 γ to 1364 γ multiplet.
1366.5 $^{\text{g}}_6$	2517.50	23 3		
$^{x}1368.6_3$		58 4		
1370.2 $^{\&}_{12}$	2303.94			$I\gamma$: I(2304 γ)=10 3:100 4 (2011Bo09).
$^{x}1370.80_{19}$		85 5		Other $E\gamma$ ($I\gamma$): 1370.89 15 (156 21) (1993Pr09) for doublet placed by 1997Pr02 from 1578 level and 1823 level, with calculated relative $I\gamma$ of 10:4.6.
1371.6 $^{\&}_{11}$	1663.63			$I\gamma$: I(1618 γ)=9 5:100 15 (2011Bo09).
1372.6 3	1784.58	50 6		
$^{x}1378.08_{20}$		33 3		
1380.2 $^{\&}_{13}$	1586.52			$I\gamma$: I(1587 γ)=59 17:100 23 (2011Bo09).
1381.09 12	1672.76	75 3		$I\gamma$: I(1626 γ)=9 1:100 3 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1380.66 18 (125 21) (1993Pr09).
1386.4 3	1485.45	35 4		Other $E\gamma$ ($I\gamma$): 1387.2 9 (43 18) (1993Pr09).
1390.82 22	1437.35	54 3		$I\gamma$: I(1438 γ)=31 4:100 12 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1391.1 10 (38 15) (1993Pr09).
$^{x}1396.3_7$		9 3		
1402.8 3	1612.06	30 5		$I\gamma$: I(1612 γ)=16 3:100 5 (2011Bo09).
1407.3 $^{\text{e}}_3$	2433.65	141 45		Other $E\gamma$ ($I\gamma$): 1407.22 19 (146 10) (1993Pr09).
1411.56 6	1510.61	250 13		Other $E\gamma$ ($I\gamma$): 1411.68 14 (239 21) (1993Pr09); placed from 1824 level by 1997Pr02.
$^{x}1414.7_9$		14 7		
1416.78 10	1463.21	284 7		Other $E\gamma$ ($I\gamma$): 1416.74 9 (281 21) (1993Pr09).
$^{x}1422.54_{22}$		100 8		
1423.9 $^{\&}_4$	1633.33			$I\gamma$: I(1634 γ)=10:100 13 (2011Bo09).
1424.61 7	1471.07	452 8		Other $E\gamma$ ($I\gamma$): 1424.26 5 (489 31) (1993Pr09); 1423.97 14 (620 55) (2007ChZX; possibly for 1422.5 γ +1424.6 γ doublet).
$^{x}1429.3_9$		16 6		
1437.52 23	1437.35	179 22		Other $E\gamma$ ($I\gamma$): 1437.88 8 (250 21) (1993Pr09).
1438.9 $^{\&}_8$	1730.50			$I\gamma$: I(1684 γ)=16 5:100 5 (2011Bo09).
				$E\gamma$ =1439.10 24, $I\gamma$ =93 23 in table 1 of 2011Bo09.
1441.9 $^{\&}_9$	1734.72			$I\gamma$: I(1323 γ)=70 30:100 20 (2011Bo09).
$^{x}1447.4_4$		22 3		
1451.5 $^{\text{g}}_7$	1660.59	9 5		
1454.2 $^{\#}_8$	2523.01	47 $^{\#}$ 22		
1455.2 $^{\&}_3$	1663.63			$I\gamma$: I(1618 γ)=26 8:100 15 (2011Bo09).
				$E\gamma$ =1455.3 8, $I\gamma$ =69 22 in table 1 of 2011Bo09.
				Other $E\gamma$ ($I\gamma$): 1455.81 15 (166 21) for multiplet (1993Pr09).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\dagger f}$	Mult.	Comments
1457.2 7	1556.24	57 12		I_{γ} : I(1510 γ)=27 4:100 6 (2011Bo09).
^x 1460.1@ 4		59 8		
1463.4# 3	1463.21	285# 21		I_{γ} : I(1417 γ)=80 10:100 12 (2011Bo09). Other E_{γ} (I_{γ}): 1463.58 7 (374 21) for doublet (1993Pr09). 1997Pr02 estimate I_{γ} =156 for this placement.
1464.13& 15	1672.76			I_{γ} : I(1626 γ)=11 2:100 3 (2011Bo09). Other E_{γ} (I_{γ}): 1463.58 7 (374 21) for doublet (1993Pr09); presumably the 1464 γ +1466 γ doublet.
1465.5 4	1672.76	57 8		I_{γ} : I(1626 γ)=6 1:100 3 (2011Bo09).
1470.75 9	1471.07	155 20		I_{γ} : I(1425 γ)=32 7:100 4 (2011Bo09). Other E_{γ} (I_{γ}): 1470.93 11 (239 21) (1993Pr09), 1471.1 4 (201 73) (2007ChZX); possibly for 1470.8+1471.5 γ doublet.
^x 1471.5 5		60 18		See comment on 1470.75 γ .
^x 1477.9 6		51 18		Other E_{γ} (I_{γ}): 1478.39 27 (85 14; I_{γ} corrected for escape-peak contaminant) (1993Pr09); possibly for 1477.9 γ +1478.5 γ doublet.
1478.5# 4	2708.12	45# 19		Placed by 1997Pr02 from an otherwise unknown 1478 level. Other E_{γ} (I_{γ}): 1478.39 27 (85 14) (1993Pr09); possibly for 1477.9 γ +1478.5 γ doublet.
1485.49# 12	3097.60	142# 9		Other E_{γ} (I_{γ}): 1485.86 15 (177 21) (1993Pr09). Placed by 1997Pr02 from 1486 level.
1487.53 23	1586.52	55 5		I_{γ} : I(1587 γ)=52 11:100 23 (2011Bo09).
1492.7 3	1784.58	23 3		I_{γ} : I(1373 γ)=45 10:100 12 (2011Bo09).
^x 1501.2 3		12 4		
1504.04 13	1550.56	23 2		
1504.06# 7	2813.42	200# 5		Other E_{γ} (I_{γ}): 1504.04 13 (239 21) (1993Pr09).
^x 1508.8 4		108 30		
1510.2& 3	1556.24			E_{γ} =1510.35 12, I_{γ} =350 30 in table 1 for complex line (2011Bo09). Other E_{γ} (I_{γ}): 1510.17 6 (530 31) (1993Pr09); 1510.17 25 (419 55) (2007ChZX; possible contribution from 1509 γ and/or 1513 γ . Fits placement poorly.
1512.82 21	1612.06	70 6		I_{γ} : I(1612 γ)=36 4:100 5 (2011Bo09).
1516.9 8	1725.65	30 8		I_{γ} : I(1726 γ)=18 2:100 4 (2011Bo09).
1519.2 6	1811.12	53 7		I_{γ} : I(1765 γ)=17 3:100 4 (2011Bo09). Other E_{γ} (I_{γ}): 1518.5 6 (53 31) (1993Pr09).
1521.8& 4	1730.50			I_{γ} : I(1684 γ)=17 3:100 5 (2011Bo09).
1523.37# 14	1569.86	185# 6		E_{γ} =1521.4 7, I_{γ} =45 8 in table 1 of 2011Bo09. I_{γ} : I(1570 γ)=80 5:100 5 (2011Bo09). Other E_{γ} (I_{γ}): 1523.16 17 (218 21) (1993Pr09).
^x 1526.4 6		24 10		
1527.9& 8	1734.72			I_{γ} : I(1323 γ)=90 30:100 20 (2011Bo09).
1528.68 23	1628.24	130 20		I_{γ} : I(1612 γ)=30 2:100 5 (2011Bo09). Other E_{γ} (I_{γ}): 1529.28 13 (229 21) (1993Pr09); presumably for 1529 γ +1530 γ doublet.
^x 1530.3@ 4		100 20		Other E_{γ} (I_{γ}): 1529.28 13 (229 21) (1993Pr09); presumably for 1529 γ +1530 γ doublet.
1532& 1	1633.33			I_{γ} : I(1634 γ)=16 10:100 13 (2011Bo09).
1532 ^a	1823.87	=7		From I_{γ} : I(1615 γ)=1:100 3 in table 2 and I(1615 γ) in table 1 of 2011Bo09.
^x 1537.5 6		37 16		
1540 ^a	1586.52	=30		I_{γ} : from I_{γ} : I(1587 γ)=17:100 23 in table 2 and I(1587 γ) in table 1 of 2011Bo09. E_{γ} =1540.5 9, I_{γ} =40 20 in table 1 for complex line (2011Bo09). Other E_{γ} (I_{γ}): 1539.5 4 (30 8; I_{γ} corrected for escape-peak contamination) (1993Pr09).
1542.08& 15	1833.78			I_{γ} : I(1625 γ)=70 19:100 21 (2011Bo09).
1543.3& 7	2612.7	47 21		Other E_{γ} (I_{γ}): 1543.38 21 (104 10) (1993Pr09).
1545.0& 14	1837.2			I_{γ} : I(1629 γ)=57 25:100 25 (2011Bo09). E_{γ} =1545.3 3, I_{γ} =55 7 in table 1 for complex line that primarily deexcites the 2482 level (2011Bo09).
1545.3& 3	2481.47	55 7		
1552.1 5	1964.74	41 9		I_{γ} : I(1918 γ)=68 15:100 8 (2011Bo09).
^x 1554.1 4		56 8		

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$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
1556.28 9	1556.24	256 6		$I\gamma$: I(1510 γ)=94 6:100 6 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1555.69 12 (322 31) (1993Pr09); 1555.60 25 (255 55) (2007ChZX).
1561.73g 16	1660.59	63 6		
1565.51 11	1612.06	128 6		$I\gamma$: I(1612 γ)=67 4:100 5 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1564.4 5 (125 21) (1993Pr09).
1569.80# 10	1569.86	230# 6		Other $E\gamma$ ($I\gamma$): 1569.5 3 (291 31) (1993Pr09).
1573.52 11	1672.76	121 7		$I\gamma$: I(1626 γ)=12 1:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1573.6 3 (156 21) (1993Pr09).
1575.8 13	1784.58	19 7		$I\gamma$: I(1373 γ)=39 15:100 12 (2011Bo09).
1580.6 5	1789.55	=50		$I\gamma$: I(1790 γ)=50 20:100 33 (2011Bo09).
1581.4 3	1628.24	170 50		$I\gamma$: I(1612 γ)=33 2:100 5 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1581.55 17 (322 31) (1993Pr09).
^x 1584.2 4		41 13		
1586.83# 12	1586.52	178# 6		Other $E\gamma$ ($I\gamma$): 1587.32 24 (229 21) (1993Pr09); may include 1589.8 γ . Placed by 1997Pr02 from 1633 level.
1586.9& 7	1633.33			$I\gamma$: I(1634 γ)=84 14:100 13 (2011Bo09). See comment on 1587 γ from 1587 level.
1589.8 3	2615.46	44 6		
1595.09 4	1886.66	412 5		Other $E\gamma$ ($I\gamma$): 1595.11 11 (478 31) (1993Pr09).
^x 1599.55 21		49 5		
1602 ^a	1893.84	=18		$I\gamma$: from $I\gamma$: I(1848 γ)=10:100 8 in table 2 and I(1848 γ) in table 1 of 2011Bo09.
1602.43 7	1811.12	281 7		$I\gamma$: I(1765 γ)=99 4:100 4 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1602.25 15 (343 31) (1993Pr09).
1609.4# 3	1900.85	44# 6		$I\gamma$: I(1692 γ)=6:100 12 (2011Bo09).
1612.16 7	1612.06	191 5		Other $E\gamma$ ($I\gamma$): 1610.7 4 (166 31) (1993Pr09); possibly for 1609 γ +1612 γ doublet.
1614 1	1660.59			$I\gamma$: I(1661 γ)=49 16:100 16 (2011Bo09). Placement from table 2. $E\gamma$ =1615.06 7 ($I\gamma$ =669 36) from table 1 primarily deexcites the 1824 level (2011Bo09). Other $E\gamma$ ($I\gamma$): 1615.13 9 (905 52) (1993Pr09); probably for 1615 γ to 1617 γ multiplet.
1615.06 7	1823.87	669 26		Other $E\gamma$ ($I\gamma$): 1615.13 9 (905 52) (1993Pr09); primarily deexcites 1661 level.
1617.7& 6	1663.63			$E\gamma$ =1616.7 3, $I\gamma$ =165 24 in table 1 of 2011Bo09.
1618.8g 7	2522.53	31 7		
1624.6& 9	1915.40			$I\gamma$: I(1916 γ)=60 30:100 11 (2011Bo09).
1625.1& 11	1833.78			
1626.29 8	1672.76	748 16		Other $E\gamma$ ($I\gamma$): 1627.09 5 (1331 73) for doublet (1993Pr09); presumably for 1626 γ +1628 γ doublet. 1997Pr02 estimate $I\gamma$ =562 for this placement.
1628.35 8	1628.24	589 16		Other $E\gamma$ ($I\gamma$): 1627.09 5 (1331 73) for doublet (1993Pr09); presumably for 1626 γ +1628 γ doublet. 1997Pr02 estimate $I\gamma$ =770 for this placement.
1628.5& 6	1837.2			$E\gamma$ =1626.29 8, $I\gamma$ =748 16 in table 1 of 2011Bo09.
1631.52 13	1730.50	108 12		$I\gamma$: I(1684 γ)=53 6:100 5 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1633.07 20 (291 31) (1993Pr09); probably for 1632 γ +1634 γ doublet.
1633.77 23	1633.33	182 12		Other $E\gamma$ ($I\gamma$): 1633.07 20 (291 31) (1993Pr09); probably for 1632 γ +1634 γ doublet.
^x 1636.4 5		38 13		
^x 1640.2 3		26 7		
^x 1646.9 3		55 24		Other $E\gamma$ ($I\gamma$): 1647.1 3 (69 9) (1993Pr09).
1652.9& 8	1944.31			$I\gamma$: I(1736 γ)=5 1:100 2 (2011Bo09). $E\gamma$ =1652.33 8, $I\gamma$ =234 6 in table 1 for complex line (2011Bo09). Other $E\gamma$ ($I\gamma$): 1652.59 8 (250 21) (1993Pr09); may include 1654.9 γ .
^x 1654.9 4		31 7		
1660.59 11	1660.59	182 9		Other $E\gamma$ ($I\gamma$): 1661.03 9 (250 21) (1993Pr09); probably for 1661 γ to 1663 γ multiplet.
1660.7& 4	1869.70			$I\gamma$: I(1870 γ)=23 4:100 7 (2011Bo09).
1663.2 3	1663.63	61 6		$I\gamma$: I(1618 γ)=29 13:100 15 (2011Bo09).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(n,\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
1672.86# 11	1672.76	121# 6		$I\gamma$: I(1626 γ)=14 1:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1672.66 15 (156 10) (1993Pr09).
1673.4& 20	1964.74			$I\gamma$: I(1918 γ)=30 20:100 8 (2011Bo09).
1674 ^a	2126.38	=9		$I\gamma$: from $I\gamma$: I(2080 γ)=4:100 4 in table 2 and I(2080 γ) in table 1 of 2011Bo09.
1677.2& 5	1886.66			$I\gamma$: I(1595 γ)=11 2:100 3 (2011Bo09). $E\gamma$ =1676.3 6, $I\gamma$ =25 6 in table 1 of 2011Bo09.
				Other $E\gamma$ ($I\gamma$): 1677.5 3 (68 9) (1993Pr09); probably for 1677 γ +1678 γ doublet.
1678.0 5	2612.7	48 6		Other $E\gamma$ ($I\gamma$): 1677.5 3 (68 9) (1993Pr09); probably for 1677 γ +1678 γ doublet.
1684.11 7	1730.50	234 5		Other $E\gamma$ ($I\gamma$): 1684.36 8 (229 21) (1993Pr09).
1686.3& 16	2099.27			$I\gamma$: I(1891 γ)=18 9:100 15 (2011Bo09).
1690.6# 3	1982.22	152# 44		Other $E\gamma$ ($I\gamma$): 1691.44 5 (395 21) (1993Pr09); presumably for 1691 γ +1692 γ doublet.
1692.1 3	1900.85	142 42		Other $E\gamma$ ($I\gamma$): 1691.44 5 (395 21) (1993Pr09) γ indicated as a doublet by 1997Pr02 but not by 1993Pr09.
1694.6# 3	2629.19	56# 12		
1698.93 10	1990.54	117 7		Other $E\gamma$ ($I\gamma$): 1698.69 20 (83 12) (1993Pr09); placed from a 1906 level by 1997Pr02.
1707.5& 9	1915.40			$I\gamma$: I(1916 γ)=45 20:100 11 (2011Bo09).
1711.7& 15	1811.12			$I\gamma$: I(1765 γ)=5 3:100 4 (2011Bo09).
1711.9& 4	2164.85			$I\gamma$: I(2118 γ)=12 3:100 3 (2011Bo09).
1713.7& 6	2126.38			$I\gamma$: I(2080 γ)=7 3:100 4 (2011Bo09).
^x 1719.3 3		43 7		Other $E\gamma$ ($I\gamma$): 1719.6 4 (53 9) (1993Pr09).
^x 1723.2 3		59 6		
1725.77 14	1725.65	171 7		Other $E\gamma$ ($I\gamma$): 1724.98 15 (187 10) (1993Pr09).
1730.7 3	1730.50	58 8		$I\gamma$: I(1684 γ)=23 4:100 5 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1729.9 3 (87 9) (1993Pr09).
1735.56 7	1944.31	796 16		Other $E\gamma$ ($I\gamma$): 1735.63 4 (863 42) (1993Pr09) for doublet. 1997Pr02 estimate $I\gamma$ =686 for this placement.
1736 ^a	1833.78	28 21		$I\gamma$: from $I\gamma$: I(1625 γ)=28 22:100 21 in table 2 and I(1625 γ) in table 1 of 2011Bo09.
1737.1& 6	2028.48			$I\gamma$: I(2029 γ)=46 7:100 6 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1735.63 4 (863 52) (1993Pr09) for doublet. 1997Pr02 estimate $I\gamma$ =177 for this placement.
1742.4@ 3	2768.57	70 5		Other $E\gamma$ ($I\gamma$): 1743.60 22 (84 11) (1993Pr09).
1743 ^a	1789.55	=15		$I\gamma$: from $I\gamma$: I(1790 γ)=15:100 33 in table 2 and I(1790 γ) in table 1 of 2011Bo09.
1746.1 4	2772.9	49 25		
^x 1750.1 5		38 16		Other $E\gamma$ ($I\gamma$): 1751.6 3 (60 12) (1993Pr09); may include 1750 γ .
^x 1752.7 3		85 16		Other $I\gamma$: 44 22 from (n, γ) E=4.1 eV.
1752.9& 12	2164.85			$I\gamma$: I(2118 γ)=6 2:100 3 (2011Bo09).
1757.3& 16	1964.74			$I\gamma$: I(1918 γ)=43 18:100 8 (2011Bo09).
^x 1758.7@ 3		37 6		Other $E\gamma$ ($I\gamma$): 1760.3 6 (60 11) (1993Pr09); probably for 1759 γ +1762 γ doublet.
1762.3& 4	2697.0	48 8		Other $E\gamma$ ($I\gamma$): 1760.3 6 (60 11) (1993Pr09); probably for 1759 γ +1762 γ doublet.
1764.59 12	1811.12	267 8		Other $E\gamma$ ($I\gamma$): 1764.65 9 (312 31) (1993Pr09).
1767.5 4	2059.37	29 7		$I\gamma$: I(1851 γ)=26 9:100 7 (2011Bo09).
^x 1770.2 4		36 8		Other $E\gamma$ ($I\gamma$): 1771.2 4 (47 11) (1993Pr09).
1777 ^a	1823.87	13 7		$I\gamma$: from $I\gamma$: I(1615 γ)=2 1:100 3 in table 2 and I(1615 γ) in table 1 of 2011Bo09.
^x 1777.5 3		63 5		
^x 1779.9 6		41 5		
1782.4 3	1990.54	69 6		$I\gamma$: I(1699 γ)=58 15:100 15 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 1782.68 24 (94 12) (1993Pr09); may include 1784 γ .
1783 ^a	2235.73	=15		$I\gamma$: from $I\gamma$: I(901 γ)=8:16 6 in table 2 and I(901 γ) in table 1 of 2011Bo09.
1784 ^a	1990.54	=19		$I\gamma$: from $I\gamma$: I(1699 γ)=16:100 15 in table 2 and I(1699 γ) in table 1 of 2011Bo09.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\dagger f}$	Mult.	Comments
1786.6& 12	1886.66			I_{γ} :I(1595 γ)=6 2:100 3 (2011Bo09). E γ =1785.7 5, I_{γ} =36 7 in table 1 of 2011Bo09.
1787.8& 12	1833.78			I_{γ} :I(1625 γ)=48 10:100 21 (2011Bo09).
1789.5 8	1789.55	99 33		Other E γ (I_{γ}): 1789.88 13 (146 10) (1993Pr09).
^x 1790.8 9		73 32		
1795.76 10	2699.22	140 5		Other E γ (I_{γ}): 1795.9 3 (114 21) (1993Pr09).
^x 1799.4 4		71 7		Other E γ (I_{γ}): 1799.4 8 (50 14) (1993Pr09).
1800 ^a	2091.5	=10		I_{γ} : from I_{γ} :I(2092 γ)=20:60 30 in table 2 and I(2092 γ) in table 1 of 2011Bo09.
1801.4 8	1900.85	32 7		I_{γ} :I(1692 γ)=10 7:100 12 (2011Bo09).
^x 1805.8 4		35 5		
1807.7& 19	2099.27			I_{γ} :I(1891 γ)=25 11:100 15 (2011Bo09).
^x 1808.5 6		21 5		Other E γ (I_{γ}): 1807.1 8 (30 17) (1993Pr09). Placed by 1997Pr02 from a 1906 level.
1811.1 5	1811.12	11 4		I_{γ} :I(1765 γ)=8 2:100 4 (2011Bo09).
^x 1814.0 5		19 4		Other E γ (I_{γ}): 1814.3 4 (60 17); I_{γ} corrected for escape-peak contamination) (1993Pr09); possibly for 1814 γ +1816 γ doublet.
1816.2& 3	1915.40	53 5		Other E γ (I_{γ}): 1814.3 4 (60 17) (1993Pr09); possibly for 1814 γ +1816 γ doublet.
1818.8& 20	2722.94	86 5		Other E γ (I_{γ}): 1818.6 4 (125 21) (1993Pr09); possibly for multiplet.
1819.6& 6	2028.48			I_{γ} :I(2029 γ)=17 4:100 6 (2011Bo09).
^x 1821.3 4		25 5		Other E γ (I_{γ}): 1823.5 5 (59 4) (1993Pr09); possibly for 1821 γ +1824 γ doublet.
1824.0 4	1823.87	24 5		I_{γ} :I(1615 γ)=5 1:100 3 (2011Bo09).
				Other E γ (I_{γ}): 1823.5 5 (59 4) (1993Pr09); possibly for 1821 γ +1824 γ doublet.
1824 ^a	1869.70	7 4		I_{γ} : from I_{γ} :I(1870 γ)=4 2:100 7 in table 2 and I(1870 γ) in table 1 of 2011Bo09.
^x 1829.8 4		19 4		Other E γ (I_{γ}): 1830.8 5 (48 15) (1993Pr09); possibly for 1830 γ +1831 γ +1834 γ multiplet.
1831 ^a	2282.99	=9		I_{γ} : from I_{γ} :I(1133 γ)=7 4:24 5 in table 2 and I(1133 γ) in table 1 of 2011Bo09.
1834.2 5	1833.78	33 4		I_{γ} :I(1625 γ)=27 8:100 21 (2011Bo09).
				Other E γ (I_{γ}): 1830.8 5 (48 15) (1993Pr09); possibly for 1830 γ +1831 γ +1834 γ multiplet.
1836 ^a	2126.38	14 7		I_{γ} : from I_{γ} :I(2080 γ)=6 3:100 4 in table 2 and I(2080 γ) in table 1 of 2011Bo09.
1837.1& 11	1837.2			I_{γ} :I(1629 γ)=72 27:100 25 (2011Bo09).
				E γ =1837.32 15, I_{γ} =173 5 in table 1 of 2011Bo09 for complex line.
				Other E γ (I_{γ}): 1837.35 10 (250 31) (1993Pr09).
1839.8 4	1886.66	30 5		I_{γ} :I(1595 γ)=15 2:100 3 (2011Bo09).
1844.2& 15	1944.31			I_{γ} :I(1736 γ)=2 1:100 2 (2011Bo09).
1847.74 14	1893.84	182 5		Other E γ (I_{γ}): 1848.31 13 (239 21) (1993Pr09); may include 1851 γ .
1850.6 4	2059.37	100 5		
1852.6& 18	2059.37			I_{γ} :I(1851 γ)=17 8:100 7 (2011Bo09).
1854.16 [#] 18	1900.85	115 [#] 5		I_{γ} :I(1692 γ)=36 10:100 12 (2011Bo09).
				Other E γ (I_{γ}): 1853.7 4 (125 21) (1993Pr09); possibly for 1853 γ +1854 γ doublet.
^x 1857.0 6		21 5		Other E γ (I_{γ}): 1857.8 14 (37 15) (1993Pr09).
^x 1859.8 6		=7		
1864.7& 19	2157.50	32 6		I_{γ} :I(2158 γ)=18 12:100 22 (2011Bo09).
				E γ =1865.3 5, I_{γ} =32 6 in table 1 of 2011Bo09.
1868.6& 9	1915.40			I_{γ} :I(1916 γ)=90 30:100 11 (2011Bo09).
				E γ =1867.6 9, I_{γ} =37 6 in table 1 of 2011Bo09.
1869.75 18	1869.70	166 6		Other E γ (I_{γ}): 1869.48 15 (218 21) (1993Pr09); possibly for 1868 γ +1870 γ doublet.
1872 ^a	2282.99	=7		I_{γ} : from I_{γ} :I(1133 γ)=5:24 5 in table 2 and I(1133 γ) in table 1 of 2011Bo09.
1872.8 6	2164.85	28 4		I_{γ} :I(2118 γ)=10 2:100 3 (2011Bo09).
1876.2& 6	2813.42	22 4		Other E γ (I_{γ}): 1876.0 12 (27 17) (1993Pr09). Placed by 1997Pr02 from 2165 level.

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$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
1877 ^a	2169.81	=3		$I\gamma$: from $I\gamma$:I(895 γ)=10:100 13 in table 2 and I(895 γ) in table 1 of (2011Bo09). Other $E\gamma$ ($I\gamma$): 895.7 15 (19 10) (1993Pr09).
1885.8& 12	2176.77			$I\gamma$:I(2177 γ)=5 2:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1885.07 25 (146 21) (1993Pr09); probably for 1885 γ +1888 γ doublet.
1886.5& 7	1886.66			$I\gamma$:I(1595 γ)=18 2:100 3 (2011Bo09). $E\gamma$ =1884.8 3, $I\gamma$ =88 5 in table 1 of 2011Bo09. Other $E\gamma$ ($I\gamma$): 1885.07 25 (146 21) (1993Pr09).
^x 1887.9 6		34 4		Other $E\gamma$ ($I\gamma$): 1885.07 25 (146 21) (1993Pr09); probably for 1886 γ +1888 γ doublet.
1890.77 24	2099.27	80 4		Other $E\gamma$ ($I\gamma$): 1890.96 25 (146 21) for doublet (1993Pr09). 1997Pr02 estimate $I\gamma$ =6.2 for this placement.
1891 ^a	1990.54	=15		$I\gamma$: from $I\gamma$:I(1699 γ)=13:100 15 in table 2 and I(1699 γ) in table 1 of 2011Bo09. Other $E\gamma$ ($I\gamma$): 1890.96 25 (146 21) (1993Pr09) for doublet. 1997Pr02 estimate $I\gamma$ =83 for this placement.
1894.20 24	1893.84	69 4		$I\gamma$:I(1848 γ)=53 8:100 8 (2011Bo09).
1897.88 14	1944.31	174 5		$I\gamma$:I(1736 γ)=21 2:100 2 (2011Bo09).
1900.2& 23	1900.85			Other $E\gamma$ ($I\gamma$): 1897.58 15 (229 31) (1993Pr09). $I\gamma$:I(1692 γ)=12 7:100 12 (2011Bo09). $E\gamma$ =1901.1 4, $I\gamma$ =35 6 in table 1 for complex line (2011Bo09).
^x 1906.6 5		26 6		Other $E\gamma$ ($I\gamma$): 1907.1 4 (59 23; $I\gamma$ corrected for escape-peak contamination) (1993Pr09); probably for 1907 γ +1909 γ doublet.
^x 1908.7 7		15 6		Other $E\gamma$ ($I\gamma$): 1907.1 4 (59 23) (1993Pr09); probably for 1907 γ +1909 γ doublet.
1915.7 4	1915.40	26 5		
1917.4& 12	2126.38			$I\gamma$:I(2080 γ)=10 4:100 4 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1917.5 6 (63 17) (1993Pr09).
1918.3 4	1964.74	60 5		Other $E\gamma$ ($I\gamma$): 1917.5 6 (63 17) (1993Pr09); may include 1916 γ .
^x 1921.1 4		43 5		Other $E\gamma$ ($I\gamma$): 1922.2 5 (68 18) (1993Pr09); probably for 1921 γ +1924 γ doublet.
^x 1923.5 4		32 5		See comment on 1921 γ .
1929.0@ 3	2028.48	32 5		$I\gamma$:I(2029 γ)=19 4:100 6 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1928.7 5 (59 17) (1993Pr09).
^x 1933.0 5		17 4		See comment on 1936 γ .
1935.9 4	1982.22	37 5		$I\gamma$:I(1691 γ)=38 5:100 16 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1935.2 4 (73 22) (1993Pr09); probably for 1933 γ +1936 γ doublet.
^x 1941.2 4		28 5		
1944 ^a	2235.73	=24		$I\gamma$: from $I\gamma$:I(901 γ)=13 8:16 6 in table 2 and I(901 γ) in table 1 of 2011Bo09. Other $E\gamma$ ($I\gamma$): 1944.46 18 (146 31) for doublet (1993Pr09). 1997Pr02 estimate $I\gamma$ =83 for this placement.
1944.42 24	1944.31	105 5		$I\gamma$:I(1736 γ)=8 2:100 2 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1944.46 18 (146 31) (1993Pr09) for doublet. 1997Pr02 estimate $I\gamma$ =58 for this placement.
1944.6& 8	1990.54			$I\gamma$:I(1699 γ)=96 16:100 15 (2011Bo09).
^x 1947.0 5		15 5		
1950.4& 14	2157.50			$I\gamma$:I(2158 γ)=20 12:100 22 (2011Bo09). $E\gamma$ =1950.6 4, $I\gamma$ =30 5 in table 1 of 2011Bo09.
1956.2 [#] 3	2164.85	95 [#] 5		$I\gamma$:I(2118 γ)=30 3:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1957.06 21 (125 31) (1993Pr09). May include 1959 γ . $I\gamma$ corrected for escape-peak contamination.
1957.3& 16	2248.10			$I\gamma$:I(2202 γ)=13 3:100 5 (2011Bo09).
^x 1958.7 5		12 5		
1964.4 5	1964.74	21 6		$I\gamma$:I(1918 γ)=35 10:100 8 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1962.5 4 (52 25; $I\gamma$ corrected for escape-peak contamination) (1993Pr09); apparently includes a contaminant.
1968.33 21	2176.77	72 7		$I\gamma$:I(2177 γ)=14 2:100 3 (2011Bo09). Other $E\gamma$ ($I\gamma$): 1967.8 3 (135 31) (1993Pr09); apparently includes a contaminant.

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$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\dagger f}$	Mult.	Comments
1975.3 4	2266.31	26 6		I_{γ} :I(2266 γ)=32 8:100 14 (2011Bo09). 2011Bo09 report that this γ deexcites a 2066 level, but E_{γ} does not fit that placement; E(level) is presumably misprinted and should have been 2266 instead (consistent with table 2 of 2011Bo09). Other E_{γ} (I_{γ}): 1975.03 4 (73 42) (1993Pr09).
1982.2& 10	2028.48			I_{γ} :I(2029 γ)=43 11:100 6 (2011Bo09).
1982.41 23	1982.22	176 6		I_{γ} :I(1691 γ)=90 16:100 16 (2011Bo09). Other E_{γ} (I_{γ}): 1982.41 23 (208 21; I_{γ} corrected for escape-peak contamination) (1993Pr09); probably for 1982 γ doublet.
^x 1986.4 4		28 6		
1990.16 23	1990.54	61 6		I_{γ} :I(1699 γ)=54 13:100 15 (2011Bo09). Other E_{γ} (I_{γ}): 1989.5 4 (76 18; I_{γ} corrected for escape-peak contaminant) (1993Pr09).
1992.0& 16	2282.99			E_{γ} =1993.2 5, I_{γ} =28 7 in table 1 for complex line (2011Bo09). I_{γ} :I(1133 γ)=9 3:24 5 (2011Bo09). Other E_{γ} (I_{γ}): 1993.4 8 (46 14) (1993Pr09).
1992.4& 17	2091.5	=15		I_{γ} : from I_{γ} :I(2092 γ)=30 20:60 30 in table 2 and I(2092 γ) in table 1 of 2011Bo09.
^x 1997.0 7		16 6		
2000.6& 14	2209.07			I_{γ} :I(2163 γ)=10:100 10 (2011Bo09).
^x 2000.8 3		48 7		Other E_{γ} (I_{γ}): 2001.6 3 (48 15; I_{γ} corrected for escape-peak contamination) (1993Pr09).
^x 2004.5 3		39 6		
^x 2010.8 7		36 13		
2012.8 4	2059.37	97 12		I_{γ} :I(1851 γ)=82 11:100 7 (2011Bo09). Other E_{γ} (I_{γ}): 2012.80 21 (82 18) (1993Pr09). I_{γ} :I(2304 γ)=11 3:100 4 (2011Bo09).
2013.6& 13	2303.94			
^x 2015.8 5		45 8		
2022.3 7	2231.48	73 10		Other E_{γ} (I_{γ}): 2022.19 23 (125 10) (1993Pr09).
^x 2026.4 7		48 10		
2027.6& 6	2126.38			I_{γ} :I(2080 γ)=4:100 4 (2011Bo09).
2028.1& 16	2235.73			I_{γ} :I(2137 γ)=35 9:100 8 (2011Bo09).
2028.61 21	2028.48	201 15		Other E_{γ} (I_{γ}): 2028.21 12 (250 21) (1993Pr09).
2034.5& 4	2324.81			I_{γ} :I(2326 γ)=18 11:100 14 (2011Bo09). E_{γ} =2033.4 3, I_{γ} =69 6 in table 1 of 2011Bo09. Other E_{γ} (I_{γ}): 2034.0 3 (98 15) (1993Pr09); possibly for 2034 γ +2036 γ doublet.
^x 2035.8 4		52 6		
2039.2& 23	2248.10			I_{γ} :I(2202 γ)=7 3:100 5 (2011Bo09).
2043.8& 12	2091.5	=52		I_{γ} : from I_{γ} :I(2092 γ)=100 30:60 30 in table 2 and I(2092 γ) in table 1 of 2011Bo09. E_{γ} =2045.04 18, I_{γ} =66 5 in table 1 of 2011Bo09. Other E_{γ} (I_{γ}): 2045.0 5 (59 17) (1993Pr09).
^x 2050.2@ 7		20 5		
2052.3& 16	2099.27			I_{γ} :I(1891 γ)=24 10:100 15 (2011Bo09).
^x 2054.2 15		19 5		
2056.6 8	2266.31	36 9		I_{γ} :I(2266 γ)=14 4:100 14 (2011Bo09).
2059.1& 16	2157.50			I_{γ} :I(2158 γ)=50 21:100 22 (2011Bo09).
2059.9& 10	2059.37			I_{γ} :I(1851 γ)=50 6:100 7 (2011Bo09). E_{γ} =2059.0 7, I_{γ} =71 10 in table 1 for complex line (2011Bo09). Other E_{γ} (I_{γ}): 2058.6 5 (87 18) (1993Pr09); possibly for 2057 γ +2059 γ doublet.
^x 2062.6@ 5		78 14		Other E_{γ} (I_{γ}): 2062.6 3 (86 19; I_{γ} corrected for escape-peak contamination) (1993Pr09).
2072 ^a	2169.81	4 2		I_{γ} : from I_{γ} :I(895 γ)=16 6:100 13 in table 2 and I(895 γ) in table 1 of 2011Bo09. Other E_{γ} (I_{γ}): 2072.40 21 (70 17; I_{γ} corrected for escape-peak contamination) (1993Pr09).
2074.2 ^g 4	2282.99	50 5		I_{γ} :I(1133 γ)=38 13:24 5 (2011Bo09).
2077.3& 16	2367.4	28 13		E_{γ} =2077.8 6, I_{γ} =28 13 in table 1 of 2011Bo09 for doublet. I_{γ} :I(2366 γ)=32 9: =83 (2011Bo09).
2079 ^a	2176.77	=5		I_{γ} : from I_{γ} :I(2177 γ)=1:100 3 in table 2 and I(2079 γ) in table 1 of 2011Bo09.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
2080.0 3	2126.38	233 17		Other $E\gamma$ ($I\gamma$): 2080.19 8 (364 31) (1993Pr09).
2080& 2	2369.07			$I\gamma$: I(2369 γ)=22 11:=100 (2011Bo09).
				$E\gamma$ =2077.8 6, $I\gamma$ =28 13 in table 1 of 2011Bo09 for doublet.
^x 2082.4 4		62 7		
^x 2085.7 6		20 6		
^x 2088.6 7		9 3		
2092.3& 4	2091.5	31 5		
2093.2& 18	2384.09			$I\gamma$: I(2286 γ)=26 7:100 10 (2011Bo09).
2097 ^a	2303.94	=11		$I\gamma$: from $I\gamma$: I(2304 γ)=5:100 4 in table 2 and I(2304 γ) in table 1 of 2011Bo09.
2098.1& 5	2098.1	43 8		
2099.3& 13	2099.27			$I\gamma$: I(1891 γ)=34 16:100 15 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2099.8 7 (40 17) (1993Pr09); probably for 2099 γ +2101 γ .
2100.6 7	2392.71	29 8		Other $E\gamma$ ($I\gamma$): 2099.8 7 (40 17) (1993Pr09); probably for 2099 γ +2101 γ .
^x 2106.2 4		36 9		Other $E\gamma$ ($I\gamma$): 2107.8 7 (50 14) (1993Pr09).
2110.1& 8	2522.53	39 9		
2111.8& 16	2157.50			$I\gamma$: I(2158 γ)=50 21:100 22 (2011Bo09).
^x 2112.3 6		42 9		Other $E\gamma$ ($I\gamma$): 2112.5 3 (74 17) for multiplet (1993Pr09).
2118.34 8	2164.85	256 6		Other $E\gamma$ ($I\gamma$): 2118.28 9 (281 21) (1993Pr09).
^x 2123.6 5		52 12		
2126.4 [#] 3	2126.38	92 [#] 9		$I\gamma$: I(2080 γ)=27 4:100 4 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2124.7 3 (99 12) (1993Pr09); possibly includes 2124 γ .
2129.60 13	2176.77	166 9		$I\gamma$: I(2177 γ)=35 6:100 3 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2129.55 16 (166 10) (1993Pr09).
^x 2134.6 7		18 9		
2136.9 [#] 5	2235.73	106 [#] 11		Other $E\gamma$ ($I\gamma$): 2136.85 14 (103 14; $I\gamma$ corrected for escape-peak contaminant) (1993Pr09).
^x 2145.9 6		11 5		
^x 2152.7 8		39 10		
2157.7 4	2157.50	45 17		Other $E\gamma$ ($I\gamma$): 2158.4 5 (59 15) (1993Pr09).
2158& 2	2367.4			$I\gamma$: I(2366 γ)=17: =83 (2011Bo09).
				$E\gamma$ =2160.7 6, $I\gamma$ =80 13 in table 1 for doublet (2011Bo09).
2162.0& 6	2369.07	80 13		$I\gamma$: I(2369 γ)=86 13:=100 (2011Bo09).
				$E\gamma$ =2160.7 6, $I\gamma$ =80 13 in table 1 of 2011Bo09 for doublet.
2162.8 5	2209.07	102 14		Other $E\gamma$ ($I\gamma$): 2162.2 4 (125 21) (1993Pr09).
2165.8 7	2164.85	48 7		$I\gamma$: I(2118 γ)=9 3:100 3 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2166.6 8 (51 15) (1993Pr09).
^x 2168.0 7		32 7		
2176.3& 12	2384.09			$I\gamma$: I(2286 γ)=66 10:100 10 (2011Bo09).
2177.0 5	2176.77	468 6		Other $E\gamma$ ($I\gamma$): 2177.21 5 (468 31) (1993Pr09).
^x 2181.2 4		32 10		
2183.3& 18	2282.99			$I\gamma$: I(1133 γ)=6 4:24 5 (2011Bo09).
2184.02 8	2392.71	240 6		
2184.6& 16	2231.48			$I\gamma$: I(2022 γ)=27 10:100 14 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2184.03 9 (239 21) (1993Pr09).
2189.5@ 6	2481.47	57 22		Other $E\gamma$ ($I\gamma$): 2189.66 21 (46 14) (1993Pr09).
2196.68& 22	(6190.992)	63 5		
2201.71 [#] 9	2248.10	180 [#] 6		Other $E\gamma$ ($I\gamma$): 2202.19 23 (135 21) (1993Pr09).
2203 ^a	2303.94	=11		$I\gamma$: from $I\gamma$: I(2304 γ)=5:100 4 in table 2 and I(2304 γ) in table 1 of 2011Bo09.
^x 2205.15 24		55 10		
2209.2& 3	2209.07	120 [#] 13		$I\gamma$: I(2163 γ)=74 11:100 10 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2209.6 3 (98 15) (1993Pr09).
2211.3 8	2503.28	34 12		
^x 2214.0 4		21 5		
2231.1 4	2231.48	15 4		$I\gamma$: I(2022 γ)=21 6:100 14 (2011Bo09).
^x 2233.6 4		28 5		
2236.2& 7	2235.73			$I\gamma$: I(2137 γ)=83 10:100 8 (2011Bo09).
				Other $E\gamma$ ($I\gamma$): 2236.17 14 (260 21) (1993Pr09).
2236.46 [#] 9	2282.99	211 [#] 14		$I\gamma$: I(1133 γ)=100 6:24 5 (2011Bo09).
^x 2240.2 6		39 12		
2242.2 4	2450.59	65 12		Other $E\gamma$ ($I\gamma$): 2243.4 6 (61 14) (1993Pr09).
2246.26 23	2292.61	49 8		$I\gamma$: I(2293 γ)=70 13:100 11 (2011Bo09).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\dagger f}$	Mult.	Comments
2248.8& 12	2248.10			I_{γ} :I(2202 γ)=15 3:100 5 (2011Bo09). E_{γ} =2249.65 19, I_{γ} =56 8 in table 1 for complex line (2011Bo09). Other E_{γ} (I_{γ}): 2249.0 5 (69 14) (1993Pr09).
^x 2254.8 5		=12		
2258.01 21	2303.94	41 6		I_{γ} :I(2304 γ)=27 5:100 4 (2011Bo09). Other E_{γ} (I_{γ}): 2257.3 4 (59 15) (1993Pr09).
2262.3& 4	2715.53	10 6		
2266.1 3	2266.31	62 7		Other E_{γ} (I_{γ}): 2267.23 22 (125 21) (1993Pr09); presumably for 2266 γ +2269 γ doublet.
2268& 2	2367.4			I_{γ} :I(2366 γ)=29 9: =83 (2011Bo09).
2268.6&# 3	(6190.992)	61# 6		
2271& 2	2369.07			I_{γ} :I(2369 γ)=22 9: =100 (2011Bo09).
2273.5@ 5	2481.47	34 10		
2278.5 4	2324.81	26 12		I_{γ} :I(2326 γ)=23 8:100 14 (2011Bo09).
2283.1& 16	2282.99			I_{γ} :I(1133 γ)=6 4:24 5 (2011Bo09). E_{γ} =2283.6 5, I_{γ} =44 16 in table 1 for complex line (2011Bo09). E_{γ} : presumably from coincidence data, but not so indicated in table 2 of 2011Bo09; E_{γ} =2285.5 4, I_{γ} =92 16 in table 1 for complex line.
2285.8& 8	2384.09			Other E_{γ} (I_{γ}): 2285.41 17 (76 11; I_{γ} corrected for escape-peak contamination) (1993Pr09).
^x 2288.4 16		22 7		
2292.9@ 3	2292.61	87 6		Other E_{γ} (I_{γ}): 2293.04 22 (94 9) (1993Pr09).
^x 2297.8 6		16 4		
2304.18 12	2303.94	214 8		Other E_{γ} (I_{γ}): 2304.33 12 (218 21) (1993Pr09).
2307.8@g 4	2517.50	49 4		
2314.3@ 4	2523.01	19 5		
2319ag	2367.4			I_{γ} :I(2366 γ)=4: =83 (2011Bo09). E_{γ} =2319.8 6, I_{γ} =68 5 from table 1 of 2011Bo09 presumably includes this transition. Other E_{γ} (I_{γ}): 2320.78 25 (98 12) (1993Pr09); presumably for 2320 γ +2322 γ doublet.
2323.3& 11	2369.07			I_{γ} :I(2369 γ)=57 11: =100 (2011Bo09). E_{γ} =2322.2 5, I_{γ} =40 5 in table 1 of 2011Bo09 for doublet. See comment on 2319 γ .
2325.9& 8	2324.81			E_{γ} =2325.17 14, I_{γ} =230 13 in table 1 for complex line which may be partly a primary γ (2011Bo09). Other E_{γ} (I_{γ}): 2325.54 12 (364 21) (1993Pr09).
2327.4& 3	2535.18	93 15		
2332.2 6	2623.05	39 6		Other E_{γ} (I_{γ}): 2332.7 6 (85 22) (1993Pr09).
^x 2334.9 6		25 5		
2337.4 7	2384.09	34 5		I_{γ} :I(2286 γ)=84 10:100 10 (2011Bo09). Other E_{γ} (I_{γ}): 2336.3 5 (69 21) (1993Pr09).
^x 2342.5e 9		57 14		
2346.2 3	2392.71	63 7		Other E_{γ} (I_{γ}): 2346.8 5 (125 10) (1993Pr09).
^x 2351.3 4		120 11		Other E_{γ} (I_{γ}): 2351.71 22 (198 21) (1993Pr09).
^x 2356.9 6		51 25		Other E_{γ} (I_{γ}): 2357.79 23 (81 12) (1993Pr09).
^x 2362.4 6		20 5		Other E_{γ} (I_{γ}): 2363.8 5 (47 12; I_{γ} corrected for escape-peak contamination) (1993Pr09).
2366& 2	2367.4			E_{γ} =2367.8 6, I_{γ} =47 15 in table 1 (2011Bo09).
2369& 2	2369.07			E_{γ} =2369.9 6, I_{γ} =72 15 in table 1 for complex line (2011Bo09). Other E_{γ} (I_{γ}): 2369.03 17 (166 21; I_{γ} corrected for escape-peak contamination) (1993Pr09).
2380.6 4	2428.06	61 5		Other E_{γ} (I_{γ}): 2380.8 4 (82 12) (1993Pr09).
2383.2& 5	2384.09	41 5		I_{γ} :I(2286 γ)=87 26:100 10 (2011Bo09). This is the only branch reported in (n, γ): $\gamma\gamma$ coin.
^x 2386.9 3		32 4		Other E_{γ} (I_{γ}): 2386.18 21 (70 15; I_{γ} corrected for escape-peak contamination) (1993Pr09).
2392.7 4	2392.71	60 11		Other E_{γ} (I_{γ}): 2393.35 23 (114 10) (1993Pr09); presumably for 2393 γ +2395 γ doublet.
2394.8& 9	2493.00	27 11		See comment on 2393 γ .
2404.29#g 17	(6190.992)	198# 9		Other E_{γ} (I_{γ}): 2404.30 19 (239 21) (1993Pr09).
^x 2407.3 4		41 5		
2413.6# 3	2623.05	50# 6		Other E_{γ} (I_{γ}): 2413.4 11 (83 42) (1993Pr09).

Continued on next page (footnotes at end of table)

¹⁸²W(n,γ) E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued)

γ(¹⁸³W) (continued)

E _γ [†]	E(level)	I _γ ^{‡f}	Mult.	Comments
2417.93 20	2417.50	78 8		Other E _γ (I _γ): 2418.0 6 (81 42); I _γ corrected for escape-peak contamination) (1993Pr09).
2423.28 3	2522.53	38 12		Other E _γ (I _γ): 2422.8 7 (81 42) (1993Pr09).
^x 2432.4 3		65 6		Other E _γ (I _γ): 2433.77 27 (166 31) (1993Pr09); probably includes 2435γ.
2434.98 3	2481.47	28 6		See comment on 2432γ.
2438.9 3	2485.63	26 4		Other E _γ (I _γ): 2439.5 4 (81 26) (1993Pr09).
^x 2443.8 3		36 8		Other E _γ (I _γ): 2445.74 22 (76 27); I _γ corrected for escape-peak contamination) (1993Pr09); probably for 2444γ+2447γ doublet.
2446.5 4	2493.00	=10		
^x 2453.8 4		18 5		Other E _γ (I _γ): 2454.06 24 (95 25); I _γ corrected for escape-peak contamination) (1993Pr09); apparently includes an impurity.
2457.12# 19	2503.28	131# 5		Other E _γ (I _γ): 2458.65 25 (114 21); I _γ corrected for escape-peak contamination) (1993Pr09); possibly includes 2461γ.
2460.58 3	2460.5	23 4		
^x 2469.4 3		35 11		Other E _γ (I _γ): 2470.53 17 (34 15); I _γ corrected for escape-peak contamination) (1993Pr09); possibly for 2469γ+2471γ doublet.
2471.38 3	2517.67	37 9		
^x 2473.8 5		11 5		
2476.38§# 15	2523.01	161# 5		Other E _γ (I _γ): 2476.41 15 (208 21); I _γ corrected for escape-peak contamination) (1993Pr09).
2479.3 3	2687.68	51 4		See comment on 2482γ.
2482.02 15	2481.47	60 4		Other E _γ (I _γ): 2481.78 17 (114 10); I _γ corrected for escape-peak contamination) (1993Pr09); presumably for 2479γ+2482γ doublet.
2488.42 11	2535.18	88 4		Other E _γ (I _γ): 2488.80 22 (156 10) (1993Pr09).
2492.71 10	2493.00	83 4		Other E _γ (I _γ): 2493.5 3 (125 10) (1993Pr09).
^x 2499.5 3		50 4		Other E _γ (I _γ): 2499.99 20 (166 21) (1993Pr09); possibly 2500γ+2503γ doublet.
2502.5 3	2503.28	38 4		
^x 2505.4 4		15 4		Other E _γ (I _γ): 2505.0 3 (94 14) (1993Pr09).
^x 2510.80 17		58 7		Other E _γ (I _γ): 2511.21 17 (166 21) (1993Pr09).
2517.78§ 16	2517.67	58 6		Other E _γ (I _γ): 2517.63 25 (114 21) (1993Pr09).
2523.00§ 6	2523.01	174 7		Other E _γ (I _γ): 2523.06 13 (250 21) (1993Pr09).
^x 2530.1 3		25 4		Other E _γ (I _γ): 2530.68 21 (99 23) (1993Pr09).
^x 2539.27 18		33 4		Other E _γ (I _γ): 2539.27 18 (56 14); I _γ corrected for escape-peak contamination) (1993Pr09).
^x 2543.0 3		38 5		Other E _γ (I _γ): 2545.00 25 (52 15); I _γ corrected for escape-peak contamination) (1993Pr09); presumably for 2543γ+2546γ doublet.
^x 2545.8 3		20 6		See comment on 2543γ.
^x 2553.3 6		=20		Other E _γ (I _γ): 2552.41 25 (53 15); I _γ corrected for escape-peak contamination) (1993Pr09).
^x 2557.7 6		=12		Other E _γ (I _γ): 2557.1 4 (56 14) (1993Pr09).
^x 2561.9 3		136 9		Other E _γ (I _γ): 2562.01 20 (260 21) (1993Pr09).
2565.0 3	2611.76	108 9		Other E _γ (I _γ): 2567.31 27 (125 10) (1993Pr09); probably for 2565γ+2569γ doublet.
2568.9 3	2615.46	61 7		See comment on 2565γ.
2574.50# 16	2782.86	96# 8		Other E _γ (I _γ): 2574.10 14 (114 10); I _γ corrected for escape-peak contamination) (1993Pr09).
^x 2589.3 5		32 11		
^x 2591.0 4		55 9		Other E _γ (I _γ): 2591.77 19 (146 21) (1993Pr09); presumably for 2591γ+2593γ doublet.
2593.3§ 4	2593.42	55 7		See comment on 2591γ.
2609.51§ 18	2609.53	69 5		Other E _γ (I _γ): 2610.5 3 (72 14) (1993Pr09).
^x 2613.8 3		36 5		
2617.4§ 4	2615.46	28 7		Other E _γ (I _γ): 2617.11 25 (53 15); I _γ corrected for escape-peak contamination) (1993Pr09).
2624.6§ 4	2623.05	21 4		Other E _γ (I _γ): 2625.9 3 (57 17) (1993Pr09); possibly for 2625γ+2628γ doublet.
^x 2627.5 6		17 4		
2630.1§ 3	2629.19	40 5		
2640.9§ 3	2687.68	51 5		Other E _γ (I _γ): 2639.4 10 (62 42) (1993Pr09).
^x 2644.0 4		51 6		
2656.18 14	2656.26	67 6		Other E _γ (I _γ): 2655.4 4 (83 31) (1993Pr09).
2662.0 3	2708.12	39 7		

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
2669.01 22	2715.53	95 7		
2676.25 11	2722.94	74 5		Other $E\gamma$ ($I\gamma$): 2676.8 6 (73 31) (1993Pr09).
$^{*}2682.93$ 8		95 5		
$^{*}2690.9$ 4		13 7		
$^{*}2694.7$ 4		12 8		
2700.38 3	2699.22	27 12		
$^{*}2702.8$ 5		43 11		
2708.2 3	2708.12	40 9		Other $E\gamma$ ($I\gamma$): 2707.2 13 (26 21) (1993Pr09).
2715.53 16	2715.53	88 5		Other $E\gamma$ ($I\gamma$): 2715.4 6 (104 31) (1993Pr09).
$^{*}2718.87$ 14		44 5		
2722.5 5	2722.94	9 4		
$^{*}2726.4$ 3		28 7		Other $E\gamma$ ($I\gamma$): 2726.0 4 (55 14) (1993Pr09).
$^{*}2735.16$ 7		76 4		Other $E\gamma$ ($I\gamma$): 2735.44 15 (99 18; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{*}2738.87$ 20		60 6		
2741.38 3	2741.3	26 6		Other $E\gamma$ ($I\gamma$): 2741.24 25 (51 14; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{*}2744.2$ 3		29 4		
$^{*}2747.05$ 9		106 5		Other $E\gamma$ ($I\gamma$): 2747.73 21 (135 21) (1993Pr09).
$^{*}2750.49$ 23		25 8		
2758.488 9	2805.04	79 4		Other $E\gamma$ ($I\gamma$): 2758.7 3 (81 17) (1993Pr09).
2764.48 3	2813.42	20 4		
2767.28 3	2768.57	41 4		
$^{*}2770.35$ 20		70 4		Other $E\gamma$ ($I\gamma$): 2770.6 5 (99 14) (1993Pr09).
$^{*}2773.7$ 3		63 5		
$^{*}2776.26$ 14		46 5		
$^{*}2785.24$ 7		83 4		Other $E\gamma$ ($I\gamma$): 2784.23 22 (73 18; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{*}2788.2$ 3		39 5		Other $E\gamma$ ($I\gamma$): 2789.7 5 (96 12) (1993Pr09); probably for 2788 γ +2791 γ doublet.
$^{*}2790.5$ 3		63 5		See comment on 2788 γ .
$^{*}2794.68$ 12		81 4		Other $E\gamma$ ($I\gamma$): 2794.8 4 (73 14; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
2805.5 3	2805.04	32 5		Other $E\gamma$ ($I\gamma$): 2807.7 5 (31 4; $I\gamma$ corrected for escape-peak contamination) (1993Pr09); may include 2810 γ .
$^{*}2809.6$ 3		17 3		See comment on 2806 γ .
2815.88 3	2815.8	18 4		
$^{*}2823.7$ 3		25 4		
$^{*}2827.0$ 4		16 5		
2832.758 18	2833.95	52 6		Other $E\gamma$ ($I\gamma$): 2833.5 4 (100 22; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
2836.358 23	2884.13	42 5		Other $E\gamma$ ($I\gamma$): 2836.9 11 (43 21) (1993Pr09).
$^{*}2844.28$ 22		31 5		Other $E\gamma$ ($I\gamma$): 2845.09 20 (104 21; $I\gamma$ corrected for escape-peak contamination) (1993Pr09); apparently includes contaminant.
$^{*}2847.55$ 11		80 6		Other $E\gamma$ ($I\gamma$): 2849.9 3 (135 10) (1993Pr09); probably for 2848 γ +2852 γ doublet.
$^{*}2851.56$ 10		83 5		See comment on 2848 γ .
$^{*}2857.03$ 24		30 6		Other $E\gamma$ ($I\gamma$): 2856.2 9 (33 11) (1993Pr09).
$^{*}2862.6$ 3		37 5		
2868.638 23	2915.17	59 5		
$^{*}2880.4$ 3		46 10		Other $E\gamma$ ($I\gamma$): 2880.5 9 (35 14; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{*}2885.63$ 18		41 5		
$^{*}2889.5$ 3		33 4		
2898.78 3	2898.7	20 5		
$^{*}2901.98^{\text{a}}$ 24		75 5		Other $E\gamma$ ($I\gamma$): 2901.9 6 (94 31) (1993Pr09).
$^{*}2910.42^{\text{e}}$ 22		33 15		$I\gamma$: corrected for escape-peak contamination.
$^{*}2918.2$ 3		56 4		
$^{*}2927.92$ 18		96 5		Other $E\gamma$ ($I\gamma$): 2928.90 21 (146 10) (1993Pr09).
$^{*}2931.2$ 5		53 6		
$^{*}2933.3$ 5		56 6		Other $E\gamma$ ($I\gamma$): 2934.08 19 (69 15; $I\gamma$ corrected for escape-peak contamination) (1993Pr09); possibly for 2933 γ +2936 γ doublet.
$^{*}2935.9$ 5		26 5		See comment on 2933 γ .

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
$^{x}2938.6\ 3$		30 5		
$^{x}2947.4\ 4$		112 33		Other $E\gamma$ ($I\gamma$): 2947.71 12 (156 10) (1993Pr09).
$^{x}2953.3\ 6$		20 7		
$^{x}2959.8\ 4$		11 5		
$^{x}2966.2\ 3$		55 10		
$^{x}2971.34\ 23$		25 5		
2980.08 16	(6190.992)	114 7		Other $E\gamma$ ($I\gamma$): 2979.9 3 (260 52) (1993Pr09) apparently for contaminated line.
$^{x}2983.7\ 4$		72 10		Other $E\gamma$ ($I\gamma$): 2985.7 4 (166 42) (1993Pr09); probably for 2984 γ +2987 γ doublet.
$^{x}2986.5\ 4$		64 11		
$^{x}3004.56\ 14$		24 4		
$^{x}3007.84\ 24$		37 4		
$^{x}3011.9@ 3$		12 3		
$^{x}3016.8\ 3$		21 4		
$^{x}3029.2\ 5$		9 2		
$^{x}3033.36\ 19$		56 3		Other $E\gamma$ ($I\gamma$): 3033.5 4 (55 12) (1993Pr09).
$^{x}3042.91\ 9$		98 6		
$^{x}3056.63\ 22$		20 6		
$^{x}3067.6\ 3$		66 9		
$^{x}3078.1\ 3$		35 6		Other $E\gamma$ ($I\gamma$): 3079.8 9 (47 12) (1993Pr09).
$^{x}3083.1\ 6$		72 41		Other $E\gamma$ ($I\gamma$): 3084.45 20 (187 21) (1993Pr09); probably for 3083 γ +3085 γ doublet.
$^{x}3085.3\ 6$		75 45		See comment on 3083 γ .
3093.35 8	(6190.992)	228 6		Other $E\gamma$ ($I\gamma$): 3093.20 11 (260 21) (1993Pr09).
$^{x}3098.62\ 24$		42 6		
$^{x}3101.85\ 24$		64 6		Other $E\gamma$ ($I\gamma$): 3100.90 23 (104 10) (1993Pr09).
$^{x}3106.5@ 3$		46 5		$E\gamma$ consistent with expectation for primary γ to 3083.7.
$^{x}3110.30\ 23$		61 5		$E\gamma$ consistent with expectation for primary γ to 3078.6.
$^{x}3114.35\ 16$		39 5		
$^{x}3124.8\ 4$		16 4		
$^{x}3132.6\ 4$		26 4		
$^{x}3136.2\ 3$		32 3		Other $E\gamma$ ($I\gamma$): 3136.6 9 (53 19) (1993Pr09).
$^{x}3148.5\ 4$		22 5		
$^{x}3155.6\ 5$		82 30		
$^{x}3160.57\ 22$		112 6		Other $E\gamma$ ($I\gamma$): 3159.8 8 (198 31) (1993Pr09).
3164.11 [#] 16	3210.77	100 [#] 4		
$^{x}3172.76\ 23$		87 13		Other $E\gamma$ ($I\gamma$): 3173.83 27 (187 42) (1993Pr09); probably for 3173 γ +3175 γ doublet.
$^{x}3175.43\ 23$		44 11		See comment on 3173 γ .
$^{x}3178.72\ 19$		40 6		
$^{x}3186.33\ 16$		21 6		Other $E\gamma$ ($I\gamma$): 3188.0 13 (38 19) (1993Pr09).
$^{x}3192.3@ 3$		=39		Other $E\gamma$ ($I\gamma$): 3192.3 13 (37 19) (1993Pr09).
$^{x}3200.0\ 6$		43 10		
$^{x}3202.9\ 3$		85 10		Other $E\gamma$ ($I\gamma$): 3203.29 22 (135 10) (1993Pr09).
$^{x}3206.71\ 16$		85 5		
3211.86 6	(6190.992)	270 6		Other $E\gamma$ ($I\gamma$): 3211.32 13 (250 21) (1993Pr09).
$^{x}3218.89\ 13$		37 7		
$^{x}3224.85\ 22$		43 6		
$^{x}3234.1\ 3$		63 9		
$^{x}3236.85\ 23$		86 10		Other $E\gamma$ ($I\gamma$): 3235.1 3 (95 14) (1993Pr09).
$^{x}3244.6\ 3$		85 28		Other $E\gamma$ ($I\gamma$): 3245.0 3 (47 14; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{x}3251.62\ 18$		59 4		Other $E\gamma$ ($I\gamma$): 3252.2 3 (57 15; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{x}3255.21\ 21$		27 4		
$^{x}3267.9\ 3$		11 5		
$^{x}3273.3\ 5$		42 12		
$^{x}3275.9\ 4$		63 12		Other $E\gamma$ ($I\gamma$): 3275.05 18 (166 10) (1993Pr09).
$^{x}3290.8\ 3$		64 5		Other $E\gamma$ ($I\gamma$): 3290.5 7 (114 21) (1993Pr09).
$^{x}3299.8\ 4$		27 16		
3306.71 7	(6190.992)	115 4		Other $E\gamma$ ($I\gamma$): 3306.63 23 (198 21) (1993Pr09).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
$^{x}3320.26\ 15$		27 3		Other $E\gamma$ ($I\gamma$): 3319.8 3 (57 14; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{x}3333.2\ 3$		=10		Other $E\gamma$ ($I\gamma$): 3333.8 9 (50 22) (1993Pr09).
3344.53 7	(6190.992)	224 10		Other $E\gamma$ ($I\gamma$): 3344.32 11 (135 31; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3357.01 9	(6190.992)	192 14		Other $E\gamma$ ($I\gamma$): 3357.06 15 (187 42; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3375.11 g 19	(6190.992)	133 21		Other $E\gamma$ ($I\gamma$): 3375.13 24 (76 22; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3379.3 5	(6190.992)	53 12		Other $E\gamma$ ($I\gamma$): 3379.2 3 (156 21) (1993Pr09).
3386.05 16	(6190.992)	45 3		Other $E\gamma$ ($I\gamma$): 3386.1 3 (55 15; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{x}3391.13\ 19$		52 4		Other $E\gamma$ ($I\gamma$): 3391.7 7 (70 15) (1993Pr09).
$^{x}3394.3\ 5$		30 6		
3408.59 17	(6190.992)	213 19		Other $E\gamma$ ($I\gamma$): 3408.37 11 (239 21) (1993Pr09).
3417.6 4	(6190.992)	56 7		Other $E\gamma$ ($I\gamma$): 3418.4 3 (125 21) (1993Pr09).
3420.5 6	(6190.992)	76 27		
3422.6 3	(6190.992)	176 30		Other $E\gamma$ ($I\gamma$): 3422.42 19 (229 21) (1993Pr09).
$^{x}3435.1\ 4$		36 5		
$^{x}3444.15\ 20$		28 3		
3448.94 g 16	(6190.992)	88 4		Other $E\gamma$ ($I\gamma$): 3448.6 6 (90 18) (1993Pr09).
$^{x}3456.27\ 24$		35 4		
3467.74 14	(6190.992)	156 6		Other $E\gamma$ ($I\gamma$): 3468.06 17 (177 21) (1993Pr09).
3475.43 9	(6190.992)	211 6		Other $E\gamma$ ($I\gamma$): 3475.03 13 (250 21) (1993Pr09).
3482.87 10	(6190.992)	184 6		Other $E\gamma$ ($I\gamma$): 3482.82 16 (187 10) (1993Pr09).
3491.96 13	(6190.992)	180 8		Other $E\gamma$ ($I\gamma$): 3492.33 26 (239 21) (1993Pr09).
3503.37 $^{\oplus}$ 23	(6190.992)	113 13		Other $E\gamma$ ($I\gamma$): 3503.18 9 (187 31; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3522.3 5	(6190.992)	64 14		Other $E\gamma$ ($I\gamma$): 3522.96 22 (77 15; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{x}3524.4\ 5$		41 13		
3534.4 $^{\oplus}$ 3	(6190.992)	134 24		Other $E\gamma$ ($I\gamma$): 3535.04 27 (69 15; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3561.78 13	(6190.992)	116 10		Other $E\gamma$ ($I\gamma$): 3561.44 25 (135 10) (1993Pr09).
3567.87 8	(6190.992)	180 6		Other $E\gamma$ ($I\gamma$): 3567.80 16 (229 21) (1993Pr09).
3575.56 9	(6190.992)	178 6		Other $E\gamma$ ($I\gamma$): 3575.8 4 (250 52) (1993Pr09).
3579.15 $^{\oplus}$ 7	(6190.992)	195 6		Probably feeds both the 2611 and 2613 levels.
3583.13 g 14	(6190.992)	66 4		Other $E\gamma$ ($I\gamma$): 3579.5 6 (229 31) (1993Pr09).
$^{x}3593.1\ 4$		15 4		Other $E\gamma$ ($I\gamma$): 3583.3 8 (73 42; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3597.53 12	(6190.992)	87 4		May be a primary γ feeding a known 2598 level.
$^{x}3618.3\ 5$		37 10		Other $E\gamma$ ($I\gamma$): 3597.43 26 (125 21) (1993Pr09).
3620.8 g 5	3667.4	35 10		Other $E\gamma$ ($I\gamma$): 3620.3 3 (61 18; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
$^{x}3626.48\ 14$		78 4		Other $E\gamma$ ($I\gamma$): 3626.3 4 (86 17) (1993Pr09).
$^{x}3637.95\ 17$		79 4		Other $E\gamma$ ($I\gamma$): 3638.5 3 (73 11) (1993Pr09).
$^{x}3642.3\ 4$		15 3		Possible primary γ to a 2547 level known in (n, γ) E=thermal: $\gamma\gamma$ coin.
3655.71 6	(6190.992)	235 5		Other $E\gamma$ ($I\gamma$): 3655.56 20 (260 21) (1993Pr09).
3668.42 4	(6190.992)	435 6		Other $E\gamma$ ($I\gamma$): 3668.38 14 (468 31) (1993Pr09).
3673.34 11	(6190.992)	123 5		Other $E\gamma$ ($I\gamma$): 3673.5 4 (125 10) (1993Pr09).
3687.68 8	(6190.992)	267 9		Other $E\gamma$ ($I\gamma$): 3688.11 16 (354 31) (1993Pr09).
3697.78 8	(6190.992)	98 5		Other $E\gamma$ ($I\gamma$): 3697.78 15 (85 29; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3705.19 24	(6190.992)	43 5		Other $E\gamma$ ($I\gamma$): 3706.8 5 (135 31) (1993Pr09).
3709.76 10	(6190.992)	144 6		Other $E\gamma$ ($I\gamma$): 3710.8 5 (135 31) (1993Pr09).
3714.5 g 3	3922.4	19 6		
3731.3 g 3	(6190.992)	60 14		Other $E\gamma$ ($I\gamma$): 3731.0 5 (96 15) (1993Pr09; uncertain assignment to ^{183}W).
3740.37 6	(6190.992)	279 10		Other $E\gamma$ ($I\gamma$): 3740.25 19 (322 21) (1993Pr09).
3757.30 6	(6190.992)	148 3		Other $E\gamma$ ($I\gamma$): 3757.06 22 (156 10) (1993Pr09).
3762.83 10	(6190.992)	121 7		Other $E\gamma$ ($I\gamma$): 3763.11 26 (125 10) (1993Pr09).
3773.50 7	(6190.992)	134 3		Other $E\gamma$ ($I\gamma$): 3773.49 27 (135 21) (1993Pr09).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger f}$	Mult.	Comments
$\times 3778.6^e$ 22		17 11		Assignment to ^{183}W is uncertain..
3798.29 6	(6190.992)	337 10		Other $E\gamma$ ($I\gamma$): 3798.38 11 (364 21) (1993Pr09).
3807.03 16	(6190.992)	175 8		Other $E\gamma$ ($I\gamma$): 3807.43 13 (198 10) (1993Pr09).
3818.48 4	(6190.992)	25 4		
3821.89 [@] 5	(6190.992)	243 5		Other $E\gamma$ ($I\gamma$): 3821.76 11 (229 21) (1993Pr09).
3831.18 23	(6190.992)	45 5		Other $E\gamma$ ($I\gamma$): 3831.1 6 (38 13) (1993Pr09).
3841.2 4	(6190.992)	19 4		Other $E\gamma$ ($I\gamma$): 3841.5 12 (26 15) (1993Pr09; assignment to ^{183}W is uncertain).
$\times 3864.2^e$ 10		83 31		
3866.24 9	(6190.992)	232 9		Other $E\gamma$ ($I\gamma$): 3867.87 25 (114 42; $I\gamma$ corrected for escape-peak contamination) (1993Pr09).
3875.94 23	(6190.992)	37 8		
3887.09 5	(6190.992)	299 5		Other $E\gamma$ ($I\gamma$): 3887.18 8 (312 21) (1993Pr09).
3898.45 13	(6190.992)	113 5		Other $E\gamma$ ($I\gamma$): 3898.31 18 (135 10) (1993Pr09).
3907.98 8	(6190.992)	257 5		Other $E\gamma$ ($I\gamma$): 3907.87 9 (281 21) (1993Pr09).
3924.67 22	(6190.992)	26 2		Other $E\gamma$ ($I\gamma$): 3924.8 9 (25 9) (1993Pr09).
3931.38 4	(6190.992)	12 3		
3943.04 10	(6190.992)	184 6		Other $E\gamma$ ($I\gamma$): 3943.10 12 (218 10) (1993Pr09); 3943.1 5 (109 55) (2007ChZX).
3955.30 12	(6190.992)	158 5		Other $E\gamma$ ($I\gamma$): 3955.76 17 (187 10) (1993Pr09).
3959.35 19	(6190.992)	39 3		
3981.89 10	(6190.992)	143 6		Other $E\gamma$ ($I\gamma$): 3981.77 17 (109 55) (1993Pr09); 3981.4 5 (109 55) (2007ChZX).
3993.858 23	3993.90	26 4		
4014.19 7	(6190.992)	718 14	d	Other $E\gamma$ ($I\gamma$): 4014.18 6 (863 52) (1993Pr09); 4014.64 16 (1003 73) (2007ChZX).
4021.5 4	(6190.992)	52 4		Other $E\gamma$ ($I\gamma$): 4021.2 6 (95 17) (1993Pr09).
4026.16 9	(6190.992)	370 5		Other $E\gamma$ ($I\gamma$): 4026.24 13 (437 31) (1993Pr09); 4025.6 3 (365 55) (2007ChZX).
4033.56 22	(6190.992)	59 4		Other $E\gamma$ ($I\gamma$): 4034.0 4 (92 18) (1993Pr09).
4064.61 7	(6190.992)	316 7		Other $E\gamma$ ($I\gamma$): 4064.51 11 (416 31) (1993Pr09); 4064.1 3 (346 55) (2007ChZX).
4092.07 22	(6190.992)	153 13		Other $E\gamma$ ($I\gamma$): 4091.91 14 (177 21; $I\gamma$ corrected by authors for escape-peak contaminant) (1993Pr09).
4099.1 7	(6190.992)	20 3		
4131.60 14	(6190.992)	124 5		Other $E\gamma$ ($I\gamma$): 4132.3 7 (146 31) (1993Pr09).
4162.47 7	(6190.992)	257 6		Other $E\gamma$ ($I\gamma$): 4162.34 21 (291 31) (1993Pr09).
4200.50 12	(6190.992)	100 5		Other $E\gamma$ ($I\gamma$): 4201.18 27 (96 13) (1993Pr09).
4208.79 10	(6190.992)	40 5		
4216.88 3	(6190.992)	25 5		
4226.12 23	(6190.992)	41 5		
4246.72 6	(6190.992)	925 7	d	Other $E\gamma$ ($I\gamma$): 4246.62 5 (1019 62) (1993Pr09); 4245.8 4 (784 73) (2007ChZX).
4275.7 3	(6190.992)	28 3		Other $E\gamma$ ($I\gamma$): 4275.6 6 (43 11) (1993Pr09).
4289.95 16	(6190.992)	95 5		Other $E\gamma$ ($I\gamma$): 4289.9 3 (84 9) (1993Pr09).
4297.64 14	(6190.992)	81 4		Other $E\gamma$ ($I\gamma$): 4297.4 3 (104 10) (1993Pr09).
4304.72 8	(6190.992)	469 7		Other $E\gamma$ ($I\gamma$): 4304.65 7 (478 31) (1993Pr09); 4305.1 4 (401 55) (2007ChZX).
4321.26 12	(6190.992)	116 3		Other $E\gamma$ ($I\gamma$): 4321.22 17 (146 10) (1993Pr09).
4345.4 ^{b g} 13	(6190.992)	7 3		
4353.8 5	(6190.992)	28 6		
4357.4 3	(6190.992)	48 6		Other $E\gamma$ ($I\gamma$): 4357.3 4 (61 11) (1993Pr09).
4367.06 5	(6190.992)	527 6		Other $E\gamma$ ($I\gamma$): 4367.19 5 (624 31) (1993Pr09); 4367.1 3 (438 55) (2007ChZX).
4379.87 5	(6190.992)	388 4		Other $E\gamma$ ($I\gamma$): 4379.78 6 (416 21) (1993Pr09); 4380.0 4 (328 55) (2007ChZX).
4401.35 21	(6190.992)	46 3		Other $E\gamma$ ($I\gamma$): 4402.8 5 (46 14) (1993Pr09).
4406.33 24	(6190.992)	37 3		
$\times 4439.5^e$ 9		22 7		Assignment to ^{183}W is uncertain. Probably not a ^{183}W primary γ because implied 1751 level is otherwise unknown.
4454.6 ^e 7	(6190.992)	46 8		
4460.52 5	(6190.992)	266 5		Other $E\gamma$ ($I\gamma$): 4460.60 11 (302 21) (1993Pr09); 4460.7 4 (204 38) (2007ChZX).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal 2011Bo09,1993Pr09,1997Pr02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^{\ddagger f}$	Mult.	Comments
4465.76 24	(6190.992)	30 3		Other $E\gamma$ ($I\gamma$): 4467.2 6 (51 8) (1993Pr09).
4474.3 6	(6190.992)	15 3		Other $E\gamma$ ($I\gamma$): 4474.1 6 (43 8) (1993Pr09).
4492.7 3	(6190.992)	18 2		
4518.18 4	(6190.992)	885 8	d	Other $E\gamma$ ($I\gamma$): 4518.12 6 (926 52) (1993Pr09); 4517.93 19 (802 109) (2007ChZX).
4528.0 12	(6190.992)	≈ 49		
4530.8 10	(6190.992)	≈ 30		Other $E\gamma$ ($I\gamma$): 4530.0 6 (74 22) (1993Pr09).
4557.65 15	(6190.992)	83 4		Other $E\gamma$ ($I\gamma$): 4557.6 8 (125 31) (1993Pr09).
4562.72 5	(6190.992)	638 6		Other $E\gamma$ ($I\gamma$): 4562.87 17 (624 52) (1993Pr09).
4579.09 12	(6190.992)	93 4		Other $E\gamma$ ($I\gamma$): 4578.4 7 (70 21) (1993Pr09).
4604.67 11	(6190.992)	89 3		Other $E\gamma$ ($I\gamma$): 4604.8 7 (73 31) (1993Pr09).
4620.9 3	(6190.992)	26 5		
4634.73 6	(6190.992)	319 5		Other $E\gamma$ ($I\gamma$): 4634.80 11 (354 21) (1993Pr09); 4634.4 4 (219 55) (2007ChZX).
4705.3 4	(6190.992)	11 4		
4719.78 5	(6190.992)	402 5		Other $E\gamma$ ($I\gamma$): 4719.86 8 (416 29) (1993Pr09); 4719.61 23 (399 40) (2007ChZX).
4727.94 14	(6190.992)	64 5		Other $E\gamma$ ($I\gamma$): 4727.9 8 (43 9) (1993Pr09).
4753.1 12	(6190.992)	30 13		
4818.1 5	(6190.992)	11 3		
4855.4 4	(6190.992)	14 3		
4881.36 7	(6190.992)	116 4		Other $E\gamma$ ($I\gamma$): 4881.14 18 (135 10) (1993Pr09).
4899.2 ^{b g} 9	(6190.992)	≈ 9		
5040.9 3	(6190.992)	18 3		
5164.62 9	(6190.992)	4050 320	d	Other $E\gamma$ ($I\gamma$): 5164.50 5 (4066 125) (1993Pr09); 5164.24 14 (4120 164) (2007ChZX).
5256.19 4	(6190.992)	265 4		Other $E\gamma$ ($I\gamma$): 5256.15 13 (291 21) (1993Pr09).
5981.70 22	(6190.992)	66 4		
6091.2 3	(6190.992)	26 3		
6144.15 4	(6190.992)	4115 92	D ^{c d}	Other $E\gamma$ ($I\gamma$): 6144.23 8 (3941 218) (1993Pr09); 6144.21 18 (3391 219) (2007ChZX); 6144.28 6 (4771 185) (2014Hu02).
6190.60 4	(6190.992)	11150 250	D ^{c d}	Other $E\gamma$ ($I\gamma$): 6190.66 10 (10816 624) (1993Pr09); 6190.78 6 (13366 185) (2014Hu02).

[†] From table 1 of 2011Bo09, except as noted. Note that data from 2014Hu02 frequently fail to agree within stated uncertainties with those from 2011Bo09 and 1993Pr09 and decay studies, and are consistently lower. Reason for discrepancy is not known.

[‡] From table 1 of 2011Bo09, except as noted. 2011Bo09 report intensities per 100,000 neutron captures. They also provide branching data from $\gamma\gamma$ coin measurements and the latter are given here in comments on the relevant transitions; for D-D sequences, angular correlation effects are expected to contribute 15% uncertainty at most. Data from 1993Pr09, 2014Hu02 and 2007ChZX are given in comments for comparison. Relative $I\gamma$ from 1993Pr09 have been scaled by a factor of 10.4 as recommended by 2011Bo09 to obtain gammas/ 10^5 n captures and $I\gamma$ from 2007ChZX was calculated from elemental photon σ assuming %Abundance(^{182}W)=16.50 16 and $\sigma_n=20.7$ 5 (2006MuZX); these $I\gamma$ would be 3.5% larger were $\sigma_n=20.0$ 6 from 2011Bo09 assumed. Agreement between $I\gamma$ data from 2014Hu02, 2011Bo09 and 1997Pr02 is poor.

[§] May be partially a primary γ -ray transition.

[#] For multiplet; 2011Bo09 indicate in table 1 only the principal placement for this transition.

[@] Complex line.

[&] From table 2 of 2011Bo09; value obtained from coincidence spectrum.

^a Very weak peak observed only in coincidence spectrum; from table 2 of 2011Bo09, uncertainty unstated by authors.

^b Existence of transition is questionable (2011Bo09).

^c D from (pol n, γ) (1972St06).

^d Strength of transition favors E1 multipolarity based on systematics for thermal (n, γ) reaction primary transitions.

^e From 1993Pr09 only.

^f Absolute intensity per 100 neutron captures.

^g Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29

Other: 1989Bo30.

2005Su29: E=thermal; measured (primary γ)–(secondary γ) coin spectra (1.5–2.4 keV resolution) for 2–photon cascades to 5 low–lying levels of ^{183}W ; 1.43% ^{182}W in target; measured $E\gamma$ ($E\gamma > 520$ keV), intermediate level energies and photon branching.

1989Bo30: measured $\gamma\gamma$ coincidence intensities corresponding to the sum energy equal to the primary transition energy to the five lowest lying levels in ^{183}W . The coincidence efficiency was calibrated using the 2505–keV $\gamma\gamma$ cascade in ^{60}Co .

^{183}W Levels

E(level) [†]	J π	Comments
0.0 $\frac{1}{2}^+$	1/2– $\frac{1}{2}^+$	
45 $\frac{3}{2}^+$	3/2– $\frac{3}{2}^+$	
99.1 $\frac{5}{2}^+$	5/2– $\frac{5}{2}^+$	
208.8 $\frac{3}{2}^+$	3/2– $\frac{3}{2}^+$	E(level): the neighboring 7/2– level at 207.0 keV may not have been resolved in this experiment but no primary γ should feed it.
291.7 $\frac{5}{2}^+$	5/2– $\frac{5}{2}^+$	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) ^{183}W Levels (continued)

E(level) [†]	E(level) [†]	Comments
557.4 3	2057.5 4	
677.6 2	2059.2 2	
804.8 1	2095.4 7	
808.2 2	2098.9 6	
816.5 2	2111.4 4	
871.9 5	2125.9 4	
899.7 1	2130.0 3	
903.0 4	2152.7 4	
909.3 3	2157.0 4	
934.0 1	2163.5 6	
941.5 [‡] 3	2166.9 4	
949.8 [‡] 1	2176.4 2	
951.2 [‡] 4	2208.8 2	
1025.9 2	2230.0 4	
1096.3 5	2235.3 2	
1188.2 2	2238.9 7	
1226.4 4	2247.8 2	
1272.0 2	2257.6 5	
1308.7 3	2262.7 6	
1412.7 3	2265.8 3	
1417.4 5	2282.8 2	
1432.9 2	2292.2 2	
1462.8 2	2303.9 7	
1470.6 2	2311.6 4	
1502.1 6	2324.5 2	
1537.8 9	2359.6 7	
1555.7 4	2366.4 3	
1586.3 3	2368.8 2	
1612.1 9	2373.2 5	
1615.2 3	2383.4 4	
1616.9 3	2392.1 2	
1628.0 1	2418.1 4	
1632.7 2	2428.1 2	
1658.0 3	2430.9 8	
1659.5 4	2433.2 4	
1661.9 3	2447.5 8	
1669.3 4	2450.4 4	
1672.5 1	2474.8 6	
1676.9 5	2493.9 [#] 3	
1724.9 11	2503.7 1	
1730.0 3	2517.3 2	
1746.6 4	2522.5 5	
1790.3 3	2529.9 7	
1811.4 13	2534.9 2	
1813.7 6	2547.4 5	
1823.5 6	2550.1 6	
1827.9 5	2552.6 4	
1835.3 11	2567.7 4	
1869.3 1	2573.9 13	
1884.0 6	2593.2 2	
1886.2 2	2597.6 3	
1893.8 2	2611.4 2	
1900.5 3	2612.4 4	
1914.9 4	2615.6 3	
1931.9 4	2655.8 4	
1943.9 5	2667.8 8	
1952.3 6	2687.2 4	
1964.1 7	2699.4 3	
1990.2 5	2707.4 3	
2004.4 3	2715.5 2	
2022.7 5	2738.0 5	
2028.3 3		
2044.6 2		

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) ^{183}W Levels (continued)

E(level) [†]	J π	Comments
2741.7 4		
2743.8 7		
2765.0 7		
2769.5 10		
2781.6 7		
2782.9 4		
2804.6 7		
2812.5 3		
2817.3 5		
2832.8 3		
2834.8 3		
2839.2 12		
2843.1 7		
2847.4 3		
2855.8 7		
2881.2 8		
2910.1 6		
2914.4 3		
2945.4 5		
2954.4 5		
2966.5 3		
2979.2 2		
3015.1 4		
3030.8 2		
3042.3 5		
3054.3 5		
3070.8 6		
3078.6 4		
3083.7 4		
3096.5 4		
3534.1 2		
3687.0 4		
3709.8 4		
3840.1 3		
(6190.60)	1/2+	J π : s-wave capture by 0+ target.

[†] From 2005Su29. Authors' best values; based on measured $E\gamma$ values for two-photon cascade(s) in which this is the intermediate level, except as noted.

[‡] Rounded value from Adopted Levels.

[§] From Adopted Levels.

[#] Not adopted. Its stronger branch is otherwise unknown and $E\gamma$ for the weaker branch is somewhat high for the γ known to deexcite a 2493 level.

 $\gamma(^{183}\text{W})$

The experimental coincidence intensities feeding each final level are compared with those calculated using the statistical model in the following table:

E($\gamma\gamma$)	E(final level)	I($\gamma\gamma$) exp 2005Su29	I($\gamma\gamma$) exp 1989Bo30	I($\gamma\gamma$) theory 1989Bo30
(per 100 neutron captures)				
6191	0	11.1 7	13.3 11	9.4
6144	46	9.7 4	10.2 7	9.8
6092	99		1.4 2	4.2
5982	209	9.9 6	8.1 19	7.2
5899	292	4.2 5	4.3 6	3.3
5287	904		(0.1)x	1.4
5257	934		(0.2)x	2.4

x Estimated (1989Bo30) on the basis of peak areas in the sum coincidence spectrum.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

For numerous, additional unplaced transitions see 1989Bo30.

$E\gamma^\dagger$	E(level)	$I(\gamma_1\gamma_2)^{\ddagger\#}$	Comments
468.8	677.6	56 12	
557.4	557.4	29 8	
596.0	804.8	145 15	
599.4	808.2	57 13	
607.7	816.5	80 13	
608.0	899.7	220 18	
611.3	903.0	43 11	
663.1	871.9	29 13	
694.2	903.0	61 13	
700.5	909.3	45 13	
742.4	951.2	67 22	
817.1	1025.9	570 40	Other $E\gamma$ ($I\gamma$): 818.2 (580 140) (1989Bo30).
887.5	934.0	250 19	
895.0	941.5	36 11	
903.0	903.0	369 20	
903.3	949.8	113 15	
926.8	1025.9	184 11	Other $E\gamma$ ($I\gamma$): 926.8 15 (400 60) (1989Bo30).
979.4	1025.9	1412 49	Other $E\gamma$ ($I\gamma$): 980.2 15 (1970 140) (1989Bo30).
	1188.2	124 19	
980.3	1272.0	78 16	
997.2	1096.3	7 4	
1025.9	1025.9	2572 52	Other $E\gamma$ ($I\gamma$): 1026.4 15 (3700 300) (1989Bo30).
1099.9	1308.7	130 20	Other $E\gamma$ ($I\gamma$): 1101.2 15 (100 30) (1989Bo30).
1121.0	1412.7	58 15	
^x 1169.9		70 24	From 1989Bo30 only; placement from 1463 level unconfirmed by 2005Su29.
1209.6	1308.7	8 4	
1226.4	1226.4	23 8	
1246.1	1537.8	20 11	
^x 1251.3		40 30	From 1989Bo30 only; placement from 1463 level unconfirmed by 2005Su29.
1261.8	1470.6	109 14	Other $E\gamma$ ($I\gamma$): 1261.8 15 (130 40) (1989Bo30).
1264.0	1555.7	63 11	Other $E\gamma$ ($I\gamma$): 1265.5 15 (100 30) (1989Bo30).
1264.3 ^{\\$} @	1308.7	29 ^{\\$} 10	
1320.4	1612.1	40 11	
1323.5	1615.2	43 11	
1346.9	1555.7	42 13	Other $E\gamma$ ($I\gamma$): 1346.1 15 (90 20) (1989Bo30).
1366.3	1658.0	39 11	
^x 1373.7			From 1989Bo30 only; placed by authors from an otherwise unknown 1666 level.
1377.6	1669.3	32 11	
1380.8	1672.5	99 12	Other $E\gamma$ ($I\gamma$): 1382.1 15 (190 50) (1989Bo30).
1386.4	1432.9	36 8	
^x 1415.6		80 20	From 1989Bo30 only; placement by 1989Bo30 from 1628 level not confirmed by 2005Su29.
1416.3	1462.8	30 8	Other $E\gamma$ ($I\gamma$): 1413.8 15 (89 21) (1989Bo30).
1417.4	1417.4	24 9	
1424.1	1470.6	228 14	Other $E\gamma$ ($I\gamma$): 1424.2 15 (220 30) (1989Bo30).
1432.9	1432.9	18 9	
1455.6	1502.1	15 8	
1456.6	1555.7	15 3	Other $E\gamma$ ($I\gamma$): 1458.8 15 ($I\gamma$ =130 30) (1989Bo30).
1462.8	1462.8	41 9	Other $E\gamma$ ($I\gamma$): 1464.0 15 (49 25) (1989Bo30; unplaced γ).
1463.7	1672.5	151 14	Other $E\gamma$ ($I\gamma$): 1468.6 15 (130 40) (1989Bo30).
1468.1	1676.9	29 12	
1470.6	1470.6	62 10	Other $E\gamma$ ($I\gamma$): 1471.7 (80 30) (1989Bo30).
1509.2	1555.7	104 13	Other $E\gamma$ ($I\gamma$): 1510.3 15 (140 20) (1989Bo30).
1516.1	1724.9	31 12	
1517.8	1616.9	16 4	
1519.7	1811.4	36 11	
1521.2	1730.0	32 12	
1528.9	1628.0	37 5	Other $E\gamma$ ($I\gamma$): 1528.3 15 (100 20) (1989Bo30).
1531.8	1823.5	30 11	
1537.8	1537.8	19 10	
1555.7	1555.7	176 16	Other $E\gamma$ ($I\gamma$): 1558.7 15 (130 30) (1989Bo30).
1565.6	1612.1	23 10	
1573.4	1672.5	44 5	Other $E\gamma$ ($I\gamma$): 1573.8 15 (120 30) (1989Bo30).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I(\gamma_1\gamma_2)^{\ddagger\#}$	Comments
1581.5	1628.0	97 12	Other $E\gamma$ ($I\gamma$): 1581.2 15 (260 40) (1989Bo30).
	1790.3	32 12	
1586.3	1586.3	34 9	
1594.5	1886.2	298 19	Other $E\gamma$ ($I\gamma$): 1594.7 15 (430 70) (1989Bo30).
1602.6	1811.4	284 20	Other $E\gamma$ ($I\gamma$): 1603.6 15 (310 80) (1989Bo30).
1612.1	1612.1	69 10	Other $E\gamma$ ($I\gamma$): 1615.0 15 (520 140) (1989Bo30).
1614.7	1823.5	682 30	
1615.4	1661.9	42 10	
1626.0	1672.5	546 27	Other $E\gamma$ ($I\gamma$): 1626.7 15 (640 50) (1989Bo30).
1626.5	1835.3	43 13	Other $E\gamma$ ($I\gamma$): 1631.2 15 (170 60) (1989Bo30).
1628.0	1628.0	498 25	Other $E\gamma$ ($I\gamma$): 1628.3 15 (590 60) (1989Bo30).
1630.9	1730.0	27 6	Other $E\gamma$ ($I\gamma$): 1650.3 15 (90 40) (1989Bo30).
1632.7	1632.7	51 9	
1652.2	1943.9	37 13	
1659.5	1659.5	33 9	Other $E\gamma$ ($I\gamma$): 1661.7 (60 30) (1989Bo30).
1672.5	1672.5	130 14	Other $E\gamma$ ($I\gamma$): 1672.2 15 (180 30) (1989Bo30).
1675.2	1884.0	52 13	Other $E\gamma$ ($I\gamma$): 1674.3 15 (90 40) (1989Bo30).
1683.5	1730.0	153 13	Other $E\gamma$ ($I\gamma$): 1683.9 15 (220 30) (1989Bo30).
1691.7	1900.5	55 13	Other $E\gamma$ ($I\gamma$): 1729.5 15 (110 20) (1989Bo30).
1724.9	1724.9	21 8	
1730.0	1730.0	52 9	
1735.1	1943.9	926 35	Other $E\gamma$ ($I\gamma$): 1736.1 15 (800 200) (1989Bo30).
1736.6	2028.3	45 13	Other $E\gamma$ ($I\gamma$): 1735.1 15 (130 40) (1989Bo30).
1746.6	1746.6	25 8	Other $E\gamma$ ($I\gamma$): 1764.9 15 (210 30) (1989Bo30).
1764.9	1811.4	203 15	
1777.0	1823.5	22 9	
1788.8	1835.3	21 9	Other $E\gamma$ ($I\gamma$): 1787.4 15 (40 20) (1989Bo30).
1790.3	1790.3	26 8	Other $E\gamma$ ($I\gamma$): 1840.8 15 (50 20) (1989Bo30).
1795.6	2004.4	52 12	
1813.7	1813.7	17 8	
1813.9	2022.7	28 12	Other $E\gamma$ ($I\gamma$): 1840.4 15 (150 20) (1989Bo30).
1819.5	2028.3	22 12	
1823.5	1823.5	43 8	
1827.9	1827.9	22 8	Other $E\gamma$ ($I\gamma$): 1820.1 15 (65 14) (1989Bo30).
1835.3	1835.3	18 8	Other $E\gamma$ ($I\gamma$): 1850.3 15 (80 40) (1989Bo30).
1837.5	1884.0	29 11	
1847.3	1893.8	58 11	
1850.4	2059.2	96 12	Other $E\gamma$ ($I\gamma$): 1850.3 15 (80 40) (1989Bo30).
1854.0	1900.5	23 10	Other $E\gamma$ ($I\gamma$): 1886.3 15 (110 30) (1989Bo30).
1869.3	1869.3	86 10	
1871.8	2163.5	35 13	
1872.7 $\S$ @	2166.9	110 $\S$ 40	Other $E\gamma$ ($I\gamma$): 1888.0 15 (70 30) (1989Bo30).
1884.0	1884.0	52 13	
1885.4	1931.9	30 10	
1886.6	2095.4	49 12	Other $E\gamma$ ($I\gamma$): 1897.6 15 (240 40) (1989Bo30).
1890.1	2098.9	31 12	
1897.4	1943.9	151 14	
1902.6	2111.4	41 12	Other $E\gamma$ ($I\gamma$): 1919.6 15 (50 30) (1989Bo30).
1914.9	1914.9	33 12	
1917.1	2125.9	38 14	
1921.2	2130.0	54 14	Other $E\gamma$ ($I\gamma$): 1939.9 15 (60 30) (1989Bo30).
1941.6 $\S$ @	2230.0	80 $\S$ 40	
1943.9	1943.9	24 12	
	2152.7	43 14	Other $E\gamma$ ($I\gamma$): 1959.8 15 (190 60) (1989Bo30).
1945.5	2044.6	19 4	
1952.3	1952.3	23 12	
1954.7	2163.5	112 14	Other $E\gamma$ ($I\gamma$): 1969.2 15 (90 40) (1989Bo30).
1958.1	2166.9	49 14	
1964.1	1964.1	21 12	
1967.6	2176.4	131 16	
1981.8	2028.3	23 10	
1990.2	1990.2	27 12	
1998.1	2044.6	24 11	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I(\gamma_1\gamma_2)^{\ddagger\#}$	Comments
2011.5\$@	2059.2	60\$ 20	
2012.2	2303.9	47 14	
2026.5	2235.3	68 14	
2026.8	2125.9	11 4	
2028.3	2028.3	127 16	Other $E\gamma$ ($I\gamma$): 2029.2 15 (190 30) (1989Bo30).
2030.1	2238.9	26 14	
2048.9	2095.4	25 11	
2053.0	2262.7	33 14	
2057.0	2265.8	42 14	
2057.5	2057.5	35 10	
2057.9	2157.0	12 4	
2064.4	2163.5	8 4	
2074.0	2282.8	105 13	
2079.4	2125.9	252 19	Other $E\gamma$ ($I\gamma$): 2080.2 15 (360 40) (1989Bo30).
2081.5	2373.2	36 14	
2098.9	2098.9	32 10	Other $E\gamma$ ($I\gamma$): 2098.5 15 (40 30) (1989Bo30).
2117.0	2163.5	218 18	
2119.6\$@	2166.9	310\$ 50	
2125.9	2125.9	54 10	Other $E\gamma$ ($I\gamma$): 2125.8 15 (80 30) (1989Bo30).
2126.4	2418.1	57 15	
2129.9	2176.4	120 14	Other $E\gamma$ ($I\gamma$): 2131.2 15 (190 30) (1989Bo30).
2136.2	2235.3	22 5	Other $E\gamma$ ($I\gamma$): 2133.8 (60 20) (1989Bo30).
2136.4	2428.1	75 15	
2157.6	2366.4	37 14	Other $E\gamma$ ($I\gamma$): 2156.9 (100 40) (1989Bo30).
2160.0	2368.8	91 14	
2162.3	2208.8	83 13	
2176.4	2176.4	447 24	Other $E\gamma$: 2179.4 15 (380 70) (1989Bo30).
2183.3	2392.1	294 10	Other $E\gamma$ ($I\gamma$): 2182.0 (320 90) (1989Bo30).
2183.5	2230.0	35 11	
2201.3	2247.8	97 13	
2204.8	2303.9	11 5	
2208.8	2208.8	52 12	
2209.3	2418.1	45 14	
2211.1	2257.6	26 11	
2212.5	2311.6	12 5	
2222.1	2430.9	24 14	
2224.4	2433.2	29 14	
2235.3	2235.3	56 12	
2236.3	2282.8	134 15	
2241.6	2450.4	76 14	
2245.7	2292.2	45 11	Other $E\gamma$ ($I\gamma$): 2245.6 15 (80 40) (1989Bo30).
2257.4	2303.9	92 12	
2265.8	2265.8	44 13	
2266.0	2474.8	30 13	
2269.7	2368.8	8 5	
2282.8	2282.8	26 12	
2285.1	2493.9	38 13	
2292.2	2292.2	49 12	Other $E\gamma$ ($I\gamma$): 2292.8 15 (70 30) (1989Bo30).
2303.9	2303.9	196 18	
2313.1	2359.6	21 11	
2313.7	2522.5	34 13	
2322.3	2368.8	57 13	Other $E\gamma$ ($I\gamma$): 2321.2 (60 20) (1989Bo30).
2324.5	2324.5	97 14	
2326.1	2534.9	116 14	
2327.5\$@	2615.6	130\$ 40	
2336.9	2383.4	40 11	
2341.3	2550.1	32 13	
2345.6	2392.1	54 29	
2350.5	(6190.60)		
2365.1	2573.9	28 13	
2366.4	2366.4	41 13	Other $E\gamma$ ($I\gamma$): 2365.9 15 (90 34) (1989Bo30).
2381.6	2428.1	52 12	
2386.7	2433.2	33 11	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I(\gamma_1\gamma_2)^{\ddagger\#}$	Comments
2392.1	2392.1	93 15	Other $E\gamma$ ($I\gamma$): 2391.2 (100 30) (1989Bo30).
2401.0	2447.5	21 11	
2402.6	2611.4	62 15	
2403.9	2450.4	128 15	
2406.8	2615.6	49 15	Other $E\gamma$ ($I\gamma$): 2403.4 (70 40) (1989Bo30).
2407.2\$@	2503.7	60\$ 20	
2447.4	2493.9	21 12	Possibly the adopted 2446.5 4 line known from (n, γ) E=thermal.
2457.2	2503.7	146 17	Other $E\gamma$: 2458.5 (190 40) (1989Bo30).
2470.8	2517.3	48 12	
2476.0	2522.5	141 16	
2480.8	(6190.60)		
2481.6\$@	2687.2	100\$ 40	
^x 2483.0		80 40	From 1989Bo30 only; placed by authors from an otherwise unknown 2775 level.
2488.4	2534.9	80 14	
2498.6	2707.4	48 15	
2500.9	2547.4	32 12	
2503.6	(6190.60)		
2505.2\$@	2503.7	90\$ 30	
2517.3	2517.3	47 10	
2522.5	2522.5	138 14	Possibly the E=2522.5–2526.4 primary γ reported by 1989Bo30.
2529.9	2529.9	18 10	
2535.0	2743.8	29 15	
2551.1	2597.6	45 12	
2552.6	2552.6	31 9	
2560.7	2769.5	79 15	Other $E\gamma$ ($I\gamma$): 2565.7 15 (130 40) (1989Bo30). Placed by 1989Bo30 from an otherwise unknown 2775 level.
2564.9	2611.4	61 12	
2567.7	2567.7	32 10	
2569.1	2615.6	75 12	Other $E\gamma$ ($I\gamma$): 2566.8 (250 40) (1989Bo30).
2573.9	2573.9	39 10	
2574.1	2782.9	50 15	
2593.2	2593.2	78 14	
2608.5	2817.3	41 14	
2609.3	2655.8	35 11	
2612.4	2612.4	38 12	
2621.0@	2615.6	80 30	$E\gamma, I(\gamma_1\gamma_2)$: from 1989Bo30; $E\gamma$ fits placement very poorly and branch is unconfirmed by 2005Su29, so placement is shown as questionable here. A weaker 2617 γ branch has been reported in (n, γ) E=thermal.
2621.3	2667.8	26 11	
2630.4	2839.2	16 14	
2640.7	2687.2	43 11	Other $E\gamma$ ($I\gamma$): 2644.9 (80 30) (1989Bo30).
2647.0	2855.8	16 14	
2652.9	2699.4	29 11	
2656.5	(6190.60)		
2660.9	2707.4	30	$I(\gamma_1\gamma_2)$: reported uncertainty of 999 is presumed to be a typographical error; 9 would be more realistic.
2667.8	2667.8	33 12	
2669.0	2715.5	29 11	Other $E\gamma$ ($I\gamma$): 2666.4 (140 30) (1989Bo30).
2672.4	2881.2	24 14	
2691.5	2738.0	29 11	
2695.2	2741.7	22 11	
2699.4	2699.4	45 12	
2707.4	2707.4	57 12	
2715.5	2715.5	61 13	Other $E\gamma$ ($I\gamma$): 2716.1 (210 30) (1989Bo30).
2718.5	2765.0	23 11	
2723.0	2769.5	44 11	
2735.1	2781.6	23 11	
2741.7	2741.7	56 15	
2758.1	2804.6	21 12	Other $E\gamma$ ($I\gamma$): 2759.7 (60 30) (1989Bo30).
2766.0	2812.5	51 11	
2769.5	2769.5	31 12	
2786.3	2832.8	46 11	Possibly the E=2784.4 to 2788.1 primary γ reported by 1989Bo30.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I(\gamma_1\gamma_2)^{\ddagger\#}$	Comments
2804.7@	2804.6		From 1989Bo30; γ absent in 2005Su29, so placement shown as uncertain here. $I_{\gamma}=60$ 30 (1989Bo30).
2834.8	2834.8	53 12	
2843.1	2843.1	24 12	
2847.4	2847.4	49 12	
2867.9	2914.4	51 11	Other E_{γ} (I_{γ}): 2865.6 (110 30) (1989Bo30).
2898.9	2945.4	29 11	
2910.1	2910.1	27 12	Other E_{γ} (I_{γ}): 2912.2 (70 30) (1989Bo30).
2916.0	3015.1	15 4	
2932.7	2979.2	43 12	
2954.4	2954.4	28 12	
2966.5	2966.5	44 12	
2979.2	2979.2	74 12	
2984.3	3030.8	73 13	Possibly the $E_{\gamma}=2982.5$ to 2985.0 line reported by 1989Bo30.
3024.3	3070.8	25 11	
3032.1	3078.6	28 11	
3042.3	3042.3	29 12	
3050.0	3096.5	39 11	
3054.3	3054.3	32 12	
3078.6	3078.6	31 12	
3083.7	3083.7	41 12	
3094.1	(6190.60)		
3106.9	(6190.60)		
3112.0	(6190.60)		
3119.8	(6190.60)		
3136.3	(6190.60)		
3148.3	(6190.60)		
3159.8	(6190.60)		Possibly the $E=3161.6$ 15 γ placed by 1989Bo30 from an otherwise unknown 3206 level.
3175.5	(6190.60)		
^x 3193.7			From 1989Bo30 only; placed by authors from an otherwise unknown 3405 level.
^x 3205.6			From 1989Bo30 only; placed by authors from an otherwise unknown 3405 level.
3211.4	(6190.60)		
3224.1	(6190.60)		
3236.2	(6190.60)		
3245.2	(6190.60)		
3276.2	(6190.60)		Other E_{γ} : 3278.5 15 (1989Bo30); presumably for a doublet.
3280.5	(6190.60)		E_{γ} : see comment on 3276 γ .
3309.4	(6190.60)		
3325.3	3534.1	38 14	
3334.8	(6190.60)		
3343.2	(6190.60)		
3347.5	(6190.60)		
3351.4	(6190.60)		
3355.8	(6190.60)		
3357.8	(6190.60)		Possibly the 3359.8 15 γ placed by 1989Bo30 from an otherwise unknown 3405 level.
3373.3	(6190.60)		Possibly the 3373.1 15 γ placed by 1989Bo30 from an otherwise unknown 3666 level.
3378.1	(6190.60)		
3386.0	(6190.60)		Other E_{γ} : 3384.5 to 3386.0 from 1989Bo30.
3407.7	(6190.60)		
3409.0	(6190.60)		Presumably part of a doublet ($E_{\gamma}=3415.8$ to 3416.2) in 1989Bo30.
3421.1	(6190.60)		E_{γ} : see comment on 3409 γ .
3425.6	(6190.60)		
3446.8	(6190.60)		
3448.9	(6190.60)		
3452.6	(6190.60)		Possibly the 3455.5 15 γ placed by 1989Bo30 from an otherwise unknown 3666 level.
3475.1	(6190.60)		Other E_{γ} : 3474.6 to 3477.7 from 1989Bo30.
3478.2	3687.0	13 15	
3483.2	(6190.60)		
3491.2	(6190.60)		
3501.0	3709.8	34 15	
3503.4	(6190.60)		Other E_{γ} : 3499.7 to 3500.2 from 1989Bo30.
3522.8	(6190.60)		
3534.1	3534.1	68 12	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I(\gamma_1\gamma_2)^{\ddagger\#}$	Comments
3534.8	(6190.60)		
^x 3568.7			From 1989Bo30 only; placed by authors from an otherwise unknown 3666 level.
3575.0	(6190.60)		Other $E\gamma$: 3569.6 to 3578.4 from 1989Bo30.
3578.2	(6190.60)		
3579.2	(6190.60)		
3593.0	(6190.60)		
3597.4	(6190.60)		
3616.7	(6190.60)		
3622.9	(6190.60)		
3638.0	(6190.60)		
3640.5	3687.0	27 12	
	(6190.60)		
3643.2	(6190.60)		
3655.7	(6190.60)		
3660.7	(6190.60)		
3668.1	(6190.60)		Possibly the E=3668.1 15 γ placed by 1989Bo30 from an otherwise unknown 3666 level.
3673.3	(6190.60)		
3686.9	(6190.60)		Other $E\gamma$: 3684.4 to 3685.6 from 1989Bo30.
3687.0	3687.0	38 13	
3696.7	(6190.60)		
3709.8	3709.8	25 13	
3715.8	(6190.60)		
3740.2	(6190.60)		
3743.1	(6190.60)		
3757.4	(6190.60)		
3759.7	(6190.60)		
3762.5	(6190.60)		
3772.5	(6190.60)		
3793.6	3840.1	32 14	
3798.5	(6190.60)		Other $E\gamma$: 3799.4 to 3799.9 from 1989Bo30.
3807.2	(6190.60)		
3817.4	(6190.60)		
3821.8	(6190.60)		Other $E\gamma$: 3822.1 15 from 1989Bo30.
3824.2	(6190.60)		Other $E\gamma$: 3824.7 to 3824.9 from 1989Bo30.
3831.0	(6190.60)		
3840.1	3840.1	45 12	
3866.1	(6190.60)		
3879.0	(6190.60)		
3886.7	(6190.60)		
3898.4	(6190.60)		Other $E\gamma$: 3897.8 to 3898.5 from 1989Bo30.
3907.8	(6190.60)		
3924.8	(6190.60)		
3927.9	(6190.60)		
3933.0	(6190.60)		
3942.8	(6190.60)		
3951.7	(6190.60)		
3955.3	(6190.60)		Other $E\gamma$: 3957.3 to 3957.7 from 1989Bo30.
3960.6	(6190.60)		
3981.8	(6190.60)		
4014.2	(6190.60)		Other $E\gamma$: 4011.3 to 4012.9 from 1989Bo30.
4023.7	(6190.60)		Other $E\gamma$: 4022.1 to 4024.6 from 1989Bo30.
4027.1	(6190.60)		Other $E\gamma$: 4026.2 15 from 1989Bo30.
4033.6	(6190.60)		
4037.9	(6190.60)		
4060.6	(6190.60)		Other $E\gamma$: 4062.2 15 from 1989Bo30.
4064.7	(6190.60)		Other $E\gamma$: 4063.9 to 4064.8 from 1989Bo30.
4079.2	(6190.60)		
4091.7	(6190.60)		Other $E\gamma$: 4092.1 15 from 1989Bo30.
4095.2	(6190.60)		Other $E\gamma$: 4093.8 15 from 1989Bo30.
4131.4	(6190.60)		Other $E\gamma$: 4131.5 from 1989Bo30.
4133.1	(6190.60)		Other $E\gamma$: 4132.6 15 from 1989Bo30.
4146.0	(6190.60)		
4162.3	(6190.60)		Other $E\gamma$: 4161.5 to 4163.8 from 1989Bo30.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	Comments
4167.0	(6190.60)	
4186.2	(6190.60)	
4200.4	(6190.60)	
4226.5	(6190.60)	
4238.3	(6190.60)	
4246.7	(6190.60)	Other E_{γ} : 4245.8 to 4250.7 from 1989Bo30.
4258.7	(6190.60)	
4275.7	(6190.60)	
4290.1	(6190.60)	
4296.8	(6190.60)	
4304.4	(6190.60)	Other E_{γ} : 4303.7 to 4307.5 from 1989Bo30.
4306.6	(6190.60)	
4321.3	(6190.60)	
4355.3	(6190.60)	Other E_{γ} : 4349.8 to 4353.7 from 1989Bo30.
4362.7	(6190.60)	
4367.1	(6190.60)	Other E_{γ} : 4366.9 to 4370.5 from 1989Bo30.
4376.9	(6190.60)	
4379.2	(6190.60)	Other E_{γ} : 4378.2 to 4379.2 from 1989Bo30.
4400.3	(6190.60)	
4444.0	(6190.60)	
4460.6	(6190.60)	Other E_{γ} : 4460.2 to 4461.1 from 1989Bo30.
4465.7	(6190.60)	
4513.7	(6190.60)	Other E_{γ} : 4513.3 15 from 1989Bo30.
4518.1	(6190.60)	Other E_{γ} : 4516.7 to 4518.4 from 1989Bo30.
4521.3	(6190.60)	Other E_{γ} : 4523.3 to 4528.9 from 1989Bo30; apparently for a doublet.
4528.7	(6190.60)	See comment on 4521 γ .
4531.1	(6190.60)	
4532.6	(6190.60)	
4557.9	(6190.60)	
4562.6	(6190.60)	Other E_{γ} : 4562.9 to 4566.3 from 1989Bo30.
4573.7	(6190.60)	Other E_{γ} : 4571.6 15 from 1989Bo30; coin with 1327.2 γ .
4575.4	(6190.60)	
4578.5	(6190.60)	
4604.3	(6190.60)	
4634.9	(6190.60)	Other E_{γ} : 4632.5 to 4635.7 from 1989Bo30.
4652.8	(6190.60)	
4688.5	(6190.60)	
4720.0	(6190.60)	Other E_{γ} : 4718.9 to 4720.1 from 1989Bo30.
4727.8	(6190.60)	Other E_{γ} : 4729.0 to 4730.6 from 1989Bo30.
4757.7	(6190.60)	
4773.2	(6190.60)	
4777.9	(6190.60)	
4881.9	(6190.60)	Other E_{γ} : 4879.8 to 4880.6 from 1989Bo30.
4918.6	(6190.60)	
4964.2	(6190.60)	
5002.4	(6190.60)	
5094.3	(6190.60)	
5164.7	(6190.60)	Other E_{γ} : 5163.7 to 5164.7 from 1989Bo30.
5239.4	(6190.60)	
5240.8	(6190.60)	
5249.1	(6190.60)	
5256.6	(6190.60)	Other E_{γ} : 5257 from 1989Bo30.
5281.3	(6190.60)	
5287.6	(6190.60)	Other E_{γ} : 5287 from 1989Bo30.
5290.9	(6190.60)	
5318.7	(6190.60)	
5374.3	(6190.60)	
5382.4	(6190.60)	
5385.8	(6190.60)	
5513.0	(6190.60)	
5633.2	(6190.60)	
5899	(6190.60)	
5981.70 22	(6190.60)	E_{γ} : from 2014Hu02; 5982 from 1989Bo30.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=thermal: $\gamma\gamma$ Coin 2005Su29 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^\dagger$	E(level)	Comments
6091.2 3	(6190.60)	$E\gamma$: from 2014Hu02; 6092 from 1989Bo30.
6144.28 6	(6190.60)	$E\gamma$: from 2014Hu02; 6144 from 1989Bo30.
6190.78 6	(6190.60)	$E\gamma$: from 2014hu002; 6191 from 1989Bo30.

† From 2005Su29, except as noted; uncertainty unstated by authors.

‡ Measured two-photon cascade coin intensity per 10^5 decays; from 2005Su29, except as noted. This intensity depends on both the primary and the secondary transitions' photon intensities and provides photon branching information from the intermediate level.

§ From 1989Bo30; unconfirmed by 2005Su29, so omitted from Adopted Gammas.

$^\#$ Absolute intensity per 100 neutron captures.

$^\@$ Placement of transition in the level scheme is uncertain.

$^\times$ γ ray not placed in level scheme.

 $^{182}\text{W}(\text{n},\gamma)$ E=res 1969MuZQ

All resonance-property data have been taken from the evaluation by 2006MuZX. See also the (n, γ) E=4.1 eV dataset for detailed γ -ray information from that resonance.

1969MuZQ: natural W target; Ge detector; measured primary $E\gamma$, $I\gamma$ for six resonances; E(n) from time of flight.

 ^{183}W Levels

E(level) †	$J\pi^\ddagger$	L	E(res)(lab)	Comments
0.0				
45				
207				
532				
870				
932				
960				
1026				
1292				
1471				
1557				
1633				
1671				
1727				
1799				
1837				
1865				
1886				
1917				
1944				
1979				
1993				
2096				
2127				
2176				
2324				
6190.81413 1	1/2+	0	4.155×10^{-3} 5	$\Gamma_\gamma=0.0495$ eV 2, $g\Gamma_n=0.001545$ eV 3. See (n, γ) E=4.1 eV dataset for detailed primary and secondary transition information from this resonance.
6190.86094 3	1/2+	0	0.02106 3	$\Gamma_\gamma=0.0483$ eV 6, $g\Gamma_n=0.0410$ eV 2. $J\pi$: s-wave capture by 0+ target.
6190.9238 1	1/2+	0	0.1144 1	$\Gamma_\gamma=0.060$ eV 3, $g\Gamma_n=0.270$ eV 10.
6191.0216 2	1/2+	0	0.2128 2	$g\Gamma_n=0.0026$ eV 3.
6191.0566 2	1/2+	0	0.2480 2	$\Gamma_\gamma=0.064$ eV 6, $g\Gamma_n=0.96$ eV 6.
6191.1497 4	1/2+	0	0.3416 4	$g\Gamma_n=0.0057$ eV 10.
6191.1841 4	1/2+	0	0.3762 4	$\Gamma_\gamma=0.063$ eV 13, $g\Gamma_n=0.140$ eV 20.
6191.2362 3	1/2+	0	0.4285 3	$\Gamma_\gamma=0.055$ eV 7, $g\Gamma_n=0.260$ eV 25.
6191.2916 3	1/2+	0	0.4842 3	$\Gamma_\gamma=0.049$ eV 7, $g\Gamma_n=0.46$ eV 4.

Continued on next page (footnotes at end of table)

¹⁸²W(n,γ) E=res 1969MuZQ (continued)

¹⁸³W Levels (continued)

E(level) [†]	Jπ [‡]	L	E(res)(lab)	Comments
6191.3850 4	1/2+	0	0.5782 4	Γ _γ =0.058 eV 7, gΓ _n =0.270 eV 25.
6191.4616 5	1/2+	0	0.6552 5	Γ _γ =0.059 eV 7, gΓ _n =0.140 eV 20.
6191.4923 6	1/2+	0	0.6860 6	gΓ _n =0.0032 eV 3.
6191.5653 6	1/2+	0	0.7594 4	Γ _γ =0.057 eV 27, gΓ _n =0.096 eV 19.
6191.5874 6	1/2+	0	0.7817 6	gΓ _n =0.009 eV 3.
6191.6681 3	1/2+	0	0.8628 3	gΓ _n =0.023 eV 4.
6191.7238 4	1/2+	0	0.9188 4	Γ _γ =0.078 eV 12, gΓ _n =0.35 eV 4.
6191.7521 4	1/2+	0	0.9473 4	Γ _γ =0.077 eV 8, gΓ _n =2.00 eV 20.
6191.8115 4	1/2+	0	1.0070 4	Γ _γ =0.070 eV 11, gΓ _n =0.51 eV 5.
6191.8403 11		[1]	1.0360 11	gΓ _n =0.0031 eV 5.
6191.8642 12		[0]	1.0600 12	gΓ _n =0.0045 eV 6.
6191.8991 5	1/2+	0	1.0951 5	Γ _γ =0.069 eV 8, gΓ _n =1.50 eV 20.
6191.9647 6	1/2+	0	1.1610 6	Γ _γ =0.052 eV 8, gΓ _n =0.484 eV 25.
6192.0779 6	1/2+	0	1.2749 6	gΓ _n =0.039 eV 6.
6192.0901 7	1/2+	0	1.2871 7	Γ _γ =0.084 eV 12, gΓ _n =0.090 eV 20.
6192.1288 7	1/2+	0	1.3260 7	Γ _γ =0.075 eV 9, gΓ _n =0.025 eV 8.
6192.2101 7	1/2+	0	1.4078 7	Γ _γ =0.080 eV 20, gΓ _n =0.13 eV 3.
6192.3038 8	1/2+	0	1.5020 8	Γ _γ =0.070 eV 10, gΓ _n =0.44 eV 3.
6192.3157 8	1/2+	0	1.5140 8	Γ _γ =0.070 eV 10, gΓ _n =0.44 eV 6.
6192.3834 9	1/2+	0	1.5820 9	Γ _γ =0.050 eV 10, gΓ _n =0.078 eV 15.
6192.4558 9	1/2+	0	1.6459 9	Γ _γ =0.080 eV 10, gΓ _n =0.062 eV 15.
6192.5573 5	1/2+	0	1.7720 5	Γ _γ =0.060 eV 6, gΓ _n =3.00 eV 25.
6192.5933 5	1/2+	0	1.7931 5	gΓ _n =0.25 eV 4.
6192.7204 20	1/2+	0	1.9209 20	gΓ _n =0.060 eV 10.
6192.8051 6	1/2+	0	2.0061 6	Γ _γ =0.095 eV 8, gΓ _n =1.43 eV 13.
6192.8597 7	1/2+	0	2.0610 7	Γ _γ =0.090 eV 8, gΓ _n =1.40 eV 15.
6192.9024 7	1/2+	0	2.1039 7	gΓ _n =0.316 eV 25.
6192.9780 7	1/2+	0	2.1799 7	Γ _γ =0.051 eV 5, gΓ _n =0.63 eV 5.
6193.0237 7	1/2+	0	2.2259 7	Γ _γ =0.091 eV 9, gΓ _n =0.80 eV 9.
6193.1255 8	1/2+	0	2.3282 8	Γ _γ =0.090 eV 7, gΓ _n =0.56 eV 6.
6193.1812 8	1/2+	0	2.3842 8	Γ _γ =0.049 eV 6, gΓ _n =0.87 eV 10.
6193.2087 8	1/2+	0	2.4119 8	gΓ _n =0.213 eV 30.
6193.3262 9	1/2+	0	2.5300 9	gΓ _n =0.225 eV 30.
6193.3719 9	1/2+	0	2.5760 9	gΓ _n =0.90 eV 10.
6193.4028 9	1/2+	0	2.6070 9	gΓ _n =0.21 eV 3.
6193.504 3		[1]	2.709 3	gΓ _n Γ _γ /Γ=0.0041 eV 4, gΓ _n =0.0044 eV 4.
6193.519 3		[1]	2.724 3	gΓ _n Γ _γ /Γ=0.0104 eV 6, gΓ _n =0.129 eV 10.
6193.532 3		[1]	2.737 3	gΓ _n Γ _γ /Γ=0.0032 eV 4, gΓ _n =0.0034 eV 4.
6193.546 3		[1]	2.751 3	gΓ _n Γ _γ /Γ=0.0014 eV 3, gΓ _n =0.0014 eV 3.
6193.586 3	1/2+	0	2.791 3	gΓ _n =2.90 eV 12.
6193.660 3		[1]	2.866 3	gΓ _n Γ _γ /Γ=0.0037 eV 5, gΓ _n =0.0040 eV 5.
6193.666 3	1/2+	0	2.872 3	Γ _γ =0.057 eV 3, gΓ _n =0.25 eV 4.
6193.698 3		[1]	2.904 3	gΓ _n Γ _γ /Γ=0.0021 eV 4, gΓ _n =0.0022 eV 4.
6193.736 3	1/2+	0	2.942 3	Γ _γ =0.0520 eV 21, gΓ _n =0.30 eV 4.
6193.784 3		[1]	2.990 3	gΓ _n Γ _γ /Γ=0.0131 eV 7, gΓ _n =0.0173 eV 20.
6193.842 3	1/2+	0	3.049 3	Γ _γ =0.066 eV 3, gΓ _n =1.45 eV 6.
6193.878 3		[1]	3.085 3	gΓ _n Γ _γ /Γ=0.0007 eV 4, gΓ _n =0.0007 eV 4.
6193.913 3	1/2+	0	3.120 3	Γ _γ =0.057 eV 5, gΓ _n =0.165 eV 30.
6193.926 3		[1]	3.133 3	gΓ _n Γ _γ /Γ=0.0049 eV 5, gΓ _n =0.0054 eV 6.
6193.949 3		[1]	3.156 3	gΓ _n Γ _γ /Γ=0.0062 eV 5, gΓ _n =0.0070 eV 6.
6193.996 3	1/2+	0	3.204 3	Γ _γ =0.0525 eV 20, gΓ _n =0.29 eV 3.
6194.012 3		[1]	3.220 3	gΓ _n Γ _γ /Γ=0.0054 eV 5, gΓ _n =0.0060 eV 6.
6194.028 3		[1]	3.236 3	gΓ _n Γ _γ /Γ=0.0036 eV 5, gΓ _n =0.0039 eV 5.
6194.050 3	1/2+	0	3.258 3	Γ _γ =0.0532 eV 16, gΓ _n =0.60 eV 8.
6194.086 3		[1]	3.294 3	gΓ _n Γ _γ /Γ=0.0095 eV 6, gΓ _n =0.0115 eV 9.
6194.099 3	1/2+	0	3.307 3	Γ _γ =0.0592 eV 23, gΓ _n =1.55 eV 7.
6194.122 3		[1]	3.330 3	gΓ _n Γ _γ /Γ=0.0026 eV 4, gΓ _n =0.0027 eV 4.
6194.136 3	1/2+	0	3.344 3	Γ _γ =0.047 eV 4, gΓ _n =0.17 eV 3.
6194.205 3	1/2+	0	3.414 3	Γ _γ =0.0522 eV 24, gΓ _n =2.62 eV 30.
6194.224 3		[1]	3.433 3	gΓ _n Γ _γ /Γ=0.0115 eV 6, gΓ _n =0.0146 eV 10.
6194.286 3	1/2+	0	3.495 3	Γ _γ =0.050 eV 3, gΓ _n =1.70 eV 9.
6194.315 4	1/2+	0	3.524 4	Γ _γ =0.0553 eV 18, gΓ _n =0.51 eV 6.
6194.356 4	1/2+	0	3.565 4	Γ _γ =0.0525 eV 17, gΓ _n =0.43 eV 4.

Continued on next page (footnotes at end of table)

¹⁸²W(n,γ) E=res 1969MuZQ (continued)

¹⁸³W Levels (continued)

E(level) [†]	Jπ [‡]	L	E(res)(lab)	Comments
6194.394 4	1/2+	0	3.604 4	Γ _γ =0.0649 eV 25, gΓ _n =1.24 eV 5.
6194.468 4		[1]	3.678 4	gΓ _n Γ _γ /Γ=0.0013 eV 4, gΓ _n =0.0013 eV 4.
6194.510 4	1/2+	0	3.720 4	gΓ _n Γ _γ /Γ=0.0247 eV 8, gΓ _n =0.046 eV 8.
6194.545 4		[1]	3.756 4	gΓ _n Γ _γ /Γ=0.0061 eV 5, gΓ _n =0.0069 eV 6.
6194.577 4	1/2+	0	3.788 4	Γ _γ =0.0752 eV 20, gΓ _n =0.095 eV 20.
6194.595 4		[1]	3.806 4	gΓ _n Γ _γ /Γ=0.0080 eV 5, gΓ _n =0.0094 eV 7.
6194.625 4		[1]	3.836 4	gΓ _n Γ _γ /Γ=0.0064 eV 6, gΓ _n =0.0073 eV 7.
6194.637 4	1/2+	0	3.848 4	Γ _γ =0.073 eV 3, gΓ _n =4.62 eV 19.
6194.648 4		[1]	3.859 4	Γ _γ =0.0727 eV 24, gΓ _n =0.0023 eV 7. gΓ _n Γ _γ /Γ=0.0022 eV 7.
6194.670 4	1/2+	0	3.881 4	gΓ _n =1.94 eV 7.
6194.684 4		[1]	3.895 4	gΓ _n Γ _γ /Γ=0.0027 eV 6, gΓ _n =0.0028 eV 6.
6194.716 4		[1]	3.927 4	gΓ _n Γ _γ /Γ=0.0059 eV 6, gΓ _n =0.0066 eV 6.
6194.729 4		[1]	3.941 4	gΓ _n Γ _γ /Γ=0.0079 eV 5, gΓ _n =0.0093 eV 7.
6194.747 4		[1]	3.959 4	gΓ _n Γ _γ /Γ=0.0020 eV 6, gΓ _n =0.0021 eV 6.
6194.764 4	1/2+	0	3.976 4	Γ _γ =0.0608 eV 20, gΓ _n =1.66 eV 7.
6194.785 4	1/2+	0	3.997 4	Γ _γ =0.0522 eV 25, gΓ _n =0.29 eV 5.
6194.834 4		[1]	4.046 4	gΓ _n Γ _γ /Γ=0.0047 eV 5, gΓ _n =0.0051 eV 6.
6194.853 4		0	4.065 4	Γ _γ =0.0526 eV 24, gΓ _n =1.14 eV 6.
6194.919 4	1/2+		4.132 4	
6194.988 4		[1]	4.201 4	gΓ _n Γ _γ /Γ=0.0032 eV 6, gΓ _n =0.0034 eV 6.
6195.001 4	1/2+	0	4.214 4	Γ _γ =0.068 eV 3, gΓ _n =0.29 eV 3.
6195.040 4		[1]	4.253 4	gΓ _n Γ _γ /Γ=0.0051 eV 6, gΓ _n =0.0056 eV 7.
6195.055 4	1/2+	0	4.268 4	Γ _γ =0.063 eV 4, gΓ _n =0.21 eV 3.
6195.101 4	1/2+	0	4.315 4	Γ _γ =0.0656 eV 23, gΓ _n =1.99 eV 9.
6195.114 4	1/2+	[0]	4.328 4	gΓ _n Γ _γ /Γ=0.0338 eV 11, gΓ _n =0.09 eV 4.
6195.126 4		[1]	4.340 4	gΓ _n Γ _γ /Γ=0.0063 eV 7, gΓ _n =0.0071 eV 8.
6195.155 4	1/2+	0	4.369 4	Γ _γ =0.073 eV 26, gΓ _n =0.085 eV 20.
6195.210 4		[1]	4.424 4	gΓ _n Γ _γ /Γ=0.0026 eV 10, gΓ _n =0.0027 eV 10.
6195.219 4	1/2+	0	4.433 4	Γ _γ =0.075 eV 3, gΓ _n =2.92 eV 13.
6195.280 4	1/2+	0	4.495 4	Γ _γ =0.0582 eV 18, gΓ _n =0.44 eV 5.
6195.310 5		[1]	4.525 5	gΓ _n Γ _γ /Γ=0.0033 eV 4, gΓ _n =0.0035 eV 4.
6195.339 5		[1]	4.554 5	gΓ _n Γ _γ /Γ=0.0092 eV 6, gΓ _n =0.0111 eV 9.
6195.393 5	1/2+	[0]	4.608 5	gΓ _n Γ _γ /Γ=0.0349 eV 10, gΓ _n =0.099 eV.
6195.418 5		[1]	4.633 5	gΓ _n Γ _γ /Γ=0.0051 eV 5, gΓ _n =0.0056 eV 6.
6195.427 5		[1]	4.642 5	gΓ _n Γ _γ /Γ=0.0089 eV 6, gΓ _n =0.0107 eV 9.
6195.501 5	1/2+	0	4.717 5	Γ _γ =0.0807 eV 22, gΓ _n =0.95 eV 10.
6195.528 5	1/2+	[0]	4.744 5	gΓ _n Γ _γ /Γ=0.0336 eV 10, gΓ _n =0.089 eV.
6195.618 5	1/2+	0	4.834 5	Γ _γ =0.0480 eV 23, gΓ _n =3.00 eV 15.
6195.632 5	1/2+	0	4.848 5	Γ _γ =0.056 eV 7, gΓ _n =0.15 eV 4.
6195.688 5		[1]	4.905 5	gΓ _n Γ _γ /Γ=0.0073 eV 9, gΓ _n =0.0084 eV 10.
6195.694 5	1/2+	0	4.911 5	Γ _γ =0.0573 eV 26, gΓ _n =1.37 eV 7.
6195.733 5		[1]	4.950 5	gΓ _n Γ _γ /Γ=0.0090 eV 8, gΓ _n =0.0108 eV 10.
6195.745 5	1/2+	0	4.962 5	Γ _γ =0.0580 eV 22, gΓ _n =0.38 eV 5.
6195.767 5		[1]	4.984 5	gΓ _n Γ _γ /Γ=0.0054 eV 6, gΓ _n =0.0060 eV 7.
6195.816 5		[1]	5.033 5	gΓ _n Γ _γ /Γ=0.0057 eV 6, gΓ _n =0.0064 eV 7.
6195.879 5	1/2+	[1]	5.097 5	gΓ _n Γ _γ /Γ=0.0178 eV 7, gΓ _n =0.027 eV 4.
6195.922 5	1/2+	0	5.140 5	Γ _γ =0.0490 eV 14, gΓ _n =1.11 eV 15.
6195.943 5		[1]	5.161 5	gΓ _n Γ _γ /Γ=0.0171 eV 8, gΓ _n =0.025 eV 3.
6195.982 5	1/2+	0	5.200 5	Γ _γ =0.071 eV 3, gΓ _n =5.19 eV 19.
6195.999 5		[1]	5.218 5	gΓ _n Γ _γ /Γ=0.0046 eV 7, gΓ _n =0.0050 eV 8.
6196.075 5		[1]	5.294 5	gΓ _n Γ _γ /Γ=0.0060 eV 6, gΓ _n =0.0068 eV 7.
6196.126 5	1/2+	[0]	5.345 5	gΓ _n Γ _γ /Γ=0.0268 eV 9, gΓ _n =0.053 eV 13.
6196.141 5		[1]	5.360 5	gΓ _n Γ _γ /Γ=0.0037 eV 6, gΓ _n =0.0040 eV 6.
6196.186 5		[1]	5.406 5	gΓ _n Γ _γ /Γ=0.0042 eV 6, gΓ _n =0.0046 eV 7.
6196.216 5	1/2+	0	5.436 5	gΓ _n Γ _γ /Γ=0.134 eV 4, gΓ _n =6.23 eV 17.
6196.243 5		[1]	5.463 5	gΓ _n Γ _γ /Γ=0.0050 eV 6, gΓ _n =0.0055 eV 7.
6196.301 6		[1]	5.521 6	gΓ _n Γ _γ /Γ=0.0055 eV 7, gΓ _n =0.0061 eV 8.
6196.320 6	1/2+	0	5.540 6	Γ _γ =0.0532 eV 23, gΓ _n =0.580 eV 15.
6196.346 6	1/2+	0	5.566 6	Γ _γ =0.0576 eV 18, gΓ _n =0.70 eV 10.
6196.361 6		[1]	5.581 6	gΓ _n Γ _γ /Γ=0.0094 eV 8, gΓ _n =0.0114 eV 10.
6196.405 6		[1]	5.626 6	gΓ _n Γ _γ /Γ=0.0108 eV 8, gΓ _n =0.0135 eV 10.
6196.435 6	1/2+	0	5.656 6	Γ _γ =0.007 eV 7, gΓ _n =13.7 eV 7.
6196.464 6	1/2+	[0]	5.685 6	gΓ _n Γ _γ /Γ=0.0340 eV 11, gΓ _n =0.092 eV.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=res $^{1969}\text{MuZQ}$ (continued) ^{183}W Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	L	E(res)(lab)	Comments
6196.483 6		[1]	5.704 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0091$ eV 8, $g\Gamma_n=0.0109$ eV 10.
6196.497 6	1/2+	[0]	5.718 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0432$ eV 12, $g\Gamma_n=0.220$ eV.
6196.545 6		[1]	5.767 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0096$ eV 7, $g\Gamma_n=0.0117$ eV 10.
6196.558 6		[1]	5.780 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0187$ eV 10, $g\Gamma_n=0.029$ eV 4.
6196.610 6	1/2+	[0]	5.832 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0272$ eV 10, $g\Gamma_n=0.055$ eV 14.
6196.661 6	1/2+	0	5.883 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0142$ eV 9, $g\Gamma_n=0.39$ eV 10.
6196.693 6			5.915 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0536$ eV 14.
6196.781 6		[1]	6.004 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0198$ eV 12, $g\Gamma_n=0.031$ eV 5.
6196.798 6	1/2+	0	6.021 6	$\Gamma_\gamma=0.050$ eV 9, $g\Gamma_n=0.24$ eV 10.
6196.856 6		[1]	6.079 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0147$ eV 11, $g\Gamma_n=0.0202$ eV 20.
6196.884 6			6.107 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0520$ eV 18.
6196.939 6		[1]	6.163 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0240$ eV 13, $g\Gamma_n=0.043$ eV 8.
6196.966 6	1/2+	0	6.190 6	$\Gamma_\gamma=0.077$ eV 4, $g\Gamma_n=4.6$ eV 4.
6196.989 6		[1]	6.213 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0088$ eV 11, $g\Gamma_n=0.0105$ eV 10.
6197.038 6	1/2+	0	6.262 6	$\Gamma_\gamma=0.051$ eV 3, $g\Gamma_n=2.59$ eV 17.
6197.067 6		[1]	6.291 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0086$ eV 11, $g\Gamma_n=0.0102$ eV 10.
6197.101 6			6.326 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0449$ eV 17.
6197.132 6		[1]	6.357 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0257$ eV 13, $g\Gamma_n=0.050$ eV 10.
6197.155 6		[1]	6.380 6	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0080$ eV 11, $g\Gamma_n=0.0094$ eV 10.
6197.181 6	1/2+	0	6.406 6	$\Gamma_\gamma=0.073$ eV 3, $g\Gamma_n=3.89$ eV 23.
6197.291 7	1/2+	0	6.517 7	$\Gamma_\gamma=0.061$ eV 3, $g\Gamma_n=0.91$ eV 15.
6197.310 7	1/2+	0	6.536 7	$\Gamma_\gamma=0.051$ eV 6, $g\Gamma_n=1.89$ eV 20.
6197.356 7		[1]	6.582 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0190$ eV 14, $g\Gamma_n=0.029$ eV 5.
6197.379 7	1/2+	0	6.605 7	$\Gamma_\gamma=0.056$ eV 4, $g\Gamma_n=0.38$ eV 8.
6197.442 7	1/2+	0	6.668 7	$\Gamma_\gamma=0.064$ eV 4, $g\Gamma_n=4.9$ eV 4.
6197.507 7	1/2+	0	6.734 7	$\Gamma_\gamma=0.056$ eV 4, $g\Gamma_n=0.47$ eV 10.
6197.516 7	1/2+	0	6.743 7	$\Gamma_\gamma=0.067$ eV 3, $g\Gamma_n=0.63$ eV 10.
6197.550 7		[1]	6.777 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0049$ eV 13, $g\Gamma_n=0.0054$ eV 10.
6197.631 7		0	6.858 7	$\Gamma_\gamma=0.068$ eV 3, $g\Gamma_n=1.25$ eV 15.
6197.679 7		[1]	6.907 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0197$ eV 15, $g\Gamma_n=0.031$ eV 5.
6197.733 7	1/2+	0	6.961 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.096$ eV 4, $g\Gamma_n=2.86$ eV 17. E(level): probable doublet.
6197.748 7		[1]	6.976 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0233$ eV 23, $g\Gamma_n=0.040$ eV 8.
6197.788 7	1/2+	0	7.016 7	$\Gamma_\gamma=0.053$ eV 3, $g\Gamma_n=0.059$ eV 10.
6197.826 7		[1]	7.055 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0113$ eV 14, $g\Gamma_n=0.0143$ eV 20.
6197.874 7	1/2+	0	7.103 7	$\Gamma_\gamma=0.084$ eV 5, $g\Gamma_n=0.49$ eV 10.
6197.929 7	1/2+	0	7.158 7	$\Gamma_\gamma=0.055$ eV 4, $g\Gamma_n=2.03$ eV 30.
6198.016 7	1/2+	0	7.246 7	$\Gamma_\gamma=0.079$ eV 3, $g\Gamma_n=1.08$ eV 15.
6198.057 7	1/2+	0	7.288 7	$\Gamma_\gamma=0.055$ eV 5, $g\Gamma_n=0.34$ eV 10.
6198.088 7			7.318 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0496$ eV 19.
6198.190 7		[1]	7.421 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0096$ eV 12, $g\Gamma_n=0.0117$ eV 20.
6198.211 7		[1]	7.442 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0092$ eV 15, $g\Gamma_n=0.0111$ eV 20.
6198.224 7		[1]	7.445 7	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0099$ eV 13, $g\Gamma_n=0.0121$ eV 20.
6198.243 7	1/2+	0	7.474 7	$\Gamma_\gamma=0.059$ eV 3, $g\Gamma_n=3.95$ eV 25, $g\Gamma_n\Gamma_\gamma/\Gamma=0.0104$ eV 23.
6198.323 8	1/2+	0	7.554 8	$\Gamma_\gamma=0.066$ eV 4, $g\Gamma_n=3.34$ eV 22.
6198.358 8	1/2+	0	7.589 8	$\Gamma_\gamma=0.0508$ eV 24, $g\Gamma_n=0.54$ eV 10.
6198.379 8		[1]	7.611 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0185$ eV 14, $g\Gamma_n=0.028$ eV 4.
6198.426 8		[1]	7.658 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0255$ eV 15, $g\Gamma_n=0.048$ eV 10.
6198.453 8		[1]	7.685 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0118$ eV 23, $g\Gamma_n=0.015$ eV 3.
6198.463 8	1/2+	0	7.695 8	$\Gamma_\gamma=0.077$ eV 4, $g\Gamma_n=3.90$ eV 28.
6198.516 8	1/2+	0	7.748 8	$\Gamma_\gamma=0.074$ eV 3, $g\Gamma_n=1.24$ eV 15.
6198.532 8		[1]	7.764 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0184$ eV 20, $g\Gamma_n=0.028$ eV 5.
6198.577 8	1/2+	0	7.810 8	$\Gamma_\gamma=0.063$ eV 5, $g\Gamma_n=3.00$ eV 25.
6198.604 8	1/2+	0	7.837 8	$\Gamma_\gamma=0.068$ eV 3, $g\Gamma_n=1.30$ eV 25.
6198.675 8		[1]	7.908 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0111$ eV 18, $g\Gamma_n=0.014$ eV 2.
6198.702 8	1/2+		7.935 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0420$ eV 25.
6198.716 8		[1]	7.949 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0211$ eV 23, $g\Gamma_n=0.035$ eV 5.
6198.742 8	1/2+	[0]	7.976 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0324$ eV 21, $g\Gamma_n=0.08$ eV 3.
6198.780 8	1/2+	0	8.014 8	$\Gamma_\gamma=0.065$ eV 3, $g\Gamma_n=1.32$ eV 20.
6198.815 8		[1]	8.049 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0260$ eV 19, $g\Gamma_n=0.050$ eV 12.
6198.838 8		[1]	8.072 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0136$ eV 16, $g\Gamma_n=0.018$ eV 3.
6198.892 8		[1]	8.126 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0275$ eV 21, $g\Gamma_n=0.056$ eV 15.
6198.912 8			8.147 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0457$ eV 24.

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=res 1969MuZQ (continued) ^{183}W Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	L	E(res)(lab)	Comments
6198.928 8		[1]	8.163 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0187$ eV 19, $g\Gamma_n=0.029$ eV 5.
6198.957 8	1/2+	0	8.192 8	$\Gamma_\gamma=0.050$ eV 3, $g\Gamma_n=1.64$ eV 20.
6199.017 8		[1]	8.252 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0192$ eV 18, $g\Gamma_n=0.030$ eV 5.
6199.062 8			8.297 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0448$ eV 26.
6199.087 8		[1]	8.322 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0088$ eV 17, $g\Gamma_n=0.0105$ eV 20.
6199.127 8		[1]	8.363 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.020$ eV 3, $g\Gamma_n=0.033$ eV 4.
6199.138 8		[1]	8.374 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.024$ eV 3, $g\Gamma_n=0.042$ eV 7.
6199.161 8	1/2+	0	8.397 8	$\Gamma_\gamma=0.074$ eV 4, $g\Gamma_n=1.82$ eV 25.
6199.206 8			8.442 8	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0474$ eV 26.
6199.274 9	1/2+	0	8.508 9	$\Gamma_\gamma=0.048$ eV 4, $g\Gamma_n=0.61$ eV 16.
6199.302 9	1/2+	0	8.539 9	$\Gamma_\gamma=0.055$ eV 4, $g\Gamma_n=0.61$ eV 15.
6199.326 9		[1]	8.563 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0215$ eV 23, $g\Gamma_n=0.036$ eV 5.
6199.356 9	1/2+	[0]	8.593 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0367$ eV 23, $g\Gamma_n=0.115$ eV.
6199.414 9	1/2+	[0]	8.651 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0419$ 26, $g\Gamma_n=0.190$ eV.
6199.490 9	1/2+	0	8.728 9	$\Gamma_\gamma=0.061$ eV 5, $g\Gamma_n=4.5$ eV 4.
6199.573 9	1/2+	0	8.811 9	$\Gamma_\gamma=0.047$ eV 4, $g\Gamma_n=1.9$ eV 3.
6199.583 9	1/2+	[0]	8.821 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0359$ eV 27, $g\Gamma_n=0.110$ eV.
6199.610 9		[1]	8.848 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0317$ eV 25, $g\Gamma_n=0.077$ eV.
6199.658 9			8.897 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.053$ eV 3.
6199.770 9	1/2+	0	9.009 9	$\Gamma_\gamma=0.076$ eV 5, $g\Gamma_n=0.86$ eV 15.
6199.834 9			9.074 9	$g\Gamma_n\Gamma_\gamma/\Gamma=0.0066$ eV 3.
6199.991 9	1/2+	0	9.231 9	$g\Gamma_n=4.0$ eV 4.
6200.211 9	1/2+	0	9.453 9	$g\Gamma_n=3.6$ eV 5.
6200.231 9	1/2+	0	9.473 9	$g\Gamma_n=1.3$ eV 4.
6200.579 10	1/2+	0	9.823 10	$g\Gamma_n=2.5$ eV 3.
6200.652 10	1/2+	0	9.896 10	$g\Gamma_n=1.64$ eV 20.
6200.700 10	1/2+	0	9.944 10	$g\Gamma_n=0.66$ eV 20.
6200.753 10	1/2+	0	9.998 10	$g\Gamma_n=3.2$ eV 6.
6200.780 10	1/2+	0	10.025 1	$g\Gamma_n=3.3$ eV 6.
6200.895 10	1/2+	0	10.140 1	$g\Gamma_n=1.66$ eV 20.
6201.014 10	1/2+	0	10.260 1	$g\Gamma_n=3.8$ eV 4.
6201.355 10	1/2+	0	10.603 1	$g\Gamma_n=1.87$ eV 25.
6201.650 10	1/2+	0	10.900 1	$g\Gamma_n=0.89$ eV 30.
6201.750 10	1/2+	0	11.000 1	$g\Gamma_n=1.84$ eV 20.
6201.923 10	1/2+	0	11.174 1	$g\Gamma_n=1.30$ eV 25.
6202.058	1/2+	0	11.310 1	$g\Gamma_n=3.2$ eV 3.
6202.128	1/2+	0	11.380 1	$g\Gamma_n=6.0$ eV 6.
6202.307	1/2+	0	11.560 1	$g\Gamma_n=2.6$ eV 3.
6202.456	1/2+	0	11.710 1	$g\Gamma_n=3.8$ eV 3.
6202.526	1/2+	0	11.780 1	$g\Gamma_n=0.64$ eV 15.
6202.565	1/2+	0	11.820 1	$g\Gamma_n=2.7$ eV 3.
6202.635	1/2+	0	11.890 1	$g\Gamma_n=3.2$ eV 3.
6202.655	1/2+	0	11.910 1	$g\Gamma_n=2.5$ eV 3.
6202.953	1/2+	0	12.210 1	$g\Gamma_n=1.9$ eV 3.
6203.103	1/2+	0	12.361 1	$g\Gamma_n=1.1$ eV 3.
6203.232	1/2+	0	12.490 1	$g\Gamma_n=3.2$ eV 3.
6203.281	1/2+	0	12.540 1	$g\Gamma_n=2.9$ eV 3.
6203.421	1/2+	0	12.680 1	$g\Gamma_n=2.0$ eV 3.
6203.796	1/2+	0	13.057 1	$g\Gamma_n=3.1$ eV 3.
6203.918	1/2+	0	13.180 1	$g\Gamma_n=5.1$ eV 7.
6203.991	1/2+	0	13.253 1	$g\Gamma_n=3.3$ eV 3.

[†] From $S(n)+E(n)(\text{c.m.})$, where $S(n)(^{183}\text{W})=6190.81$ 5 (2012Wa38) and resonance $E(n)(\text{c.m.})=(182/183)E(n)(\text{lab})$, except for $E(\text{level})<S(n)$. Note that a systematic uncertainty of 0.05 keV arising from the adopted $S(n)$ value needs to be combined in quadrature with the uncertainties shown here. From difference in energy between primary γ feeding excited state and that feeding g.s. if $E(\text{level})<S(n)$.

[‡] L=0 capture by 0+ target.

$^{182}\text{W}(\text{n},\gamma)$ E=res 1969MuZQ (continued) $\gamma(^{183}\text{W})$

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger@$	$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger@$	$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger@$
3866	6190.86094	≤ 0.3	4325	6190.86094	1.5 2	4898	6190.9238	2.5 2
	6190.9238	≤ 0.5		6190.9238	1.3 3		6191.0566	≤ 0.7
	6191.0566	≤ 0.9		6191.0566	0.8 4		6191.1841	≤ 0.3
	6191.1841	≤ 0.2		6191.1841	4.0 9		6191.2916	≤ 0.5
	6191.2916	≤ 1.2		6191.2916	≤ 1.3	5164	6190.86094	0.6 1
4014	6190.86094	1.7 2	4353	6190.86094	≤ 0.4		6190.9238	2.5 2
	6190.9238	0.6 3		6190.9238	1.4 3		6191.0566	1.8 3
	6191.0566	≤ 0.1		6191.0566	≤ 0.6		6191.1841	≤ 1.2
	6191.2916	≤ 2.0		6191.1841	≤ 0.4		6191.2916	5.6 11
4063	6190.86094	0.9 2		6191.2916	≤ 1.9	5230	6190.86094	0.3 1
	6190.9238	≤ 0.4	4391	6190.86094	0.4 2		6190.9238	≤ 0.2
	6191.0566	≤ 0.7		6190.9238	3.4 3		6191.0566	0.5 3
	6191.1841	≤ 1.5		6191.0566	0.4 4		6191.1841	≤ 1.0
	6191.2916	≤ 2.3		6191.1841	≤ 1.6		6191.2916	1.6 10
4094	6190.9238	1.1 3		6191.2916	≤ 0.5	5258	6190.86094	1.1 4
	6191.0566	0.6 5	4463	6190.86094	0.5 2		6190.9238	2.6 2
	6191.1841	1.3 9		6191.0566	3.5 4		6191.0566	≤ 0.5
	6191.2916	≤ 0.5		6191.1841	1.4 8		6191.1841	0.8 5
4197	6190.86094	0.9 2		6191.2916	1.8 13		6191.2916	8.1 10
	6190.9238	≤ 0.1	4519	6190.86094	1.3 2	5320	6190.86094	0.8 3
	6191.0566	≤ 0.5		6190.9238	3.4 3		6191.0566	≤ 0.3
	6191.1841	2.5 9		6191.0566	3.4 4	5658	6190.9238	≤ 0.2
	6191.2916	≤ 0.5		6191.1841	1.1 9		6191.0566	2.1 3
4211	6190.86094	0.6 2		6191.2916	5.8 13		6191.1841	≤ 0.5
	6191.1841	≤ 1.1	4557	6190.86094	≤ 0.2		6191.2916	≤ 0.5
	6191.2916	1.6 14		6190.9238	1.1 3	5983	6190.86094	1.9§ 8
4246	6190.86094	≤ 0.3		6191.0566	≤ 0.4		6190.9238	9.5 2
	6191.0566	1.2 5		6191.1841	≤ 1.0		6191.0566	1.3 2
	6191.1841	≤ 0.2		6191.2916	2.3 13		6191.1841	0.8 4
	6191.2916	≤ 0.8	4633	6190.86094	5.0 2		6191.2916	0.7 6
4273	6190.86094	0.4 2		6190.9238	3.6 3	6145	6190.86094	6.9 1
	6190.9238	3.6 3		6191.0566	3.6 4		6190.9238	0.5 1
	6191.0566	0.4 5		6191.1841	≤ 0.8		6191.0566	2.2 2
	6191.1841	3.0 9		6191.2916	2.2 12		6191.1841	3.0 4
	6191.2916	≤ 0.5	4719	6190.86094	0.9 1		6191.2916	3.6 6
4304	6190.86094	3.0 2		6190.9238	2.1 3	6190	6190.86094	4.4 1
	6190.9238	0.7 3		6191.0566	1.9 4		6190.9238	8.3# 2
	6191.0566	0.6 4		6191.1841	2.4 8		6191.0566	0.5 2
	6191.1841	1.3 9		6191.2916	1.9 12		6191.1841	11.1 6
	6191.2916	≤ 0.5	4898	6190.86094	≤ 0.2		6191.2916	1.5 6

† Measured for 4.1-eV resonance. Analysis of those resonance data indicates that these values may be systematically low by several keV.

‡ Primary $I\gamma$ normalized assuming $I\gamma(6190)=4.4$ 1 per 100 n captures (1969MuZQ). Other value: $I\gamma(6190)=2.6$ 3 (1967Ra06).

§ Uncertainty of 0.08 in table is presumed to be a typographical error.

Other $I\gamma$: $I\gamma(6190)=1.4$ 12 (1967Ra06).

@ Absolute intensity per 100 neutron captures.

 $^{182}\text{W}(\text{n},\gamma)$ E=4.1 eV 1973Ca02,1969MuZQ

1969MuZQ: natural W target; Ge detector; measured primary $E\gamma$, $I\gamma$ for six resonances; $E(\text{n})$ from time of flight.

1973Ca02: neutrons from high flux beam reactor; neutron monochromator; two Ge(Li) detectors (FWHM=1 keV at 122 keV for one detector, FWHM=6–8 keV at 6 MeV for the other); 94.3% isotopically enriched ^{182}W target; measured $E\gamma$, $I\gamma$ for 4.1 eV and 7.6 eV resonances.

 ^{183}W Levels

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=4.1 eV 1973Ca02,1969MuZQ (continued) ^{183}W Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	L	S	Comments
0.0	1/2-			
46.56 10	3/2-			
99.28 14	5/2-			
206.9 3	7/2-			
209.05 11	3/2-			
292.12 14	5/2-			
310.2 6	9/2-			
412.21 15	7/2-			
453.09 14	7/2-			
535.0 10				
873.0 13	(1/2, 3/2, 5/2+)			
904.53 15	(5/2-)			
934.46 14	1/2-			
1002.2 3	7/2-			
1026.47 12	(3/2)-			
1052.96 23	(5/2)-			
1274.89? 25	(5/2+)			Level introduced by evaluator to accommodate 822 γ in accord with Adopted Levels, Gammas.
1437.33 12	(1/2-, 3/2-)			$J\pi$: 1973Ca02 include possible 1/2+ which seems unlikely due to deexcitation to the $J\pi=5/2-$ level.
≈ 1545	($\leq 9/2$)			
1612.24 15	(1/2-, 3/2, 5/2-)			
1629.95 18	(1/2-, 3/2, 5/2-)			$J\pi$: 1973Ca02 include possible 1/2+ which seems unlikely due to deexcitation to the $J\pi=5/2-$ level.
1673.44 15	(3/2-, 5/2-)			
1730.0 13	(3/2)-			
1811.41 17	1/2-			
1823.98 18	(3/2)-			
1840.0 13	5/2+			
1866.60 18	(3/2-, 5/2, 7/2-)			$J\pi$: 1973Ca02 include possible 3/2+ which seems unlikely due to deexcitation to the $J\pi=7/2-$ level.
1885.41 13	(1/2-, 3/2)			
1920.0 13	(1/2-, 3/2)			
1945.14 12	3/2-			
1983.87 16	3/2-			
2099.15 14	(3/2-, 5/2-)			
2126.71 13	3/2-			$J\pi$: 1973Ca02 include possible (1/2-) which seems unlikely due to reported deexcitation to a $J\pi=7/2-$ level.
2165.60 18	(3/2-)			
2179.0 13	(3/2)			
2327.0 13	(1/2-, 3/2, 5/2-)			
6193.1 8	1/2+	0	4.155×10^{-3} 5	E(level): rounded value from (n, γ) E=res is 6190.81. $J\pi$: assuming s-wave capture by 0+ g.s. of target. $\Gamma_\gamma=0.0495$ eV 2, $g\Gamma_n=0.001545$ eV 3 (2006MuZX).

[†] From least-squares fit to $E\gamma$ (normalized $\chi^2=1.3$).[‡] From Adopted Levels, except as noted. $\gamma(^{183}\text{W})$ I γ normalization: from I(6190 γ)=9.7 5 per 100 n captures (1969MuZQ). Other I(6194 γ)=9.0 (1967Ra06).

E $\gamma^{\dagger}$	E(level)	I $\gamma^{\ddagger}$	Comments
98.8 7	99.28	100 50	
107.8 7	206.9	99 50	
143.0 7	453.09	6 3	
162.3 7	209.05	200 100	
192.9 7	292.12	3.3 17	
205.1 7	412.21	8 4	
209.4 7	209.05	25 [§] 13	
211	310.2	1.3 [#] CA	
245.6 ^a 7	292.12	21 ^a 11	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=4.1 eV 1973Ca02,1969MuZQ (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger}$	Comments
245.6 ^a 7	453.09	21 ^a 11	
291.8 7	292.12	31 16	
313.3 7	412.21	35 18	
^x 320.9 7		1.2 6	
^x 326.4 2		0.70 14	
353.9 2	453.09	5.1 26	
365.5 2	412.21	2.9 6	
^x 371.4 2		0.40 8	
^x 400.7 2		0.90 18	
406.4 2	453.09	0.80 16	
^x 419.8 2		0.80 16	
451.9 2	904.53	0.50 10	
^x 464.6 2		0.40 8	
^x 559.7 2		0.90 18	
^x 611.8 2		4.7 9	
^x 633.9 2		2.3 5	
≈640.2	1052.96	0.90 18	
^x 652.3 2		11.9 24	
695.4 ^a 2	904.53	29 ^a 6	
	1629.95	29 ^a 6	
^x 707.6 2		1.9 4	
^x 713.3 2		0.90 18	
734.4 2	1026.47	0.60 12	
^x 776.3 2		4.0 8	
^x 804.4 2		1.3 3	
817.4 2	1026.47	12.3 25	
821.8 ^{@b} 2	1274.89?	1.1 6	
^x 825.9 2		0.6 3	
^x 834.5 2		1.20 24	
846.1 2	1052.96	9.9 20	
857.6 2	904.53	4.9 10	
^x 866.4 2		33 7	
888.1 2	934.46	27 5	
927.2 2	1026.47	15 3	
^x 941.2 2		6 3	
953.6 2	1052.96	1.20 24	
^x 960.0 2		3.0 6	
979.9 2	1026.47	60 12	
^x 1017.8 2		5.2 10	
1026.4 2	1026.47	100 20	
1100.4 ^{&b} 2	2126.71	11.6 23	
^x 1128.3 2		2.8 6	
^x 1149.8 2		2.4 5	
1163.4 2	2165.60	3.7 19	
1164.9 2	2099.15	4.5 23	
^x 1182.6 2		2.5 5	
1192.3 2	2126.71	7 4	
^x 1209.9 2		3.1 6	
1228.2 2	1437.33	1.8 4	
^x 1236.0 2		1.9 4	
^x 1245.0 2		1.9 10	
^x 1262.6 2		2.2 4	
^x 1288.9 2		4.5 9	
^x 1294.2 2		3.0 15	
1337.9 ^a 2	1437.33	1.4 ^a 3	
	1629.95	1.4 ^a 3	
^x 1343.4 2		1.3 7	
^x 1347.3 2		1.4 3	
≈1370.0	1823.98	1.4 7	
^x 1371.9 2		1.1 6	
1390.8 2	1437.33	1.3 7	
^x 1406.4 2		1.3 3	
1411.4 2	1823.98	7 4	

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=4.1 eV 1973Ca02,1969MuZQ (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger}$	Comments
$^{x}1416.6\ 2$		7.0 35	
$^{x}1423.8\ 2$		7.2 14	
1437.5 2	1437.33	9.7 19	
1454.8 2	1866.60	3.0 15	
$^{x}1470.6\ 2$		3.4 7	
$^{x}1485.8\ 2$		4.0 8	
$^{x}1503.8\ 2$		5.8 12	
$^{x}1510.2\ 2$		7.5 15	
$^{x}1523.2\ 2$		4.8 10	
$^{x}1528.7\ 2$		2.9 15	
$^{x}1556.5\ 2$		2.9 15	
1565.9 2	1612.24	2.6 13	
$^{x}1569.9\ 2$		3.5 7	
$^{x}1580.0\ 2$		3.1 6	
$^{x}1586.7\ 2$		3.8 8	
$^{x}1595.1\ 2$		4.5 9	
1602.5 2	1811.41	4.0 8	
1612.0 2	1612.24	5.3 27	
1615.3 2	1823.98	15 3	
1627.2 2	1673.44	22 4	
$^{x}1633.5\ 2$		8.7 17	
1653.0 2	1945.14	6 3	
$^{x}1661.1\ 2$		3.6 7	
1673.1 ^a 2	1673.44	2.5 ^a 5	
	2126.71	2.5 ^a 5	
1676.4 2	1885.41	1.8 4	
$^{x}1684.3\ 2$		2.0 4	
1691.6 2	1983.87	4.5 9	
$^{x}1713.5\ 2$		2.0 4	
$^{x}1725.9\ 2$		2.2 4	
1735.9 2	1945.14	21 4	
1753.2 2	2165.60	1.8 9	
1764.7 2	1811.41	3.5 7	
$^{x}1790.8\ 2$		1.9 4	
$^{x}1796.6\ 2$		1.9 4	
1819.6 2	1866.60	1.9 10	
1838.7 2	1885.41	12.4 25	
$^{x}1848.6\ 2$		5.2 10	
$^{x}1853.4\ 2$		2.6 5	
1885.5 2	1885.41	7.6 15	
1889.9 2	2099.15	3.4 7	
1898.3 2	1945.14	5.1 10	
$^{x}1907.2\ 2$		3.3 7	
1945.6 2	1945.14	2.9 6	
1984.0 2	1983.87	4.3 9	
$^{x}2023.5\ 2$		3.4 7	
$^{x}2029.2\ 2$		1.7 3	
$^{x}2035.4\ 2$		1.9 4	
$^{x}2062.6\ 2$		3.3 17	
$^{x}2071.2\ 2$		2.2 4	
2080.8 2	2126.71	5.8 12	
$^{x}2092.9\ 2$		1.9 4	
2099.1 2	2099.15	3.0 6	
2119.2 2	2165.60	4.1 8	
2126.5 2	2126.71	2.7 14	
$^{x}2135.3\ 2$		2.7 14	
$^{x}2138.1\ 2$		4.5 23	
2170 8	2165.60	0.9 5	$E\gamma$: broad peak; possibly complex (1973Ca02).
3866	6193.1		From 1969MuZQ only.
			$I\gamma$: 1.0 3 (1969MuZQ).
4014	6193.1		$E\gamma$: from 1969MuZQ only.
			$I\gamma$: 0.5 3 (1969MuZQ).
4028 3	6193.1		$I\gamma$: 0.61 9 (1973Ca02).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{n},\gamma)$ E=4.1 eV $^{1973}\text{Ca02},^{1969}\text{MuZQ}$ (continued) **$\gamma(^{183}\text{W})$ (continued)**

$E\gamma^\dagger$	E(level)	Comments
4066 3	6193.1	I γ : 0.68 10 (1973Ca02), 0.41 21 (1969MuZQ).
4094 3	6193.1	I γ : 1.06 16 (1973Ca02), 0.9 3 (1969MuZQ).
4210 3	6193.1	I γ : 0.19 6 (1973Ca02), ≤ 0.21 (1969MuZQ).
4248 3	6193.1	I γ : 3.1 5 (1973Ca02), 2.89 21 (1969MuZQ).
4273	6193.1	E γ : from 1969MuZQ only. I γ : 0.10 21 (1969MuZQ).
4307 3	6193.1	I γ : 2.5 4 (1973Ca02), 3.09 21 (1969MuZQ).
4325 3	6193.1	I γ : 0.29 4 (1973Ca02), 0.62 21 (1969MuZQ).
4353	6193.1	E γ : from 1969MuZQ only. I γ : 0.41 21 (1969MuZQ).
4369 3	6193.1	I γ : 0.90 14 (1973Ca02).
4382 3	6193.1	I γ : 0.37 6 (1973Ca02).
4463	6193.1	E γ : from 1969MuZQ only. I γ : ≤ 0.21 (1969MuZQ).
4520 3	6193.1	I γ : 1.15 17 (1973Ca02), 1.96 21 (1969MuZQ).
4563 3	6193.1	I γ : 0.87 13 (1973Ca02), 0.82 21 (1969MuZQ).
4582 3	6193.1	I γ : 0.28 4 (1973Ca02).
4755 3	6193.1	I γ : 0.96 14 (1973Ca02).
5166 3	6193.1	I γ : 18.9 28 (1973Ca02), 20.0 21 (1969MuZQ).
5259 3	6193.1	I γ : 0.64 10 (1973Ca02), 0.93 21 (1969MuZQ).
5320	6193.1	E γ : from 1969MuZQ only. I γ : ≤ 0.21 (1969MuZQ).
5658	6193.1	E γ : from 1969MuZQ only. I γ : 0.31 10 (1969MuZQ).
5984 3	6193.1	I γ : 0.43 6 (1973Ca02), 0.52 10 (1969MuZQ).
6146 3	6193.1	I γ : 3.6 5 (1973Ca02), 3.2 1 (1969MuZQ).
6193 3	6193.1	I γ : 10.0 15 (1973Ca02).

† From 1973Ca02, except as noted; absolute uncertainty of 3 keV for primary transitions is shown, relative uncertainty is 1 keV. 1969MuZQ report E γ for primary transitions only.

‡ Intensity relative to I(1026 γ)=100 (1973Ca02) for secondary transitions. Primary transition intensities relative to I(6193 γ)=10.0 are given in comments and these can be converted to intensity/100 n captures by multiplying by 0.97 5 based on I(6194 γ)=9.7 5 (1969MuZQ). Other I(6194 γ)/ 100 n captures: 9.0 (1967Ra06).

§ May include contribution from unresolved E γ =211 from 310 level.

$^\#$ From intensity of 143 γ feeding the level.

$^\@$ Placement by 1973Ca02 from an 1824-keV level was unconfirmed in other reaction studies. Placed by evaluator from a 1275 level instead, consistent with Adopted Levels, Gammas.

$^\&$ Placement indicated as uncertain because, although no other branch from 2126 level is so strong, this placement has not been confirmed by any other study. An 1100-keV γ is known to deexcite a 1309 level, so 1973Ca02's placement from the 2127 level is not adopted.

$^\text{a}$ Multiply placed; undivided intensity given.

$^\text{b}$ Placement of transition in the level scheme is uncertain.

$^\text{x}$ γ ray not placed in level scheme.

 $^{182}\text{W}(\text{d},\text{p})$, (pol d,p) $^{2011}\text{Bo09},^{1997}\text{Pr02},^{1972}\text{Ca01}$

J $\pi(^{182}\text{W})=0^+$.

Others: 1963Is01, 1965Er03, 1966Si04, 1967Si17, 1972Is05, 1973Ca09.

$^{2011}\text{Bo09}$: E(pol d)=18 MeV, polarization $\approx 60\%$ from Lamb-shift ion source at Munich tandem accelerator; natural W target; Q3D magnetic spectrograph with position-sensitive detector (FWHM=4 keV for $\theta \leq 20^\circ$); measured $\sigma(\theta)$ and asymmetry ($\theta(\text{lab})=11^\circ$ – 26° in 3° steps, 30° – 50° in 5° steps); DWBA analysis.

$^{1997}\text{Pr02}$: E(d)=26 MeV; carbon-backed, 94.5% enriched ^{182}W target; Q3D spectrograph with position sensitive cathode strip detector (FWHM unstated in 1997Pr02, but 3.3–3.9 keV listed in 1995Be02 for study using the same spectrograph); $\theta(\text{lab})=60^\circ$; measured spectra (E(level)=0–2.2 MeV), 8 overlapping segments.

$^{1973}\text{Ca09}$: E(pol d)=12.08, 15.0 MeV; isotopically enriched thick target; $\theta(\text{lab})=30^\circ$ – 125° (7 angles); FWHM=25–35 keV; measured p spectra, analyzing power; DWBA calculations.

$^{1972}\text{Ca01},^{1973}\text{Kl07}$: E(d)=12.08 MeV; FWHM=10–12 keV.

$^{1966}\text{Si04},^{1967}\text{Si17}$: E(d)=7.5, 12 MeV.

DWBA analysis of data.

$^{182}\text{W}(\text{d,p})$, (pol d,p) 2011Bo09,1997Pr02,1972Ca01 (continued) ^{183}W Levels

E(level) [†]	$J\pi^{\ddagger}$	L [#]	I(p) (rel.) [§]	Comments
0.0 ^d	1/2-	1	0.0055 ^b	
46.5 ^d 3	3/2-	1	0.089 ^b	Ip(26 MeV)/Ip(12 MeV)=0.25; Ip(rel.,26 MeV)=70 5 (1997Pr02).
99.1 ^d 2	5/2-	3	0.15	Ip(26 MeV)/Ip(12 MeV)=0.25; Ip(rel.,26 MeV)=49 3 (1997Pr02).
208.8 ^{cde} 2	3/2- and 7/2-	1	0.058 ^{bc}	Ip(26 MeV)/Ip(12 MeV)=0.2 1 for doublet consisting of 3/2 3/2[512] and 7/2 1/2[510] levels and apparently dominated by the former; Ip(rel.,26 MeV)=42 3 (1997Pr02).
291.9 ^e 3	5/2-	3	0.084 ^b	Ip(26 MeV)/Ip(12 MeV)=0.24; Ip(rel.,26 MeV)=31.0 23 (1997Pr02).
309.2 ^{cdf} 4	9/2- and 11/2+	5	^c	Ip(26 MeV)/Ip(12 MeV)=0.91 for doublet including 9/2, 1/2[510] and 11/2, 11/2[615] levels (apparently dominated by the former since L=5 dominates); Ip(rel.,26 MeV)=11.8 14 (1997Pr02). 3/2[510] band assignment in table 3 of 2011Bo09 is presumed to be a typographical error; in the literature, this doublet includes a member of the 1/2[510] band.
412.3 ^e 2	7/2-	3	0.044	J π : from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.35; Ip(rel.,26 MeV)=32 7 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 67 (11°), 104 (20°), 184 (30°).
452.9 ^g 2	7/2-	3	0.115	J π : from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.30; Ip(rel.,26 MeV)=74 8 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 209 (20°), 394 (30°).
486.1 ^f 2	13/2+	6	0.097	Ip(26 MeV)/Ip(12 MeV)=2.7; Ip(rel.,26 MeV)=46 6 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): $\approx$ 16 (11°), 28 (20°).
552.8 ^e 7	9/2-	≥ 3		Ip(26 MeV)/Ip(12 MeV)>0.7 (12 MeV datum is an upper limit); Ip(rel.)=2.0 14 (1997Pr02).
599.4 ^g 9	9/2-	≥ 3		Ip(26 MeV)/Ip(12 MeV)=1.4; Ip(rel.,26 MeV)=4.0 17 (1997Pr02).
689.4 ^f 10	(15/2+)			Ip(rel.)=3.7 12 (1997Pr02).
740.3 ^e 6	11/2-	5	0.035	Ip(26 MeV)/Ip(12 MeV)>1.3; Ip(rel.,26 MeV)=6.6 26 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 13 (20°), 20 (30°).
913? [@] 5				E(level): unconfirmed in subsequent studies so indicated as uncertain here.
935.0 ^j 5	1/2-	1	0.014	J π : from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.22; Ip(rel.,26 MeV)=8.3 17 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 29 (11°), 44 (20°), 31 (30°).
964.2 ^h 16	(13/2+)	6		L and Nilsson orbital assignment taken from the literature. Ip(rel.,26 MeV)=3.5 20 (1997Pr02).
999.2 ⁱ 4	7/2-	3	0.02	Ip(26 MeV)/Ip(12 MeV)=0.39; Ip(rel.,26 MeV)=15 3 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 46 (11°), 62 (20°), 76 (30°).
1029 6		1		E(level),L: from 1972Ca01.
1069.3 ^k 4	7/2-	3		Ip(26 MeV)/Ip(12 MeV)=0.54; Ip(rel.,26 MeV)=9.2 26 (1997Pr02).
1126.2 ⁱ 8	9/2-	≥ 5		Ip(26 MeV)/Ip(12 MeV)=3.2; Ip(rel.,26 MeV)=3.2 14 (1997Pr02). L: >3 (1997Pr02); ≥ 5 for E=1128 7 (1972Ca01).
1149.8 ^l 1	3/2-	1	0.10	J π : from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.21; Ip(rel.,26 MeV)=100 6 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 450 (20°), 420 (30°). Possibly the E=1156 5 line reported by 1965Er03; however, 1973Ca09 deduced L=2 (J=5/2 preferred) from (pol d,p) for an E=1154 7 level, so a separate (5/2+) level may exist in this vicinity.
1217.2 ^k 11	9/2-	≥ 5		Ip(26 MeV)/Ip(12 MeV)=1.6; Ip(rel.,26 MeV)=3.2 14 (1997Pr02). L: >3 from 1997Pr02, ≥ 5 from 1972Ca01.
1229.5 ^l 3	5/2-	3	0.017 ^b	Ip(26 MeV)/Ip(12 MeV)=0.51; Ip(rel.,26 MeV)=15.8 23 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): $\approx$ 14 (20°), $\approx$ 30 (30°).
1337.9 ^l 5	(7/2- and 3/2-)	(1+3)		E(level): 1337.1 7 for unresolved doublet in 2011Bo09. Other E: 1338 5 (1965Er03) and 1342 8 (L=(3)) (1972Ca01). Ip(26 MeV)/Ip(12 MeV)=0.29; Ip(rel.,26 MeV)=8.3 23 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 25 (11°), 30 (20°), 74 (30°).
1385.7 ⁿ 3	9/2-	5	0.096	J π : from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.79; Ip(rel.,26 MeV)=22.1 26 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 6? (11°), 17 (20°), 44 (30°).
1439.8 20		(1)		E(level),L: L from 1972Ca01 for E=1443 9. E=1437 5 from 1965Er03.
1470.9 ^m 1	1/2-	1	0.16	J π : from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.25; Ip(rel.,26 MeV)=66 5 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 365 (20°), 364 (30°).
1476.1 ^l 8	(9/2-)			Ip(rel.,26 MeV)=2.9 20 (1997Pr02).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{d,p})$, (pol d,p) 2011Bo09,1997Pr02,1972Ca01 (continued) ^{183}W Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	L [#]	I(p) (rel.) [§]	Comments
1483.7 7		(1)	0.08 ^b	Ip(26 MeV)/Ip(12 MeV)=0.28; Ip(rel.,26 MeV)=10.3 23 (1997Pr02). Other E: 1486.2 6 (2011Bo09). dσ/dΩ (μb/sr) (2011Bo09): ≈130 (30°).
1514? 9				From 1972Ca01 alone, so level shown as tentative here.
1542.8 9				Ip(rel.,26 MeV)=5.2 17 (1997Pr02).
1550.3 ^o 4	5/2-	3&	0.11	Jπ: from (pol d,p) (2011Bo09). (1997Pr02). Ip(26 MeV)/Ip(12 MeV)=0.35 but Ip(12 MeV) is for doublet; Ip(rel.,26 MeV)=38 3 (1997Pr02). dσ/dΩ (μb/sr) (2011Bo09): 290 (20°), 280 (30°).
1556.7 ^m 4	3/2-	1&	0.04	L: from 1972Ca01; L=(1) from 2011Bo09. Ip(26 MeV)/Ip(12 MeV)=0.35 but Ip(12 MeV) is for doublet; Ip(rel.,26 MeV)=28 4 (1997Pr02). dσ/dΩ (μb/sr) (2011Bo09): 150 (20°), 140 (30°).
1577.8 5		5		Ip(26 MeV)/Ip(12 MeV)=0.73; Ip(rel.,26 MeV)=13.8 5 (1997Pr02).
1601.6 5				Ip(rel.,26 MeV)=4.6 14 (1997Pr02).
1628.2 ^l 5	3/2-	1	0.024	Jπ: from (pol d,p) (2011Bo09). E(level): probably the 1636 5 level reported by 1965Er03. Fragment of 3/2[501] orbital. Ip(26 MeV)/Ip(12 MeV)=0.13; Ip(rel.,26 MeV)=18 3 (1997Pr02). dσ/dΩ (μb/sr) (2011Bo09): 150 (11°), 100 (20°), 130 (30°).
1663 [@] 5				E(level): possibly the E=1651 (L=1) level reported by 1972Ca01.
1676.3 4		(1)		Other E: 1674 1 (2011Bo09). Ip(rel.,26 MeV)=15.8 23 (1997Pr02).
1680.3 4	(7/2-)	3		dσ/dΩ (μb/sr) (2011Bo09): 60 (11°), 30 (30°). E(level),L: other E: 1683.1 7 (2011Bo09) for line perturbed by impurity. 1972Ca01 report L=3 level at 1679 10 in (d,t) but not in (d,p). Ip(26 MeV)/Ip(12 MeV)=0.29; Ip(rel.,26 MeV)=21.0 26 (1997Pr02). dσ/dΩ (μb/sr) (2011Bo09): ≈40 (11°), ≈120 (20°), ≈200 (30°). Ip(rel.,26 MeV)=3.2 14 (1997Pr02).
1691.2 12				Other E: 1719.5 3 (1997Pr02) for unresolved doublet for which authors propose L=3 based on Ip(26 MeV)/Ip(12 MeV)=0.44 for doublet; Ip(rel.,26 MeV)=39 3 (1997Pr02). 1723 10 (L=3) (1972Ca01).
1716.4 5	(1/2+, 3/2+)	(0,2)		dσ/dΩ (μb/sr) (2011Bo09): 70 (11°), 100 (20°), 110 (30°).
1735.7 5	(5/2+)	(2)	0.008	Jπ,L: from (pol d,p) (2011Bo09). However, L=1 suggested by 1997Pr02 based on Ip(26 MeV)/Ip(12 MeV)=0.15; Ip(rel.,26 MeV)=13.2 23 (1997Pr02). E=1740 10 (L=1) reported by 1972Ca01.
1784.1 5	5/2+	2	0.014	dσ/dΩ (μb/sr) (2011Bo09): 60 (20°), 78 (30°). Jπ: from (pol d,p) (2011Bo09). However, L=1 suggested by 1997Pr02 based on Ip(26 MeV)/Ip(12 MeV)=0.17; Ip(rel.,26 MeV)=20.1 26 (1997Pr02).
1793.8 6		3		dσ/dΩ (μb/sr) (2011Bo09): 80 (11°), 140 (20°), 120 (30°). L: other L: 1 from 1972Ca01 for E=1790 11 level. E=1789 5 from 1965Er03. Ip(rel.,26 MeV)=13.5 23 (1997Pr02).
1802.1 7				Ip(rel.,26 MeV)=8.9 20 (1997Pr02).
1812.4 ^m 4	1/2-	1	0.081	Jπ,L: from (pol d,p) (2011Bo09). However, L=3 suggested by 1997Pr02 based on Ip(26 MeV)/Ip(12 MeV)=0.30; Ip(rel.,26 MeV)=36 3 (1997Pr02). E=1812.8 8 (2011Bo09) for line perturbed by impurity line. Other: E=1816 11 (L≥3) reported by 1972Ca01.
1821.5 5		1		dσ/dΩ (μb/sr) (2011Bo09): 170 (11°), 180 (20°), 190 (30°). Other E: 1823.3 4 (2011Bo09), 1827 11 (1972Ca01), 1820 5 (1965Er03).
1823.3 4	(1/2-)	10	0.045	Ip(26 MeV)/Ip(12 MeV)=0.07; Ip(rel.,26 MeV)=18.4 26 (1997Pr02).
1840.8 3	5/2+	20	0.028	dσ/dΩ (μb/sr) (2011Bo09): 90 (11°), 120 (20°), 120 (30°). Other E: 1842.7 4 (2011Bo09). Jπ,L: from (pol d,p) (2011Bo09). However, L=1 suggested by 1997Pr02 based on Ip(26 MeV)/Ip(12 MeV)=0.15; Ip(rel.,26 MeV)=48 4 (1997Pr02).
1847? 11		1		dσ/dΩ (μb/sr) (2011Bo09): 300 (20°), 200 (30°).
1892.1? 9				E(level),L: from 1972Ca01 only so shown as uncertain here. Ip(rel.,26 MeV)=6.0 17 (1997Pr02).

Continued on next page (footnotes at end of table)

$^{182}\text{W}(\text{d,p})$, (pol d,p) 2011Bo09,1997Pr02,1972Ca01 (continued) ^{183}W Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	L [#]	I(p) (rel.) [§]	Comments
1905.7 5	(1/2+, 3/2+)	(0, 2)		J π : (1/2+) favored by asymmetry in (pol d,p) (2011Bo09). Ip(rel.,26 MeV)=13.2 23 (1997Pr02). Other E: 1907.6 8 (2011Bo09). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 60 (11°), 70 (20°), 50 (30°).
1944.5 1 3	3/2-	1	0.032	J π ,L: from (pol d,p) (2011Bo09). However, L=3 suggested by 1997Pr02 based on Ip(26 MeV)/Ip(12 MeV)=0.34. Ip(rel.,26 MeV)=45 4 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 100 (11°), 150 (20°). Ip(26 MeV)/Ip(12 MeV)=0.37; Ip(rel.,26 MeV)=23 3 (1997Pr02). Other E: 1950 12 (1972Ca01), 1960 5 (1965Er03). L: from 1972Ca01 for E=1969 12. Ip(rel.,26 MeV)=7.5 20 (1997Pr02).
1962.1 4		3		J π ,L: from (pol d,p) (2011Bo09). Ip(rel.,26 MeV)=11.2 20 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 65 (11°), 70 (20°), 55 (30°). Ip(rel.,26 MeV)=11.2 20 (1997Pr02).
1971.6 9		1		Ip(26 MeV)/Ip(12 MeV)=0.25 but Ip(12 MeV) is for doublet; Ip(rel.,26 MeV)=9.2 23 (1997Pr02).
1981.0 1 7	3/2-	1	0.013	Ip(26 MeV)/Ip(12 MeV)=0.25 but Ip(12 MeV) is for doublet; Ip(rel.,26 MeV)=12.6 23 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 60 (11°), 110 (20°), 80 (30°). Ip(rel.,26 MeV)=10.9 20 (1997Pr02). Other: E=2014 12 (L=1,3) proposed by 1972Ca01; possibly 2010+2025 doublet.
1991.0 7		a		L,J π : from 2011Bo09. However, 1997Pr02 propose L=3 based on Ip(26 MeV)/Ip(12 MeV)=0.39. Other: E=2050 12, L=3 reported by 1972Ca01.
2002.2 8				Ip(rel.,26 MeV)=12.1 23 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 53 (20°), 40 (30°). For unresolved doublet.
2009.5 7		2, 3 ^a		Ip(26 MeV)/Ip(12 MeV)=0.14; Ip(rel.,26 MeV)=10.1 20 (1997Pr02). Ip(26 MeV)/Ip(12 MeV)=0.29; Ip(rel.,26 MeV)=11.5 23 (1997Pr02). Ip(rel.,26 MeV)=8.3 20 (1997Pr02).
2024.8 6				E(level): 2128.2 8 from 2011Bo09 for line perturbed by line from a different W isotope.
2044.2 6	(1/2+, 3/2+)	(0, 2)		J π ,L: from (pol d,p) (2011Bo09). Ip(26 MeV)/Ip(12 MeV)=0.11; Ip(rel.,26 MeV)=12.6 23 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 120 (11°), 130 (20°), 110 (30°). J π : asymmetry favors J=1/2 (2011Bo09). Other E: 2208.9 8 (2011Bo09). Ip(rel.,26 MeV)=7.5 17 (1997Pr02). d σ /d Ω ($\mu\text{b/sr}$) (2011Bo09): 30 (20°), 43 (30°).
2062.5 7		1		E(level): from 1965Er03.
2091.0 7		3		E(level): from 1965Er03.
2099.9 9				E(level): from 1965Er03.
2127.4 1 6	3/2-	1	0.023	E(level): from 1965Er03.
2209.6 7	(1/2+, 3/2+)	(0, 2)		E(level): from 1965Er03.
2256@ 5				
2279@ 5				
2308@ 5				
2330@ 5				
2412@ 5				
2500@ 5				

[†] From 1997Pr02, except as noted. These data agree with those from 2011Bo09, except as noted, but are of slightly higher precision.

[‡] Values proposed in table 1 of 1997Pr02, in accord with their band assignments, except as noted. Values adopted by 2011Bo09, based on deduced L and/or measured asymmetry, are indicated in comments on the relevant levels when relevant.

[§] From DWBA analysis by 2011Bo09 of their unpolarized E(d)=18 MeV data at $\theta(\text{lab})=40^\circ$, except as noted.

[#] Deduced by 1997Pr02 from the ratio of their I(p) data for E(d)=26 MeV to that from 1972Ca01 for E(d)=12 MeV. Typically, these ratios are ≤ 0.25 for L=1, 0.24–0.54 for L=3, >0.7 for L=5. Note that values were not established for even L transfers. Also, differences in resolution and energy scales in the two studies can make it difficult to correctly identify identical levels in the two experiments at the higher energies.

@ From 1965Er03.

& L=1,3 for 1550+1557 doublet.

^a L=1,3 for 2002+2010 doublet.

^b From DWBA analysis by 2011Bo09 of E(d)=12 MeV data from 1972Ca01.

^c For unresolved doublet.

^d (A): 1/2[510] band.

^e (B): 3/2[512] band.

$^{182}\text{W}(\text{d,p})$, (pol d,p) 2011Bo09,1997Pr02,1972Ca01 (continued) **^{183}W Levels (continued)**

f (C): 11/2[615] band.
g (D): 7/2[503] band.
h (E): 9/2[624] band.
i (F): 5/2[512] band.
j (G): 1/2[521] band.
k (H): 7/2[514] band.
l (I): 3/2[501] band.
m (J): 1/2[501] band.
n (K): 9/2[505] band.
o (L): 5/2[503] band.

 $^{182}\text{W}(\text{t,d})$ 1970F113

E(t)=20 MeV; magnetic spectrograph (FWHM=15 keV; $\theta(\text{lab})=15^\circ, 22^\circ, 30^\circ$); Si $\Delta\text{E-E}$ telescope (FWHM=42 keV); measured E(d), $\sigma(\theta)$ ($\theta(\text{lab})=30^\circ-72^\circ$ in 3° steps)' DWBA calculations; deduced S.

 ^{183}W Levels

E(level)	$J\pi^\dagger$	S
0.0		
46 3	3/2-	0.17
98 3	5/2-	0.28
209 3	3/2-	0.11
293 3	5/2-	0.16
415 3	7/2-	0.08
456 3	7/2-	0.18

† From Adopted Levels; assumed for extraction of S.

 $^{183}\text{W}(\gamma,\gamma')$: Mossbauer 1971Bo42,1968Ha29,1967Ag02

Others: 1962Su14, 1966Sh07, 1967De07, 1970Me09.

 ^{183}W Levels

E(level) †	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0	1/2-	stable	
46	3/2-	0.185 ns 4	$\mu=-0.1$ 1 (1967Ag02); $Q=1.8$ 4 (2011StZZ). μ : from $g=-0.07$ 7 (1967Ag02) and adopted $J=3/2$. $T_{1/2}$: unweighted average of 0.184 ns 5 (1967Ag02), 0.194 ns 10 (1968Ha29), 0.174 ns 6 (1970Me09) and 0.188 ns 4 (1971Bo42). Other measurements: 1962Su14 (0.15 ns 2), 1966Sh07 (0.158 ns 3), 1967Dr07 (0.19 ns 2). The unweighted average of all data is 0.177 ns 6.
99	5/2-	0.75 ns 3	$\mu=+0.91$ 4 (2011StZZ); $Q=2.0$ 3 (2011StZZ). μ : from $g/g(^{182}\text{W}, 2+)=1.40$ 4 (1967Gi03) and $g(^{182}\text{W}, 2+)=0.26$ 1 (2011StZZ from 1968Pe06). Q : from $Q/Q(^{182}\text{W}, 2+)=0.94$ 4 (1967Ag02) and $Q(^{182}\text{W}, 2+)=-2.1$ 4 (2011StZZ). $T_{1/2}$: weighted average of 0.77 ns 4 (1970HaYD), 0.72 ns 5 (1967Ag02), 0.57 ns 21 (1962Su14). Other datum: 975 ps 40 (1971Bo42).

† Rounded value from Adopted Levels.

‡ From Adopted Levels.

$^{183}\text{W}(\text{n}, \text{n}'\gamma)$ 1993Pr09

Others: 1983BeZA (158 transitions), 1997Pr02.

1993Pr09: reactor fast neutrons; 96.3% enriched ^{183}W metallic target; Ge detector (FWHM=1.9 keV at 1.3 MeV); measured $E\gamma$ ($E\gamma=40-2080$), $I\gamma$. See 1997Pr02 for further discussion of these data.

 ^{183}W Levels

E(level) [†]	J π [‡]	Comments
0.0 [#]	1/2-	
46.49 [#] 3	3/2-	
99.011 [#] 21	5/2-	
206.955 [#] 25	7/2-	
208.750 [@] 22	3/2-	
291.658 [@] 24	5/2-	
308.84 [#] 3	9/2-	
309.06 ^{&} 10	11/2+	
412.05 [@] 4	7/2-	
452.93 ^a 3	7/2-	
475.12 [#] 4	11/2-	
551.15 [@] 3	9/2-	
595.12 ^a 4	9/2-	
622.15 ^b 10	9/2+	
630.99 [#] 15	13/2-	
739.88 [@] 5	11/2-	
770.96? 8		Proposed as 11/2- level in 1993Pr09 but level absent in 1997Pr02 so, in the absence of any other evidence for its existence, level is omitted from Adopted Levels.
776.23 ^b 13	11/2+	
776.9 ^a 3	11/2-	
904.04 ^c 13	5/2-	
934.67 ^d 12	1/2-	
963.44? 12	(11/2, 13/2)	
999.57 ^c 8	7/2-	
1026.28 ^d 10	3/2-	
1052.33 ^d 16	5/2-	
1069.26 ^e 10	7/2-	
1149.17 ^f 12	3/2-	
1214.27 10		
1223.24? ^e 14	(9/2-)	Evaluator considers existence of this level to be highly uncertain; the only γ deexciting it has an alternative placement.
1308.91 ^g 13	3/2-	
1372.15 ^g 15	(5/2-)	
1437.8 4	1/2-, 3/2-	
1469.75? 25	1/2-	
1474.69 23	(5/2-, 7/2-)	
1550.5 ^h 4	5/2-	
1557.3 ^h 4	3/2-	
1587.08 16	(1/2-, 3/2-)	
1627.29 17	1/2-, 3/2-	
1672.13 18	1/2-, 3/2-	
1823.1 4	1/2-, 3/2-	

[†] From least-squares fit to measured $E\gamma$, omitting the 324 γ and $E\gamma$ for doublets (102 γ , 313 γ , 1262 γ , 1627 γ), unless no other γ deexcites the level in question. Reduced χ^2 for fit is 2.4 cf. $\chi^2(\text{critical})=1.6$.

[‡] Authors'suggested values.

[#] (A): v 1/2[510] g.s. band.

[@] (B): v 3/2[512] band.

[&] (C): v 11/2[615] band.

^a (D): v 7/2[503] band.

^b (E): v 9/2[624] band.

^c (F): v 5/2[512] band.

^d (G): v 1/2[521] band.

^e (H): v 7/2[514] band.

^f (I): $K\pi=3/2-$ band 1. Possible 7/2[503] K-2 γ vibration band.

^g (J): $K\pi=3/2-$ band 2. Possible 1/2[510] K-2 γ vibration band.

^h (K): v 1/2[501] band.

$^{183}\text{W}(\text{n},\text{n}'\gamma)$ 1993Pr09 (continued) $\gamma(^{183}\text{W})$

$E\gamma^\dagger$	E(level)	$I\gamma^\dagger$	Comments
46.68 21	46.49	230 50	
52.73 10	99.011	153 30	
82.80 17	291.658	26 9	
84.71	291.658	68 25	$E\gamma$: rounded value from Adopted Gammas.
99.09 3	99.011	186 40	
102.10 [#] 9	308.84	10.5 [#]	$I\gamma$: 12 2 for doublet.
	309.06	5.5 [#]	$I\gamma$: 12 2 for doublet.
^x 106.44 10		9.9 20	
107.91 3	206.955	280 30	
109.81 3	208.750	41 3	
142.22 3	595.12	63 6	
144.12 8	452.93	9.0 19	
153.98& 10	776.23	6.1& 17	Placement from table 2 and text of 1997Pr02. This γ also deexcites an otherwise unknown 1223 level, according to 1993Pr09.
	1223.24?	6.1& 17	
160.39 4	206.955	77 7	
161.17 5	452.93	64 6	
162.27 3	208.750	334 26	
166.28 3	475.12	30 3	
175.84@ 7	770.96?	40 7	Placement from 1993Pr09 only; not mentioned in 1997Pr02, so not adopted.
192.63 6	291.658	9.3 20	
203.22 6	412.05	14 2	
205.02 3	412.05	32 3	
208.72 3	208.750	42 4	
209.80 3	308.84	169 12	
244.26 4	452.93	34 2	
245.94 3	452.93	100 3	
259.48 4	551.15	23 1	
264.81 12	739.88	2.7 6	
268.18 3	475.12	26 1	
291.61 3	291.658	100 4	
313.09 [#] 3	412.05	89 [#]	$I\gamma$: 227 9 for doublet.
	622.15	138 [#]	$I\gamma$: 227 9 for doublet.
321.86 21	630.99	14 4	
323.96@ 27	776.9	13.0 4	$I\gamma$: from 1997Pr02; quoted as 13 4 in 1993Pr09.
			Placement from 1997Pr02; unplaced by 1993Pr09.
327.77 9	739.88	8 2	
332.25 17	963.44?	8.8 26	
^x 337.5 [‡] § 4		5.0 [‡] 15	
344.16 5	551.15	12 2	
353.94 3	452.93	39 1	
365.62 10	412.05	14 3	
^x 382.83 14		3.1 6	
^x 401.24 13		8.3 25	
404.60 18	999.57	7.0 21	
406.65 21	452.93	6.8 20	
^x 414.57 25		8 3	
^x 429.1 4		4.5 14	
431.05 5	739.88	14 2	
452.18 4	551.15	13 1	
467.35 14	776.23	4.9 27	Placed feeding 11/2+ 309 in table 2 and text of 1997Pr02; unplaced by 1993Pr09 and unobserved in 'Budapest' data from 2007ChZX.
			Placement from table 2 and fig. 8 of 1997Pr02; γ unplaced by 1993Pr09.
474.67 15	1069.26	4.0 12	
^x 478.1 4		4.0 12	
488.41 12	963.44?	3.2 8	
^x 491.30 25		2.4 7	
587.49 9	999.57	6.7 13	
611.98 18	904.04	9.8 25	
^x 647.49 26		7.5 22	
652.41 11	1587.08	17 2	
656.65 22	1069.26	5.8 26	
^x 681.2 4		6.7 20	
695.69& 18	904.04	49& 10	

Continued on next page (footnotes at end of table)

$^{183}\text{W}(\text{n},\text{n}'\gamma)$ 1993Pr09 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^\dagger$	Comments
695.69& 18	1149.17	49& 10	
707.85 26	999.57	16 4	
$\times 729.9\text{\textasciitilde} 5$		5.5 17	
777.34 15	1069.26	18 4	
802.18 10	1214.27	14 3	Placement from 1997Pr02 (table 2); unplaced by 1993Pr09.
$\times 805.09$ 13		14 3	
818.0 5	1026.28	8.5 19	
858.1@ 4	1149.17	6 3	Placement from 1993Pr09; γ omitted from table 2 and fig. 9 by 1997Pr02, so placement is shown as uncertain here.
888.18 11	934.67	52 5	
923.2 4	1214.27	3.9 19	Placement from 1997Pr02 (table 2); this presumably supersedes 1993Pr09's placement of this γ from the 1475 level.
927.8 6	1026.28	5.0 25	
940.77 15	1149.17	14 3	
953.29 16	1052.33	12 3	
959.80 18	1372.15	12 3	
$\times 976.3\text{\textasciitilde} 6$		5.1 25	
979.82 15	1026.28	25 5	
$\times 983.8$ 10		3.5 18	
$\times 995.63\text{\textasciitilde} 21$		11 $\frac{1}{2}$ 4	
1006.5 9	1052.33	6.4 22	
$\times 1017.4$ 3		7 3	
1022.0 4	1474.69	4 2	
1026.19 13	1026.28	38 4	
1062.6 3	1474.69	10 3	
$\times 1066.1$ 4		9.7 3	
$\times 1075.74$ 21		6.4 19	
1081.10 26	1372.15	5.7 17	
$\times 1085.2$ 4		3.5 17	
1100.11 13	1308.91	14.6 27	
$\times 1103.93$ 26		6.5 19	
1149.7 6	1149.17	6 3	
$\times 1157.2$ 3		8.6 26	
$\times 1162.87$ 27		27 6	
$\times 1173.6\text{\textasciitilde} 5$		12 6	
1182.3 8	1474.69	11 4	
$\times 1189.8$ 4		13 3	
$\times 1193.1$ 4		23 5	
$\times 1230.4$ 3		14 3	
$\times 1259.3$ 4		7 3	
1262.9& 4	1308.91	7& 3	
	1469.75?	7& 3	
$\times 1280.9$ 4		5.6 17	
$\times 1287.4$ 4		6.6 19	
$\times 1296.0$ 4		14 3	
$\times 1405.9$ 4		5.5 17	
1423.2@ 3	1469.75?	11 3	
1437.8 4	1437.8	7.3 23	
$\times 1455.07$ 18		5.2 16	
1504.0 4	1550.5	9.1 27	Placement from table 2 and fig. 9 of 1997Pr02.
1510.7 5	1557.3	10 3	
$\times 1523.56$ 26		7 3	
1528.6 3	1627.29	6 3	
1557.4 5	1557.3	6 3	
$\times 1569.8$ 3		7.0 21	
1573.2 3	1672.13	7.0 21	
1580.6 6	1627.29	5.5 28	
$\times 1610.5$ 6		6 3	
1614.3 4	1823.1	8 4	
1627.13& 22	1627.29	6.9& 21	
	1672.13	6.9& 21	
$\times 1631.4$ 5		5.0 15	
$\times 1652.6$ 4		5.0 15	

Continued on next page (footnotes at end of table)

$^{183}\text{W}(\text{n},\text{n}'\gamma)$ 1993Pr09 (continued) **$\gamma(^{183}\text{W})$ (continued)**

$E\gamma^\dagger$	$I\gamma^\dagger$
$^{x1690.35\ 25}$	$7.4\ 22$
$^{x1794.1\ 4}$	$2.6\ 13$
$^{x1836.7\ \S\ 3}$	$4.3\ 22$
$^{x1857.9\ \S\ 7}$	$4.8\ 24$
$^{x2001.8\ 6}$	$4.4\ 13$
$^{x2082.1\ 3}$	$3.7\ 9$

† From 1993Pr09, except as noted. 1983BeZA report four additional transitions with $E\gamma(I\gamma)$ as follows:
 177.0 2 (43 11), 319.4 2 (14 4) from a 772 level and 202.3 1 (24 8), 379.0 2 (7 2) from a 974 level. These were not confirmed by 1993Pr09, so have not been adopted here.

‡ Transition contaminated with γ from ^{184}W . ^{184}W contribution to $I\gamma$ has been subtracted by authors of 1993Pr09.

§ Assignment to ^{183}W is tentative (1993Pr09).

$^\#$ Multiply placed; intensity suitably divided.

$^\@$ Placement of transition in the level scheme is uncertain.

$^\&$ Multiply placed; undivided intensity given.

x γ ray not placed in level scheme.

Coulomb Excitation 1979Mc04,1992La02

Others: 1957Ch39 ($E(p)=3.7$ MeV), 1958Mc02 ($E(p)=4$ MeV), 1961Ha21 ((p,p') and (d,d')), 1966Th07 (p, ^6Li , ^7Li ;
 $E=1.3-3.3$ MeV), 1967As03 (^{16}O , $^{16}\text{O}'\gamma$), 1968St13 ($E\alpha=8$ MeV).

1979Mc04:

(α,α'): $E(\alpha)=13$ MeV; carbon-backed, isotopically-separated ^{183}W target; Enge split-pole spectrometer with position-sensitive gas proportional counter (FWHM=11 keV); $\theta(\text{lab})=90^\circ$ and 150° .

Measured $\sigma(150^\circ)$; deduced $B(E2)$.

($\alpha,\alpha'\gamma$): $E(\alpha)=15$ MeV; thick, natural W target; Ge(Li) ($\theta(\text{lab})=0^\circ, 55^\circ, 90^\circ$); measured $E\gamma$, $I\gamma$, $\gamma(\theta)$.

1992La02: (^{58}Ni , $^{58}\text{Ni}'\gamma$): $E(^{58}\text{Ni})=160,220$ MeV; 77.4% ^{183}W target sputtered onto annealed Gd foil with Cu backing or onto Pb; 4 HPGe detectors, annular Si detector ($\theta(\text{lab})=146^\circ-166^\circ$); measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, particle- γ coin, $\gamma(\theta, \text{H,T})$ (thin-foil transient field IMPAC technique; $H=0.05$ Tesla, $T=90^\circ$ K), $\gamma(\theta)$, $T_{1/2}$ from Doppler-broadened lineshapes.

 ^{183}W Levels

E(level)	$J\pi^\dagger$	$T_{1/2}^\ddagger$	Comments
0.0 $^\@$	1/2-		
46.5 $^\@$	3/2-	219 ps 10	$B(E2)\uparrow=1.63\ 4$ (1979Mc04). $B(E2)\uparrow$: from particle spectroscopy. Other values: 1.52 7 (1961Ha21), 1.50 +16-12 (1968St13); 1.37 19 from $B(E2)/(1+\alpha)=0.148\ 20$ (1966Th07). Other $T_{1/2}$: ≈ 208 ps (1967As03; RDM).
99.1 $^\@$	5/2-	716 ps 32	$B(E2)\uparrow=2.21\ 3$ (1979Mc04). $B(E2)\uparrow$: from particle spectroscopy. Other values: 2.7 3 (1958Mc02), 2.04 8 (1961Ha21), 2.31 11 (1968St13). Other $T_{1/2}$: 707 ps 35 (1967As03; RDM).
207.0 $^\@$	7/2-		$\mu=0.42\ 21$ (1992La02). μ : g-factor=0.12 6 (1992La02; thin-foil transient-field IMPAC).
208.8 $^\&$	3/2-	≈ 245 ps	$B(E2)\uparrow=0.010\ 5$ (1979Mc04). $B(E2)\uparrow$: weighted average of 0.015 5 from (α,α') and 0.006 4 from ($\alpha,\alpha'\gamma$) (1979Mc04). Other values: 0.049 6 (1958Mc02), 0.08 2 (1961Ha21).
291.7 $^\&$	5/2-	60 ps 3	$B(E2)\uparrow=0.243\ 9$ (1979Mc04). $B(E2)\uparrow$: weighted average of 0.239 9 from (α,α') and 0.265 22 from ($\alpha,\alpha'\gamma$) (1979Mc04). Other values: 0.246 22 (1958Mc02), 0.30 5 (1961Ha21).
308.9 $^\@$	9/2-		$\mu=1.53\ 14$ (1992La02). μ : g-factor=0.34 3 (1992La02; thin-foil transient-field IMPAC).
412.1 $^\&$	7/2-		
475.4 $^\S\ 3$	11/2-		$\mu=1.12\ 22$ (1992La02). μ : g-factor=0.20 4 (1992La02; thin-foil transient-field IMPAC).

Continued on next page (footnotes at end of table)

Coulomb Excitation 1979Mc04,1992La02 (continued) ^{183}W Levels (continued)

E(level)	$J\pi^\dagger$	$T_{1/2}^\ddagger$	Comments
551.1&	9/2-		$\mu=2.2$ 9 (1992La02). μ : g-factor=0.48 19 (1992La02; thin-foil transient-field IMPAC).
631.2§@ 3	13/2-	10.4 ps [#] +28-14	$\mu=2.6$ 3 (1992La02). μ : g-factor=0.40 5 (1992La02; thin-foil transient-field IMPAC). $T_{1/2}$: from 1992La02.
739.92& 23	11/2-		
850.6§@ 3	15/2-		
903.5	(5/2-)		B(E2) $\uparrow$ =0.0064 6 (1979Mc04).
926.25§& 25	13/2-		
1026.3	(3/2)-		B(E2) $\uparrow$ =0.0010 2 (1979Mc04).
1052.9	(5/2)-		B(E2) $\uparrow$ ≤0.0019 (1979Mc04).
1062.5§@ 4	17/2-	3.0 ps [#] 4	$\mu=2.6$ 7 (1992La02). μ : g-factor=0.30 8 (1992La02; thin-foil transient-field IMPAC). $T_{1/2}$: from 1992La02.
1149.8	3/2-		B(E2) $\uparrow$ =0.0009 4 (1979Mc04).
1291.6	(1/2-, 3/2-)		B(E2) $\uparrow$ =0.0044 6 (1979Mc04).
1309.9	(≤5/2-)		B(E2) $\uparrow$ =0.0077 6 (1979Mc04).
1332.4?@ 5	(19/2-)		
1463.1	(3/2, 5/2)-		B(E2) $\uparrow$ =0.0034 4 (1979Mc04).
1485.0	(1/2-, 3/2-)		B(E2) $\uparrow$ =0.018 2 (1979Mc04).
1510.4	(3/2-, 5/2, 7/2-)		B(E2) $\uparrow$ =0.0056 7 (1979Mc04).
1556.4	(3/2-)		B(E2) $\uparrow$ =0.020 2 (1979Mc04).

[†] From Adopted Levels.[‡] Calculated from measured B(E2) and adopted γ -ray properties, except as noted.§ Level populated directly by Coulomb excitation, favoring $\pi=-$, as for g.s. (1992La02).

From Doppler-broadened lineshape (1992La02).

@ (A): 1/2[510] band.

& (B): 3/2[512] band.

 $\gamma(^{183}\text{W})$

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger$	Mult.§	$\delta^\S$	Comments
46.51 3	46.5				$E\gamma$: from 1957Ch39 (curved crystal spectrometer; E relative to E(K x ray) for W. Mult.: E2 excitation of level (1966Th07) based on relative yields from ^6Li and ^7Li Coulomb excitation.
52.6#	99.1				
82.9#	291.7				
84.7#	291.7				
99.1#	99.1				
101.9#	308.9	7.3 7	D+Q	-0.21 3	$I\gamma$: I(102 γ)/I(210 γ)=0.073 7 (1992La02) implies I(102 γ)=6.2.
107.9#	207.0		D+Q	-0.09 2	
109.7#	208.8				
120.4#	412.1				
139.2#	551.1				
155.8#	631.2				$I\gamma$: I(156 γ)/I(322 γ)=0.012 4 (1992La02).
160.5	207.0	164			W(0°)/W(90°)=1.15 2 (1979Mc04). I(161 γ)/I(108 γ)=0.256 11 (1992La02).
162.3	208.8	485			W(0°)/W(90°)=1.12 1 (1979Mc04).
166.4#	475.4		D+Q	-0.12 2	$I\gamma$: I(166 γ)/I(269 γ)=0.763 15 (1992La02).
186.3	926.25				
188.6#@	739.92				
192.6	291.7	118			W(0°)/W(90°)=1.220 18 (1979Mc04).
203.3#	412.1				
205.1#	412.1				
208.8	208.8	83			W(0°)/W(90°)=0.875 16 (1979Mc04).
209.9	308.9	85			W(0°)/W(90°)=1.44 3 (1979Mc04).
219.4#	850.6	27 3	D+Q	-0.25 7	
245.2	291.7	124			W(0°)/W(90°)=0.982 21 (1979Mc04).
259.4	551.1	8.3			

Continued on next page (footnotes at end of table)

Coulomb Excitation 1979Mc04,1992La02 (continued) $\gamma(^{183}\text{W})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger$	Mult.§	$\delta^\S$	Comments
268.5	475.4				$E\gamma$: from fig. 1 of 1992La02; 268.3 in table 1 of 1992La02.
291.7	291.7	1391			$W(0^\circ)/W(90^\circ)=1.171 \pm 0.012$ (1979Mc04).
313.0#	412.1	14	D+Q	+0.23 3	
322.2#	631.2				
327.8#	739.92				
344.1	551.1	4.7	D+Q	+0.37 10	$I\gamma$: $I(344\gamma)/I(259\gamma)=0.49 \pm 0.03$ (1992La02) implies $I(344\gamma)=4.1$. δ : from table 6 of 1992La02; +0.37 8 in table 2.
365.6#	412.1				
374.9#	926.25	100			
375.2#	850.6	100			
431.0#	739.92				$I(431.0\gamma)/I(431.3\gamma)=0.35$ (1992La02).
431.3#	1062.5				
450.9#	926.25	22 5			$I\gamma$: $I(451\gamma)/I(375\gamma)=0.22 \pm 0.05$ (1992La02).
452.0	551.1	4.5			$I\gamma$: $I(452\gamma)/I(259\gamma)=0.68 \pm 0.05$ (1992La02) implies $I(452\gamma)=5.6$.
481.8#@	1332.4?				$E\gamma$: tentative transition; placed on the basis of band systematics.
532.9#	739.92				
581.5	1485.0	3.0			
617.3#	926.25	10 2			$I\gamma$: $I(617\gamma)/I(375\gamma)=0.10 \pm 0.02$ (1992La02).
640.8	1052.9	≤ 1.0			
652.9	1556.4	21			
804.4	903.5	8.0			
857.0	903.5	7.4			
942.8	1149.8	0.8			
979.8	1026.3	1.5			
1026.3	1026.3	3.3			
1051.0	1463.1	5.9			
1098.3	1510.4	6.5			
1144.3	1556.4	2.0			
1149.8	1149.8	3.0			
1192.5	1291.6	5.9			
1263.4	1309.9	3.3			
1291.6	1291.6	5.1			
1301.6	1510.4	2.2			
1309.9	1309.9	17			
1347.6	1556.4	4.2			
1438.5	1485.0	13			
1485.0	1485.0	14			

† From 1979Mc04, except as noted; uncertainty unstated by authors.

‡ Thick-target yield per nanocoulomb (6.24×10^9 ions) in (α, α') (1979Mc04). Photon branching determined by 1992La02 from angular correlation data is given in comments.

§ From particle- γ angular correlation, using alignment tensors calculated with Winther-deBoer Coulomb excitation code (1992La02). The latter code had been demonstrated to give good agreement with experiment for several known pure E2-transition particle- γ correlations.

From fig. 1 of 1992La02 only; uncertainty unstated by authors.

@ Placement of transition in the level scheme is uncertain.

 $^{184}\text{W}(\text{d}, \text{t})$ 1972Ca01,1973K107

$J\pi(^{184}\text{W})=0^+.$

1972Ca01: $E(\text{d})=12.08$ MeV; FWHM=7–8 keV; $\theta(\text{lab})=60^\circ, 90^\circ, 125^\circ$; $\geq 95\%$ isotopically enriched target; broad range magnetic spectrograph with photographic plates (FWHM=8 keV); measured triton spectra and $\sigma(\theta)$ (3 angles) and deduced L; DWBA calculations. See also 1973K107.

 ^{183}W Levels

E(level) †	$J\pi^\S$	$L^\ddagger$	Comments
0.0@			$d\sigma/d\Omega(\mu\text{b/sr})$: 9 (60°), 9 (90°), 3 (125°) (1972Ca01).
47#@			$d\sigma/d\Omega(\mu\text{b/sr})$: 304 (60°), 266 (90°), 104 (125°) (1972Ca01).

Continued on next page (footnotes at end of table)

$^{184}\text{W}(\text{d,t})$ 1972Ca01,1973K107 (continued) ^{183}W Levels (continued)

E(level) [†]	$J\pi^{\S}$	$L^{\ddagger}$	Comments
99#			$d\sigma/d\Omega(\mu\text{b/sr})$: 154 (60°), 177 (90°), 83 (125°) (1972Ca01).
207#			$d\sigma/d\Omega(\mu\text{b/sr})$: 112 (60°), 116 (90°), 51 (125°) (1972Ca01) for 207+209 doublet.
209#			$d\sigma/d\Omega(\mu\text{b/sr})$: 112 (60°), 116 (90°), 51 (125°) (1972Ca01) for 207+209 doublet.
292#			$d\sigma/d\Omega(\mu\text{b/sr})$: 37 (60°), 50 (90°), 23 (125°) (1972Ca01).
309#			$d\sigma/d\Omega(\mu\text{b/sr})$: 3 (60°), 10 (90°), 9 (125°) (1972Ca01).
412#			$d\sigma/d\Omega(\mu\text{b/sr})$: 40 (60°), 62 (90°), 36 (125°) (1972Ca01).
453#			$d\sigma/d\Omega(\mu\text{b/sr})$: 68 (60°), 98 (90°), 58 (125°) (1972Ca01).
487 ^a			$d\sigma/d\Omega(\mu\text{b/sr})$: 9 (60°), 35 (90°), 33 (125°) (1972Ca01).
=553#			$d\sigma/d\Omega(\mu\text{b/sr})$: <1 (60°), <1.3 (90°), 1 (125°) (1972Ca01).
596#			$d\sigma/d\Omega(\mu\text{b/sr})$: 1 (125°) (1972Ca01).
623 ^c			$d\sigma/d\Omega(\mu\text{b/sr})$: 8 (60°), 16 (90°), 10 (125°) (1972Ca01).
742			$d\sigma/d\Omega(\mu\text{b/sr})$: 1.4 (90°), 2.8 (125°) (1972Ca01).
906 ^d			$d\sigma/d\Omega(\mu\text{b/sr})$: 10 (60°), 18 (90°), 11 (125°) (1972Ca01).
936 ^e			$d\sigma/d\Omega(\mu\text{b/sr})$: 285 (60°), 342 (90°), 158 (125°) (1972Ca01).
960 ^c			$d\sigma/d\Omega(\mu\text{b/sr})$: 11 (60°), 38 (90°), 29 (125°) (1972Ca01).
1002 ^d			$d\sigma/d\Omega(\mu\text{b/sr})$: 112 (60°), 207 (90°), 128 (125°) (1972Ca01).
1029 ^e			$d\sigma/d\Omega(\mu\text{b/sr})$: 45 (60°), 46 (90°), 27 (125°) (1972Ca01).
1056 ^e	5/2-, 7/2-	3	$d\sigma/d\Omega(\mu\text{b/sr})$: 37 (60°), 56 (90°), 35 (125°) (1972Ca01).
1072 ^f			$d\sigma/d\Omega(\mu\text{b/sr})$: 47 (60°), 79 (90°), 52 (125°) (1972Ca01).
1128 ^d			$d\sigma/d\Omega(\mu\text{b/sr})$: 4 (60°), 14 (90°), 15 (125°) (1972Ca01).
1154			$d\sigma/d\Omega(\mu\text{b/sr})$: 11 (60°), 16 (90°), 10 (125°) (1972Ca01).
1219 ^f			$d\sigma/d\Omega(\mu\text{b/sr})$: 4 (60°), 21 (90°), 16 (125°) (1972Ca01).
1233			$d\sigma/d\Omega(\mu\text{b/sr})$: 1.4 (60°), 4 (90°), 1.8 (125°) (1972Ca01).
1265 ^e	(5/2-, 7/2-)	(3)	$d\sigma/d\Omega(\mu\text{b/sr})$: =15 (60°), 47 (90°), 31 (125°) (1972Ca01).
1281 ^d			$d\sigma/d\Omega(\mu\text{b/sr})$: =3 (60°), =3 (90°), 4 (125°) (1972Ca01).
=1314 ^e			$d\sigma/d\Omega(\mu\text{b/sr})$: <2 (60°), 5 (90°), 5 (125°) (1972Ca01).
1339			$d\sigma/d\Omega(\mu\text{b/sr})$: =3 (60°), 5 (90°), =3 (125°) (1972Ca01).
=1375	5/2-, 7/2-	3	$d\sigma/d\Omega(\mu\text{b/sr})$: 7 (60°), 11 (90°), 9 (125°) (1972Ca01).
1397 ^f	≥9/2	≥5	$d\sigma/d\Omega(\mu\text{b/sr})$: =3 (60°), 9 (90°), 7 (125°) (1972Ca01).
1441			$d\sigma/d\Omega(\mu\text{b/sr})$: 2.7 (90°), 2.2 (125°) (1972Ca01).
1468			$d\sigma/d\Omega(\mu\text{b/sr})$: =5 (60°), =2 (90°), 1.2 (125°) (1972Ca01).
1476			$d\sigma/d\Omega(\mu\text{b/sr})$: 7 (60°), 13 (90°), 6 (125°) (1972Ca01).
1489			$d\sigma/d\Omega(\mu\text{b/sr})$: 2.2 (60°), 2.3 (125°) (1972Ca01).
1550			$d\sigma/d\Omega(\mu\text{b/sr})$: 7 (60°), 13 (90°), 13 (125°) (1972Ca01).
1562	≥5/2	≥3	$d\sigma/d\Omega(\mu\text{b/sr})$: 11 (60°), 21 (90°), 23 (125°) (1972Ca01).
1592	5/2-, 7/2-	3	$d\sigma/d\Omega(\mu\text{b/sr})$: 19 (60°), 32 (90°), 21 (125°) (1972Ca01).
1650			$d\sigma/d\Omega(\mu\text{b/sr})$: <4 (60°), 9 (90°), 7 (125°) (1972Ca01).
1679	5/2-, 7/2-	3	$d\sigma/d\Omega(\mu\text{b/sr})$: 4 (60°), 8 (90°), 7 (125°) (1972Ca01).
1692			$d\sigma/d\Omega(\mu\text{b/sr})$: 4 (60°), 8 (90°), 3 (125°) (1972Ca01).
1711			$d\sigma/d\Omega(\mu\text{b/sr})$: 3 (60°), 7 (90°), 11 (125°) (1972Ca01).
1737	1/2-, 3/2-	1	$d\sigma/d\Omega(\mu\text{b/sr})$: 6 (60°), 7 (90°), 5 (125°) (1972Ca01).
1763	5/2-, 7/2-	3	$d\sigma/d\Omega(\mu\text{b/sr})$: 7 (60°), 12 (90°), 11 (125°) (1972Ca01).
1792			$d\sigma/d\Omega(\mu\text{b/sr})$: =3 (60°), 7 (90°), 5 (125°) (1972Ca01).
1822	5/2-, 7/2-	3	$d\sigma/d\Omega(\mu\text{b/sr})$: 7 (60°), 16 (90°), 8 (125°) (1972Ca01).
1967	≥5/2	≥3	$d\sigma/d\Omega(\mu\text{b/sr})$: 1.9 (60°), 5 (90°), 5 (125°) (1972Ca01).
1989			$d\sigma/d\Omega(\mu\text{b/sr})$: 3 (60°), 7 (90°), 4 (125°) (1972Ca01).
2016	≤7/2-	3, 1	$d\sigma/d\Omega(\mu\text{b/sr})$: 9 (60°), 15 (90°), 11 (125°) (1972Ca01).
2137			$d\sigma/d\Omega(\mu\text{b/sr})$: =15 (90°), 10 (125°) (1972Ca01).
2216			$d\sigma/d\Omega(\mu\text{b/sr})$: =12 (90°), 5 (125°) (1972Ca01).

[†] From 1972Ca01, except as noted.[‡] From 1972Ca01. However, for levels excited in both (d,p) and (d,t), it is not clear whether L was determined in both or just one of the reactions; consequently, L is entered here for only those levels seen in (d,t) alone.[§] Based on L.

Rounded value from Adopted Levels.

@ (A): 1/2[510] band.

& (B): 3/2[512] band.

^a (C): 11/2[615] band.^b (D): 7/2[503] band.^c (E): 9/2[624] band.^d (F): 5/2[512] band.^e (G): 1/2[521] band.^f (H): 7/2[514] band.

 $^{184}\text{W}(^3\text{He},\alpha)$ 1973K107

$J\pi(^{184}\text{W})=0+$.

1973K107: $E(^3\text{He})=20.3$ MeV; 94% enriched ^{184}W target; magnetic spectrograph with nuclear emulsions (FWHM=30 keV);
measured $E\alpha$, $d\sigma/d\Omega$ at $\theta(\text{lab})=60^\circ$, the angle at which DWBA calculations predict maximum $L=6$ transfer cross sections.

 ^{183}W Levels

E(level) [†]	L [‡]	Comments
487 4	6	$d\sigma/d\Omega(60^\circ)=15$ $\mu\text{b/sr}$.
960 7	6	$d\sigma/d\Omega(60^\circ)=21$ $\mu\text{b/sr}$.
1550 7	6	$d\sigma/d\Omega(60^\circ)=15$ $\mu\text{b/sr}$.
1562? 7		
1711 7	6	$d\sigma/d\Omega(60^\circ)=12$ $\mu\text{b/sr}$.

[†] From authors' (d,p) measurements reported by 1972Ca01. Uncertainties are 4 keV for lowest-energy levels, 7 keV for all others.

[‡] Based on measured ratio of ($^3\text{He},\alpha$) to (d,t) cross sections.

Adopted Levels, Gammas

Q(β^-)=-2150 50; S(n)=8430 100; S(p)=4852 8; Q(α)=2124 8 2012Wa38.

Also populated in W(d,X) (2015Du03, 2013Di02), W(d,xn) (2014Ma43), Re(p,X) (2015He05, 2013Di07, 2013Is01) and ¹⁸¹Ta(⁹Be,X) (2014Zh30).

¹⁸³Re Levels

Cross Reference (XREF) Flags

A ¹⁸³Re IT Decay (1.04 ms)
B ¹⁸³Os ϵ Decay (13.0 h)
C ¹⁸³Os ϵ Decay (9.9 h)

D ¹⁷⁶Yb(¹¹B,4n γ)
E ¹⁸¹Ta(α ,2n γ)
F ¹⁸²W(³He,d),(α ,t)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
0.0 ^{\$}	5/2 ⁺ #	ABCDEF	70.0 d 14	% ϵ =100. μ =+3.160 13 (1987Oh10); Q=+2.1 2 (1985Ha41). μ : from NMR on oriented nuclei; relative to ¹⁸⁶ Re. Q: presumed to supersede 2.3 2 (1983Ha49). From static orientation with γ detection, relative to ¹⁸⁷ Re. J π : L(³ He,d)=2; log f/t =6.8 (log $f^{1u}t$ <8.5) to 7/2- 453 in ¹⁸³ W. T _{1/2} : weighted average of 67.6 d 25 (1958Fo47), 71 d 3 (1958Ga17), and 71 d 2 (1965Bl06). J π : M1+E2 intraband 114 γ to 5/2+ g.s.. J π : g.s. band member. J π : g.s. band member. %IT=100. μ =+5.14 11 (1980Za09); Q=(+)3.8 3 (1978Ne14). μ : from TDPAD; relative to ¹⁹ F(197). Q: from TDPAC; relative to ¹⁸⁷ Re. J π : M2 496 γ to 5/2+ g.s.; E1 236 γ to 9/2+ 260. T _{1/2} : weighted average of 7.7 ns 5 (1960Ne03 in ϵ decay (13.0 h)) and 7.9 ns 5 (1988BeYU).
114.475 [@] 20	7/2 ⁺ #	ABCDE		
259.866 ^{\$} 21	9/2 ⁺ #	AB DE		
435.25 [@] 3	11/2 ⁺ #	AB DE		
496.242 ^{&} 24	9/2 ⁻ a	B DE	7.8 ns 4	
598.83 ^c 5	(5/2)-	BCDEF	1.96 ns 5	XREF: F(603). %IT=100. J π : E1 484 γ to 7/2+ 114; L(³ He,d)=3; 102 γ from (1/2)- 701. T _{1/2} : from (α ,2n γ). J π : L(³ He,d)=5; strong 503 γ branch to 7/2+ 114. J π : g.s. band member. XREF: F(667). J π : L(³ He,d)=4,5; intraband M1+E2 168 γ to 9/2- 496. J π : L(³ He,d)=1; J=3/2 band member assigned elsewhere. J π : stretched Q intraband 142 γ to (9/2)- 617. XREF: F(835). J π : L(³ He,d)=1; 829 γ to 5/2+ g.s.; 128 γ to (1/2)- 701. J π : M1 851 γ to 5/2+ g.s.; (E1) 355 γ to 9/2- 496. J π : 9/2[514] band member. J π : g.s. band member. J π : L(³ He,d)=0. XREF: F(899). J π : L(³ He,d)=(3); 228 γ to 11/2- 664; 892 γ to 5/2+ g.s.. XREF: F(961). J π : L(³ He,d)=(2); E2 955 γ to 5/2+ g.s.; band assignment. J π : L(³ He,d)=2; strong intraband 121 γ to 1/2+ 879. J π : M1+E2 151 γ to (7/2)+ 852; 339 γ to 11/2- 664; 568 γ to 11/2+ 435; 1002 γ to 5/2+ g.s.. J π : stretched Q intraband 264 γ to (13/2)- 760. J π : M1+E2 1035 γ to 5/2+ g.s.; band assignment. J π : L(³ He,d)=2; band assignment. J π : 366 γ to (1/2)- 701; 237 γ to (3/2)- 829; log f/t =8.4 from 1/2-; band assignment.
617.67 ^c 7	(9/2)-	B DEF		
639.05 ^{\$} 6	13/2 ⁺ #	AB DE		
664.07 ^b 3	11/2 ⁻ a	B DEF		
700.62 ^c 6	(1/2)-	C F		
759.54 ^c 11	(13/2)-	DE		
828.99 ^d 7	(3/2)-	C F		
851.54 ^e 3	(7/2)+	B DE		
861.14 ^{&} 3	13/2 ⁻ a	B E		
870.47 [@] 7	15/2 ⁺ #	A DE		
878.92 ^f 5	1/2+	BC F		
891.79 ^d 5	(7/2)-	B F		
954.80 ^f 4	(3/2)+	C F		
999.54 ^f 7	(5/2)+	B F		
1002.52 ^e 3	(9/2)+	B D F		
1023.13 ^c 14	(17/2)-	DE		
1034.74 ^g 4	(3/2)+	C		
1040.73 ^h 9	(5/2)+	C F		
1066.10 ⁱ 9	(3/2)	C F		
1075 7		F		
1084.72 ^b 6	15/2 ⁻ a	DE		J π : intraband D+Q 223 γ to 13/2- 861; intraband stretched Q 420 γ to 11/2- 664. J π : M1+E2 67 γ to (3/2)+ 1035; (E2) 1102 γ to 5/2+ g.s.; 401 γ to (1/2)- 701. J π : M1 1108 γ to 5/2+ g.s.; 993 γ to 7/2+ 114; band assignment. J π : L(³ He,d)=(2).
1101.95 ^j 4	(1/2)+	C		
1107.88 ^j 4	(3/2)+	C		
1125 7	(3/2+, 5/2+)	F		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{183}Re Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
1127.15 ^s 10	17/2+ [#]	A DE		$J\pi$: g.s. band member.
1183.65 ^e 6	(11/2)+	B D		$J\pi$: intraband 181 γ to (9/2)+ 1003; intraband 332 γ to (7/2)+ 852.
1290 7		F		
1304.18 ^k 5	(11/2)-	B F		XREF: F(1309). $J\pi$: $L(^3\text{He,d})=5$; M1 808 γ to 9/2- 496; likely configuration: π 11/2[505] (1971Lu01).
1335.09 ^{&} 7	17/2-a	DE		$J\pi$: 9/2[514] band member.
1338 7		F		
1348.85 ^d 14	(15/2-)	D		$J\pi$: intraband 589 γ to (13/2)- 759; band assignment.
1353.74 ^l 5	(3/2+)	C		$J\pi$: $\log ft=7.9$ ($\log f^{lu}t<8.5$) from 1/2-; 1354 γ to 5/2+ g.s.; (M1) 252 γ to (1/2)+ 1102; band assignment.
1393.63 ^e 6	(13/2+)	D		$J\pi$: intraband 210 γ to (11/2+) 1184; intraband 391 γ to (9/2+) 1002.
1403.25 ^c 16	(21/2-)	DE		$J\pi$: intraband E2 380 γ to (17/2-) 1023.
1409.42 [@] 12	19/2+ [#]	A DE		$J\pi$: g.s. band member.
1413.23 ^w 6	(13/2-)	D		$J\pi$: stretched (Q) 917 γ to 9/2- 496; 749 γ to 11/2- 664.
1414.61 9	(1/2-, 3/2)	C		$J\pi$: 536 γ to 1/2+ 879; 714 γ to 1/2- 701; 816 γ to (5/2)- 599.
1422 7	1/2+	F		$J\pi$: $L(^3\text{He,d})=0$. Likely configuration: π 1/2[660] (1971Lu01).
1470 7	3/2+, 5/2, 7/2-	F		$J\pi$: $L(^3\text{He,d})=2,3$. Likely configuration: π 3/2[651] (1971Lu01) favors 3/2+.
1525.22 5	(9/2)-	B		$J\pi$: E1 1265 γ to 9/2+ 260; 664 γ to 13/2- 861; 1411 γ to 7/2+ 114.
1532 7	(3/2+, 5/2+)	F		$J\pi$: $L(^3\text{He,d})=(2)$.
1554.07 4	(9/2)-	B		$J\pi$: E1 1440 γ to 7/2+ 114; 693 γ to 13/2- 861; M1+E2 1058 γ to 9/2- 496.
1563.14 14	$\leq(1/2-, 3/2, 5/2+)$	C		$J\pi$: 965 γ to (5/2)- 599, 734 γ to (3/2)- 829 imply $J\pi=(1/2-, 3/2, 5/2, 7/2-)$; $\log ft=8.3$ from 1/2-.
1608.28 ^b 10	19/2-a	DE		$J\pi$: 9/2[514] band member.
1628.36 ^x 6	(15/2-)	D		$J\pi$: 964 γ to 11/2- 664; 767 γ to 13/2- 861; band assignment.
1630.89 ^e 7	(15/2+)	D		$J\pi$: 237 γ to (13/2+) 1394; 447 γ to (11/2)+ 1184; band assignment.
1631 7	(1/2+)	F		$J\pi$: $L(^3\text{He,d})=(0)$.
1653 7	(1/2+)	F		$J\pi$: $L(^3\text{He,d})=(0)$.
1659.09 5	(7/2, 9/2)-	B		$J\pi$: M1 1163 γ to 9/2- 496; 1544 γ to 7/2+ 114.
1663.78 5	(11/2)	B		$J\pi$: 1168 γ to 9/2- 496; 1025 γ to 13/2+ 639; 802 γ to 13/2- 861; 1404 γ to 9/2+ 260.
1670.41 ^w 8	(15/2)	D		$J\pi$: 809 γ to 13/2- 861; 1006 γ to 11/2- 664; band assignment.
1711.65 6	(9/2-)	B		$J\pi$: 1114 γ to (5/2)- 599; 1276 γ to 11/2+ 435; 1048 γ to 11/2- 664.
1713.37 ^s 12	21/2+ [#]	A DE		$J\pi$: g.s. band member.
1740.47 ^d 15	(19/2-)	D		$J\pi$: 392 γ to (15/2-) 1348; 717 γ to (17/2-) 1023; band assignment.
1746.45 7	(9/2-, 11/2-)	B		$J\pi$: (M1) 1082 γ to 11/2- 664; 1250 γ to 9/2- 496; 1487 γ to 9/2+ 260.
1763.50 ^y 6	(17/2-)	D		$J\pi$: D+Q 679 γ to 15/2- 1085; (Q) 903 γ to (13/2-) 861; band assignment.
1781.36 5	(9/2, 11/2)-	B		$J\pi$: M1 477 γ to (11/2)- 1304; (M1) 1285 γ to 9/2- 496.
1798.53 12	(5/2+, 7/2, 9/2+)	B		$J\pi$: 1539 γ to 9/2+ 260; 1798 γ to 5/2+ g.s..
1819.52 ^x 7	(17/2-)	D		$J\pi$: 959 γ to 13/2- 861; 485 γ to 17/2- 1335; band assignment.
1864.35 8	(7/2, 9/2+)	B		$J\pi$: 1368 γ to 9/2- 496; 1864 γ to 5/2+ g.s.; 1605 γ to 9/2+ 260.
1893.33 ^c 18	(25/2-)	DE		$J\pi$: E2 490 γ to (21/2-) 1403; band assignment.
1894.25 ^e 7	(17/2+)	D		$J\pi$: 500.5 to (13/2+) 1394; 1024 γ to 15/2+ 970; band assignment.
1897.84 7	(7/2-, 9/2, 11/2+)	B		$J\pi$: 1234 γ to 11/2- 664; 1783 γ to 7/2+ 114.
1903.78 7	(1/2+, 3/2+)	C		$J\pi$: (E2) 1904 γ to 5/2+ g.s.; 796 γ to (3/2)+ 1108; $\log ft=7.1$ from 1/2-.
1906.83 ^{&} 10	21/2-a	D		$J\pi$: 9/2[514] band member.
1907.21 ⁿ 15	(25/2)+	A DE	1.04 ms 4	%IT=100. $J\pi$: E2 194 γ to 21/2+ 1713. $T_{1/2}$: from IT decay.
1925.18 ^w 8	(17/2)	D		$J\pi$: 841 γ to 15/2- 1085; 1064 γ to 13/2- 861; band assignment.
1927.55 13	(15/2+)	D		$J\pi$: 1288 γ to 13/2+ 639; 1492 γ to 11/2+ 435; dominant configuration: $\pi(5/2[402]+9/2[514]+1/2[541])?$ from ($^{11}\text{B}, 4n\gamma$).
1936.66 ^y 9	(19/2-)	D		$J\pi$: 173 γ to (17/2-) 1763; band assignment.

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Adopted Levels, Gammas (continued)

¹⁸³Re Levels (continued)

E(level) [†]	Jπ [‡]	XREF	T _{1/2}	Comments
1936.66+x ^z	(21/2)	D	10 ns 4	%IT=100. E(level): x<75 keV to account for non-observance of transition feeding the 1937 level. The 1937 level has a 10 ns 4 isomeric feeding component attributed to a low energy transition for which low detection efficiency or strong electron conversion could render it unobservable in (¹¹ B,4nγ). T _{1/2} : from (¹¹ B,4nγ). Jπ: (D) transition to 19/2- 1937. Jπ: 1097γ to (7/2)+ 852, 946γ to (9/2)+ 1003 suggest Jπ=(5/2+,7/2,9/2,11/2+).
1948.91 10		B		Jπ: 1327γ to 11/2- 664; 1876γ to 7/2+ 114; 1556γ to 11/2+ 435. Jπ: 1353γ to 11/2- 664; 1165γ to (7/2)+ 852.
1990.99 8	(9/2, 11/2+)	B		Jπ: 412γ to 19/2- 1608; 392γ to (15/2-) 1628; band assignment.
2016.89 13	(7/2-, 9/2, 11/2+)	B		Jπ: 1179γ to (7/2)+ 852; 1391γ to 13/2+ 639.
2019.94 ^x 9	(19/2-)	D		Jπ: 109γ to (15/2+) 1928; 100γ to (19/2-) 1937; band assignment.
2030.06 5	(9/2+, 11/2+)	B		Jπ: D+Q 327γ to 21/2+ 1713; 631γ to 19/2+ 1409; g.s. band member.
2036.97 ^β 10	(19/2+)	D		Jπ: 201γ to (19/2-) 1937; 374γ to (17/2-) 1763; band assignment.
2039.77 [@] 13	23/2+ [#]	DE		Jπ: 1054γ to 17/2+ 1127; 551γ to (15/2+) 1631; band assignment.
2137.86 ^y 10	(21/2-)	D		Jπ: 250γ to (21/2) 1937+x; band assignment.
2181.29 ^e 9	(19/2+)	D		Jπ: 875γ to 17/2- 1335; 1125γ to 15/2- 1085; band assignment.
2186.38+x ^z 8	(23/2)	D		Jπ: 305γ to 21/2- 1907; band assignment.
2209.68 ^w 18	(19/2)	D		Jπ: 315γ to 21/2- 1907; 613γ to 19/2- 1608; 9/2[504] band member.
2212.29 ^m 16	(27/2+)	D		Jπ: 195γ to (19/2+) 2037; band assignment.
2221.68 ^b 12	23/2-a	D		Jπ: 497γ to (19/2-) 1740; 834γ to (21/2-) 1403; band assignment.
2232.08 ^α 14	(21/2+)	D		Jπ: 630γ to 19/2- 1608; 419γ to (17/2-) 1819; band assignment.
2237.52 ^d 16	(23/2-)	D		Jπ: 227γ to 21/2- 2138; 429γ to (19/2-) 1937; band assignment.
2238.26 ^x 10	(21/2-)	D		Jπ: 344γ to 23/2+ 2040; 671γ to 21/2+ 1713; g.s. band assignment.
2365.21 ^y 11	(23/2-)	D		Jπ: g.s. band member.
2383.85 [§] 14	25/2+ [#]	D		Jπ: 223γ to (23/2+) 2232; 418γ to (19/2+) 2037; band assignment.
2454.78 ^β 15	(23/2+)	D		Jπ: 278γ to (23/2) 2186; 527γ to (21/2) 1937; band assignment.
2464.02+x ^z 8	(25/2)	D		Jπ: 570γ to 21/2- 1907; 239γ to (21/2-) 2238; band assignment.
2476.58 ^x 11	(23/2-)	D		Jπ: 7/2[404] band member.
2483.89 ^e 11	(21/2+)	D		Jπ: 593γ to 25/2- 1893; band assignment.
2485.84 ^c 21	(29/2-)	D		Jπ: 311γ to 19/2+ 2181; 598γ to 21/2+ 1894; band assignment.
2491.92 ^v 10	(21/2+)	D		Jπ: 1179γ to 17/2- 1335; band assignment.
2513.9 ^w 3	(21/2)	D		Jπ: 326γ to (27/2+) 2212; 631γ to 21/2- 1907; band assignment.
2538.40 ⁿ 16	(29/2+)	D		Jπ: 9/2 [514] band member.
2563.69 ^{&} 12	25/2-a	D		Jπ: 251γ to (23/2-) 2365; 4479γ to (21/2-) 2138; band assignment.
2616.45 ^y 12	(25/2-)	D		Jπ: 247γ to (23/2+) 2455; 470γ to (21/2+) 2232; band assignment.
2702.20 ^α 16	(25/2+)	D		Jπ: 258γ to (23/2-) 2477; 496γ to (21/2-) 2238; band assignment.
2734.20 ^x 12	(25/2-)	D		Jπ: E1 199γ to (29/2+) 2538; 831γ to (25/2+) 1907; D 526γ to (27/2+) 2212.
2737.78 ^o 16	(29/2-)	D	6.0 ns 5	T _{1/2} : from (¹¹ B,4nγ). Jπ: g.s. band member.
2745.23 [@] 15	27/2+ [#]	D		Jπ: 302γ to (25/2) 2464+x; 579γ to (23/2) 2186+x; band assignment.
2765.56+x ^z 10	(27/2)	D		Jπ: 335γ to (21/2+) 2492; band assignment.
2826.71 ^v 12	(25/2+)	D		Jπ: 592γ to (23/2-) 2237; 936γ to (25/2-) 1893; band assignment.
2829.31 ^d 19	(27/2-)	D		Jπ: 346γ to (29/2+) 2538; 672γ to (27/2+) 2212; band assignment.
2884.32 ^m 17	(31/2+)	D		Jπ: 272γ to (25/2-) 2616; 524γ to (23/2-) 2365; band assignment.
2888.78 ^y 13	(27/2-)	D		Jπ: 350γ to 25/2- 2564; 692γ to 23/2- 2222; 9/2[514] band member.
2914.01 ^b 13	27/2-a	D		Jπ: 270γ to (25/2+) 2702; 517γ to (23/2+) 2455; band assignment.
2971.93 ^β 16	(27/2+)	D		Jπ: 278γ to (25/2-) 2734; 536γ to (23/2-) 2477; band assignment.
3012.26 ^x 15	(27/2-)	D		Jπ: 483γ to 29/2+ 2538; 1114γ to (25/2+) 1909; band assignment.
3021.73 ^q 16	(29/2)	D		Jπ: 505γ to (29/2+) 2538; 1136γ to (25/2+) 1907; band assignment.
3043.46 ^f 11	(29/2+)	D		Jπ: 311γ to (29/2-) 2738; band assignment.
3048.61 ^p 17	(31/2-)	D		Jπ: 321γ to (27/2) 2766+x; 622γ to (25/2) 2464+x; band assignment.
3086.21+x ^z 11	(29/2)	D		Jπ: g.s. band member.
3117.22 [§] 15	29/2+ [#]	D		Jπ: 687γ to 29/2- 2486; band assignment.
3172.54 ^c 23	(33/2-)	D		Jπ: 295γ to (27/2-) 2889; 567γ to (25/2-) 2616; band assignment.
3183.26 ^y 14	(29/2-)	D		Jπ: 470γ to (29/2-) 2738; band assignment.
3208.03 ^s 17	(31/2)	D		Jπ: 364γ to (31/2+) 2884; 710γ to (29/2+) 2538; band assignment.
3248.30 ⁿ 17	(33/2+)	D		Jπ: 427γ to (25/2+) 2827; band assignment.
3253.71 ^v 16	(29/2+)	D		Jπ: 290γ to (27/2+) 2972; 560γ to (25/2+) 2702; band assignment.
3262.01 ^α 17	(29/2+)	D		

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Adopted Levels, Gammas (continued)

¹⁸³Re Levels (continued)

E(level) [†]	Jπ [‡]	XREF	Comments
3274.84& 14	29/2-a	D	Jπ: 9/2[514] band member.
3321.69q 17	(31/2)	D	Jπ: 437γ to (31/2+) 2884; 783γ to (29/2+) 2538; band assignment.
3370.20r 18	(31/2)	D	Jπ: 1158γ to (27/2+) 2212; band assignment.
3374.95o 17	(33/2-)	D	Jπ: 326γ to (31/2-) 3049; 637γ to (29/2-) 2738; band assignment.
3419.33+x ^z 13	(31/2)	D	Jπ: 333γ to (29/2) 3086+x; 654γ to (27/2) 2766+x; band assignment.
3452.48t 16	(31/2)	D	Jπ: 568γ to (31/2+) 2884; 914γ to (29/2+) 2538; band assignment.
3492.06@ 16	31/2+#	D	Jπ: g.s. band member.
3499.29y 16	(31/2-)	D	Jπ: 316γ to (29/2-) 3183; 611γ to (27/2-) 2889; band assignment.
3512.3d 4	(31/2-)	D	Jπ: 683γ to 27/2- 2829; 1026γ to (29/2-) 2486; band assignment.
3571.14β 18	(31/2+)	D	Jπ: 309γ to (29/2+) 3262; 599γ to (27/2+) 2972; band assignment.
3589.67s 18	(33/2)	D	Jπ: 382γ to (31/2) 3208; 541γ to (31/2-) 3049; band assignment.
3628.66m 17	(35/2+)	D	Jπ: 381γ to (33/2+) 3248; 745γ to (31/2+) 2884; band assignment.
3643.79q 17	(33/2)	D	Jπ: 395γ to (33/2+) 3248; 622γ to (29/2) 3022; band assignment.
3680.52b 17	31/2-a	D	Jπ: 9/2[514] band member.
3713.14p 18	(35/2-)	D	Jπ: 338γ to (33/2-) 3375; 665γ to (31/2-) 3049; band assignment.
3721.5r 3	(33/2)	D	Jπ: 1183γ to (29/2+) 2538; band assignment.
3744.10u 18	(33/2)	D	Jπ: 369γ to (33/2-) 3375; 1006γ to (29/2-) 2738; band assignment.
3755.81+x ^z 15	(33/2)	D	Jπ: 670γ to (29/2) 3086+x; band assignment.
3771.11v 19	(33/2+)	D	Jπ: 517γ to (29/2+) 3254; band assignment.
3815.71t 17	(33/2)	D	Jπ: 931γ to (31/2+) 2884; band assignment.
3833.46y 17	(33/2-)	D	Jπ: 650γ to (29/2-) 3183; band assignment.
3852.37s 17	33/2+#	D	Jπ: g.s. band member.
3898.28α 18	(33/2+)	D	Jπ: 327γ to (31/2+) 3571; 636γ to (29/2+) 3262; band assignment.
3944.84c 25	(37/2-)	D	Jπ: 772γ to 33/2- 3172; band assignment.
3986.79s 18	(35/2)	D	Jπ: 612γ to (33/2-) 3375; 779γ to (31/2) 3208; band assignment.
3986.92q 18	(35/2)	D	Jπ: 359γ to 35/2+ 3629; 665γ to (31/2) 3322; band assignment.
4022.94n 18	(37/2+)	D	Jπ: 384γ to 35/2+ 3629; 775γ to (33/2+) 3248; band assignment.
4032.8& 4	33/2-a	D	Jπ: 9/2[514] band member.
4058.72o 19	(37/2-)	D	Jπ: 346γ to (35/2-) 3713; 684γ to (33/2-) 3375; band assignment.
4096.1r 3	(35/2)	D	Jπ: 1212γ to 31/2+ 2884; band assignment.
4113.07u 18	(35/2)	D	Jπ: 400γ to (35/2-) 3713; 1064γ to (31/2-) 3049; band assignment.
4198.62t 18	(35/2)	D	Jπ: 383γ to (33/2) 3186; 746γ to (31/2) 3452; band assignment.
4206.31@ 18	35/2+#	D	Jπ: g.s. band member.
4238.95β 20	(35/2+)	D	Jπ: 341γ to (33/2+0 3898; 668γ to (31/2+) 3571; band assignment.
4345.92q 18	(37/2)	D	Jπ: 323γ to (37/2+) 4023; 702γ to (33/2) 3644; band assignment.
4375.81v 21	(37/2+)	D	Jπ: 605γ to (33/2+) 3771; band assignment.
4401.60p 19	(39/2-)	D	Jπ: 343γ to (37/2-) 4058; 689γ to (35/2-) 3713; band assignment.
4429.02m 18	(39/2+)	D	Jπ: 406γ to 37/2+ 4023; 800γ to 35/2+ 3629; band assignment.
4488.3r 6	(37/2)	D	Jπ: 1240γ to (33/2+) 3248; band assignment.
4510.77u 21	(37/2)	D	Jπ: 798γ to (35/2-) 3713; 1136 to (33/2-) 3375; band assignment.
4595.9α 3	(37/2+)	D	Jπ: 698γ to (33/2+) 3898; band assignment.
4597.66t 18	(37/2)	D	Jπ: 399γ to (35/2) 3816; 782γ to (33/2) 3816; band assignment.
4722.63q 21	(39/2)	D	Jπ: 736γ to (35/2) 3987; band assignment.
4749.60o 20	(41/2-)	D	Jπ: 348γ to (39/2-) 4402; 691γ to (37/2-) 4059; band assignment.
4792.9c 3	(41/2-)	D	Jπ: 848γ to (37/2-) 3945; band assignment.
4843.51n 20	(41/2+)	D	Jπ: 414γ to (39/2+) 4429; 821γ to (37/2+) 4023; band assignment.
4966.3β 5	(39/2+)	D	Jπ: 727γ to (35/2+) 4129; band assignment.
5010.9t 3	(39/2)	D	Jπ: 812γ to (35/2) 4199; band assignment.
5065.2v 4	(41/2+)	D	Jπ: 689γ to (37/2+) 4376; band assignment.
5076.33p 21	(43/2-)	D	Jπ: 327γ to (41/2-) 4750; 675γ to (39/2-) 4402; band assignment.
5099.32q 21	(41/2)	D	Jπ: 753γ to (37/2) 4346; band assignment.
5266.53m 20	(43/2+)	D	Jπ: 423γ to 41/2+ 4844; 838γ to 39/2+ 4429; band assignment.
5440.3t 3	(41/2)	D	Jπ: 843γ to (37/2) 4598; band assignment.
5454.21o 21	(45/2-)	D	Jπ: 378γ to 43/2- 5076; 705γ to 41/2- 4750; band assignment.
5511.0q 4	(43/2)	D	Jπ: 788γ to (39/2) 4723; band assignment.
5691.72n 22	(45/2+)	D	Jπ: 426γ to 43/2+ 5267; 848γ to 41/2+ 4844; band assignment.
5706.1c 4	(45/2-)	D	Jπ: 913γ to 41/2- 4793; band assignment.
5769.72p 23	(47/2-)	D	Jπ: 315γ to (45/2-) 5454; 693γ to (43/2-) 5076; band assignment.
5838.3v 7	(45/2+)	D	Jπ: 773γ to (41/2+) 5065; band assignment.
6131.5m 3	(47/2+)	D	Jπ: 865γ to 43/2+ 5267; band assignment.
6178.1o 3	(49/2-)	D	Jπ: 408γ to (47/2-) 5770; 724γ to (45/2-) 5454; band assignment.
6211.2 11	(49/2-)	D	Jπ: intraband 757γ to (45/2-) 5454.
6569.8n 4	(49/2+)	D	Jπ: 878γ to 45/2+ 5692; band assignment.

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Adopted Levels, Gammas (continued)183Re Levels (continued)

E(level) [†]	Jπ [‡]	XREF	Comments
7012.5m 11	(51/2+)	D	Jπ: 881γ to 47/2+ 6132; band assignment.
[†] From least-squares fit to Eγ, omitting the 273.01γ which fits its placement poorly. Even so, normalized $\chi^2=2.28$ cf. $\chi^2(\text{critical})=1.23$ and 7 Eγ values deviate from least-squares expectation by at least 3σ. [‡] Values rely heavily on measured L-transfer and on deduced rotational band structure. Specific arguments are given with the individual levels. § (A): π 5/2[402], α=+1/2 g.s. band. Band parameters: E ₀ =41.1, A=16.56, B=-12.3 (J=5/2,7/2,9/2).. # Definite Jπ assigned to members of 5/2[402] band based on regular progression of level energies and independently established Jπ(g.s.)=5/2+ and M1+E2 multipolarity for intraband 114γ. @ (B): π 5/2[402] band, α=-1/2 g.s. band. See comment on signature partner band. & (C): π 9/2[514], α=+1/2 band. Band parameters: E ₀ =426.8, A=15.4, B=-7.1 (J=9/2,11/2,13/2,15/2). a Definite Jπ assigned to members of 9/2[514] band based on regular progression of level energies and independently determined Jπ=9/2- for 496 level and M1+E2 multipolarity for intraband 168γ. b (D): π 9/2[514] band, α=-1/2. See comment on signature partner band. c (E): π 1/2[541], α=+1/2 band. Band parameters: E ₀ =805, A=15.3, a=7.3 (J=1/2,5/2,7/2). Strong Coriolis mixing with 3/2[532] band. J=1/2 band member identified in (³ He,d), (α,t); calculated E=700 (2000Pu01). d (F): π 1/2[541] band, α=-1/2. J=3/2, 7/2, 11/2 members identified in (³ He,d), (α,t). See comment on signature partner band. e (G): 7/2[404] band. π=+ assigned to all band members based on established π=+ for J=9/2 band member. Band parameters: E ₀ =792, A=17.0, B=-15.9 (J=7/2,9/2,11/2). f (H): 1/2[400] band. Band parameters: E ₀ =879, A=17.12, a=0.48 (J=1/2,3/2,5/2). Mixed with 1/2/2[402],2+ band. g (I): 3/2[402] band. h (J): 5/2[642] band. i (K): 3/2[532] band. j (L): 1/2[411] band. k (M): 11/2[505] band. l (N): 3/2[411]? band. m (O): Kπ=(25/2)+ band, α=-1/2. π5/2[402]v9/2[624]v11/2[615] configuration (1998Ha51, 2000Pu01) probably dominates the 1907-keV bandhead. Band parameters: E ₀ =2236, A=11.4, B=9.3 (J=7/2,9/2,11/2,13/2). n (P): Kπ=(25/2)+ band, α=+1/2. π5/2[402]v9/2[624]v11/2[615] configuration (1998Ha51, 2000Pu01) probably dominates the 1907-keV bandhead. See comment on signature partner. o (Q): Kπ=29/2- band, α=+1/2. π9/2[514]v9/2[624]v11/2[615], α=+1/2 band (1998Ha51, 2000Pu01). p (R): Kπ=29/2- band, α=-1/2. π9/2[514]v9/2[624]v11/2[615], α=-1/2 band (1998Ha51, 2000Pu01). q (S): K=(25/2) band. r (T): Band based on (29/2+) 3043. Possibly a 3-quasiparticle intrinsic state coupled to a γ-vibration phonon, consistent with observed strong interband transitions (2000Pu01). s (U): K=(31/2) band. Based on 3208 level. t (V): K=(31/2) band. Based on 3452 level. u (W): K=(33/2) band. v (X): π 1/2[660] band. w (Y): Kπ=13/2- band. Bandhead may be a π9/2[514] K+2 γ vibration state (2000Pu01). x (Z): Kπ=15/2- band. y (a): Kπ=17/2- band. z (b): K=(21/2) band. α (c): Kπ=(19/2+) band, α=+1/2. β (d): Kπ=(19/2+) band, α=-1/2.			

γ(183Re)

E(level)	Eγ [†]	Iγ [†]	Mult. [‡]	δ [‡]	α	Comments
114.475	114.43 3	100	M1+E2	0.24 4	3.45 6	Eγ: weighted average of 114.48 7 from (α,2nγ), 114.43 5 from ε decay (13.0 h), 114.48 16 from IT decay (1.04 ms), 114.35 7 from ε decay (9.9 h) and 114.5 1 from (¹¹ B,4nγ).

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	$\delta^{\ddagger}$	α	Comments
259.866	145.383 19	100.0 24	M1+E2	0.37 13	1.68 7	E γ : weighted average of 145.31 11 from ($\alpha, 2n\gamma$), 145.39 2 from ϵ decay (13.0 h), 145.35 12 from IT decay (1.04 ms) and 145.3 1 from ($^{11}\text{B}, 4n\gamma$). I γ : from ($^{11}\text{B}, 4n\gamma$). Other δ : 0.12 +6–12 from $\gamma(\theta)$ in ($\alpha, 2n\gamma$).
	259.92 4	21 6	E2		0.1365	E γ : weighted average of 259.92 5 from ϵ decay (13.0 h), 259.8 1 from ($^{11}\text{B}, 4n\gamma$). Other E γ : 258.8 3 from ($\alpha, 2n\gamma$). I γ : unweighted average of 17.6 8 from ($^{11}\text{B}, 4n\gamma$), 33 9 from ($\alpha, 2n\gamma$) and 12.6 6 from ϵ decay (13.0 h).
435.25	175.366 23	100.0 17	M1+E2	0.48 19	0.95 7	E γ : weighted average of 175.38 9 from ($\alpha, 2n\gamma$), 175.370 25 from ϵ decay (13.0 h), 175.3 2 from IT decay (1.04 ms) and 175.3 1 from ($^{11}\text{B}, 4n\gamma$). Other mult.: D+Q intraband γ from ($\alpha, 2n\gamma$). Other δ : 0.15 3 from $\gamma(\theta)$ in ($\alpha, 2n\gamma$).
	320.82 6	28.2 14	(E2)		0.0723	E γ : weighted average of 320.92 17 from ($\alpha, 2n\gamma$), 320.80 8 from ϵ decay (13.0 h), 321.1 3 from IT decay (1.04 ms) and 320.8 1 from ($^{11}\text{B}, 4n\gamma$). I γ : unweighted average of 32.1 10 from ($^{11}\text{B}, 4n\gamma$), 26.6 18 from ($\alpha, 2n\gamma$), 28 4 from ϵ decay (13.0 h) and 26 6 from IT decay (1.04 ms).
496.242	236.42 4	3.81 6	E1		0.0423	Mult.: Q intraband γ from ($\alpha, 2n\gamma$). B(E1)(W.u.)= 7.3×10^{-8} 4. E γ : weighted average of 236.2 3 from ($\alpha, 2n\gamma$), 236.41 5 from ϵ decay (13.0 h), 236.5 1 from ($^{11}\text{B}, 4n\gamma$). I γ : from ϵ decay (13.0 h). Other I γ : 4.7 7 from ($^{11}\text{B}, 4n\gamma$).
	381.74 4	100.0 10	E1		0.01344	B(E1)(W.u.)= 4.56×10^{-7} 25. E γ : weighted average of 381.88 19 from ($\alpha, 2n\gamma$), 381.74 5 from ϵ decay (13.0 h), 381.7 1 from ($^{11}\text{B}, 4n\gamma$). I γ : from ϵ decay (13.0 h).
	496.37 5	0.713 8	M2		0.191	B(M2)(W.u.)=0.0275 15. E γ : weighted average of 496.4 7 from ($\alpha, 2n\gamma$), 496.37 5 from ϵ decay (13.0 h). I γ : from ϵ decay (13.0 h).
598.83	484.46 6	100 4	E1		0.00790	E γ : weighted average of 484.59 24 from ($\alpha, 2n\gamma$), 484.49 5 from ϵ decay (9.9 h), 484.3 1 from ($^{11}\text{B}, 4n\gamma$). B(E1)(W.u.)= 9.3×10^{-7} 6. Mult.: from ϵ decay; D from ($\alpha, 2n\gamma$).
617.67	599 (18.84 9)		[E2]		1.13×10^4 4	E γ : from level–energy difference. γ expected but not observed.
	182.0 1	100 8				
	357.5 1	19 3				
	502.8 1	72 10				

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	$\delta^{\ddagger}$	α	Comments
639.05	203.77 6	100.0 23	M1+E2	0.14 7	0.681 13	E γ : weighted average of 203.73 10 from ($\alpha, 2n\gamma$), 203.84 10 from ϵ decay (13.0 h), 203.9 2 from IT decay (1.04 ms) and 203.7 1 from ($^{11}\text{B}, 4n\gamma$). Mult.: D+Q from ($\alpha, 2n\gamma$) for intraband γ . Other δ : 0.14 +3-4 from $\gamma(0)$ in ($\alpha, 2n\gamma$).
	379.4 3	39 9	(E2) §		0.0450	E γ : unweighted average of 380.0 4 from ($\alpha, 2n\gamma$), 379.1 3 from IT decay (1.04 ms) and 379.2 1 from ($^{11}\text{B}, 4n\gamma$). Other E γ : 379.18 20 from ϵ decay (13.0 h), presumably for contaminated line. I γ : unweighted average of 51 13 from IT decay (1.04 ms), 15.7 10 from ($\alpha, 2n\gamma$), 35 10 from ϵ decay (13.0 h), 53.1 16 from ($^{11}\text{B}, 4n\gamma$). (the weighted average is 26 10.).
664.07	167.850 19	100.0 9	M1+E2	0.16 +2-3	1.169 18	E γ : weighted average of 167.90 11 from ($\alpha, 2n\gamma$), 167.85 2 from ϵ decay (13.0 h), 167.8 1 from ($^{11}\text{B}, 4n\gamma$). δ : from $\gamma(0)$ in ($\alpha, 2n\gamma$); other δ : 0.14 7 from ϵ decay (13.0 h).
700.62	404.28@ 8	0.41@ 7				
759.54	101.79& 5	100&	[E2]		3.84	
	141.87 9	100	E2		1.073	E γ : weighted average of 141.79 18 from ($\alpha, 2n\gamma$) and 141.9 1 from ($^{11}\text{B}, 4n\gamma$).
828.99	128.30& 8	39& 8	[M1]		2.53	
	230.10& 15	100& 32	[M1]		0.492	
	829.01& 18	37& 10				
851.54	355.35@ 5	14.3@ 3	(E1)		0.01585	
	591.54@ 10	0.59@ 16	(M1)		0.0396	
	737.15@ 8	6.1@ 3	(M1)		0.0225	Other I(737 γ):I(851 γ)=68 20:100 20 in ($\alpha, 2n\gamma$) where 355 γ and 592 γ branches were not seen.
861.14	851.46@ 5	100.0@ 7	M1		0.01562	
	197.08 4	100.0 21	M1+E2	0.14 3	0.748 12	E γ : weighted average of 197.05 15 from ($\alpha, 2n\gamma$), 197.10 4 from ϵ decay (13.0 h), 197.0 1 from ($^{11}\text{B}, 4n\gamma$). I γ : from ($\alpha, xn\gamma$). δ : from $\gamma(0)$ in ($\alpha, 2n\gamma$).
	364.92 3	9.6 15	(E2) §		0.0501	E γ : weighted average of 365.20 25 from ($\alpha, 2n\gamma$), 364.925 23 from ϵ decay (13.0 h), 364.8 1 from ($^{11}\text{B}, 4n\gamma$). I γ : unweighted average of 8.8 21 from ($\alpha, 2n\gamma$), 7.5 14 from ϵ decay (13.0 h) and 12.5 12 from ($^{11}\text{B}, 4n\gamma$).
870.47	231.43 8	100 3	(M1+E2) §	≤ 0.14 §	0.481 8	E γ : weighted average of 231.29 11 from ($\alpha, 2n\gamma$), 231.6 2 from IT decay (1.04 ms) and 231.5 1 from ($^{11}\text{B}, 4n\gamma$). δ : from $\delta=0.10$ +4-10 from $\gamma(0)$ in ($\alpha, 2n\gamma$).

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	$\delta^{\ddagger}$	α	Comments
870.47	435.27 9	73.9 24	(E2) §		0.0311	E γ : weighted average of 435.45 20 from ($\alpha, 2n\gamma$), 435.5 3 from IT decay (1.04 ms) and 435.2 1 from ($^{11}\text{B}, 4n\gamma$). I γ : from ($^{11}\text{B}, 4n\gamma$). Other I γ : 75 3 from ($\alpha, 2n\gamma$), 74 15 from IT decay (1.04 ms).
878.92	878.91& 5	100&	E2		0.00615	
891.79	228.02@ 10	100@ 18	[E2]		0.207	
	273.01@ 10	24@ 5	[M1]		0.308	E γ : fits placement poorly.
	293.30@ 10	45@ 14	[M1]		0.253	
	892.10@ 8	28@ 7	[E1]		0.00230	
954.80	840.58& 8	46& 6				
	954.88& 8	100.0& 14	E2		0.00519	
999.54	120.62 5	100 22	[E2]		1.97	
	999.59 20	25 6				
1002.52	150.96@ 3	23.4@ 18	M1+E2	0.6 2	1.40 10	Other I γ : 100 13 from ($^{11}\text{B}, 4n\gamma$) for weak γ .
	338.53@ 5	11.4@ 12				
	567.56@ 20	1.2@ 5				
	742.73@ 10	5.9@ 8	[M1]		0.0221	
	887.94@ 5	100.0@ 14	(M1)		0.01405	
	1002.46@ 8	5.9@ 5				
1023.13	263.7 1	100	(E2) #		0.1305	Other E γ : 263.33 13 from ($\alpha, 2n\gamma$).
1034.74	80.03 4		[M1]		9.79	E γ : from ϵ decay (9.9 h).
	1034.68& 5	100.0& 10	M1+E2		0.007 3	
1040.73	926.06& 20	44& 12	(E2)		0.00552	
	1040.77& 10	100& 14	(M1)		0.00944	
1066.10	237.00& 15	$\approx$ 100&	[M1]		0.453	
	365.51& 8	68& 24	[M1]		0.1400	
1084.72	223.5 7	100.0 21	(M1+E2) #	0.11 +3-5	0.529	E γ : weighted average of 223.6 1 from ($^{11}\text{B}, 4n\gamma$) and 223.48 11 from ($\alpha, 2n\gamma$). I γ : weighted average of 100 3 from ($^{11}\text{B}, 4n\gamma$) and 100 3 from ($\alpha, 2n\gamma$). Other δ : 0.12 +6-12 from $\gamma(\theta)$ in ($\alpha, 2n\gamma$).
	420.60 11	31.5 24	(E2) #		0.0340	E γ : weighted average of 420.7 1 from ($^{11}\text{B}, 4n\gamma$) and 420.48 11 from ($\alpha, 2n\gamma$). I γ : unweighted average of 33.9 24 from ($^{11}\text{B}, 4n\gamma$) and 29.1 3 from ($\alpha, 2n\gamma$).
1101.95	67.24& 3	1.75& 18	M1+E2	$\approx$ 0.075	$\approx$ 2.93	
	147.11& 10	0.91& 25	(M1)		1.718	
	401.32& 8	0.85& 7				
	1101.93& 5	100.0& 10	(E2)		0.00390	
1107.88	993.43& 15	0.77& 9				
	1107.93& 5	100.0& 9	M1		0.00808	
1127.15	256.91 20	100 3	M1+E2	$\leq$ 0.19	0.359 7	E γ : unweighted average of 256.43 21 in ($\alpha, 2n\gamma$), 256.9 1 in ($^{11}\text{B}, 4n\gamma$) and 257.4 2 in IT decay (1.04 ms). I γ : weighted average from ($\alpha, 2n\gamma$), IT decay (1.04 ms) and ($^{11}\text{B}, 4n\gamma$). δ : 0.14 +5-10 from $\gamma(\theta)$ in ($\alpha, 2n\gamma$).
	488.14 15	89 8	E2		0.0232	E γ : unweighted average of 488.2 3 in ($\alpha, 2n\gamma$), 488.4 1 in ($^{11}\text{B}, 4n\gamma$) and 487.9 3 in IT decay (1.04 ms). I γ : unweighted average of 75 7 from ($\alpha, 2n\gamma$), 90 19 from IT decay (1.04 ms) and 101.9 21 in ($^{11}\text{B}, 4n\gamma$).

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	$\delta^{\ddagger}$	α	Comments
1183.65	181.1 1	75 10	[M1+E2]		0.7 3	Other E_{γ} (I_{γ}): 180.78 25 (440 100) in ϵ decay (13.0 h) suggests that γ may have been contaminated in that study.
	332.1 1	55 10				Other E_{γ} (I_{γ}): 332.15 15 (67 20) in ϵ decay (13.0 h).
	687.10@b 20	100@ 27				γ seen in ϵ decay (13.0 h) only, so placement shown as uncertain here.
	923.8 1	100 15				Other E_{γ} (I_{γ}): 923.56 20 (100 47) in ϵ decay (13.0 h).
1304.18	640.24@ 8	10.2@ 13	[M1]		0.0323	
	807.94@ 5	100.0@ 22	M1		0.01783	
1335.09	250.24 10	100 3	M1+E2	≤ 0.14	0.388	E_{γ} : weighted average of 250.09 14 from ($\alpha, 2n\gamma$) and 250.3 1 from ($^{11}\text{B}, 4n\gamma$).
						I_{γ} : weighted average from ($\alpha, 2n\gamma$) and ($^{11}\text{B}, 4n\gamma$).
						δ : 0.10 +4-10 from $\gamma(\theta)$ in ($\alpha, 2n\gamma$).
	473.83 21	34 10	E2		0.0250	E_{γ} : weighted average of 474.2 3 from ($\alpha, 2n\gamma$) and 473.9 1 from ($^{11}\text{B}, 4n\gamma$).
						I_{γ} : unweighted average of 43 4 from ($^{11}\text{B}, 4n\gamma$) and 24 4 from ($\alpha, 2n\gamma$); the weighted average is 30 10.
1348.85	589.2 1	100				
1353.74	245.90& 5	79& 31	(M1)		0.410	
	251.92& 8	100& 13	(M1)		0.383	
	1353.57& 10	44& 6	(E2)		0.00265	
1393.63	209.9 1	100 13				
	391.0 1	90 16				
	958.5 1	100 13				
1403.25	380.28 10	100	E2		0.0447	E_{γ} : weighted average of 380.3 1 from ($^{11}\text{B}, 4n\gamma$) and 380.0 4 from ($\alpha, 2n\gamma$).
1409.42	282.28 8	75 7	M1+E2	≤ 0.59	0.258 23	E_{γ} : weighted average of 282.3 1 from ($^{11}\text{B}, 4n\gamma$), 282.20 18 from ($\alpha, 2n\gamma$) and 202.3 3 from IT decay (1.04 ms).
						I_{γ} : unweighted average of 87 5 from ($\alpha, 2n\gamma$), 76 3 from ($^{11}\text{B}, 4n\gamma$) and 63 19 from IT decay (1.04 ms).
	538.8 4	100 5	E2		0.0182	δ : 0.39 +20-39 from $\gamma(\theta)$ in ($\alpha, 2n\gamma$).
						E_{γ} : unweighted average of 539.1 1 from ($^{11}\text{B}, 4n\gamma$), 539.32 23 from ($\alpha, 2n\gamma$) and 538.1 3 from IT decay (1.04 ms).
1413.23	749.2 1	33.0 27				
	917.1 1	100 6	(Q) [#]			
1414.61	535.62& 25	2.1& 12				
	585.60& 10	100& 26				
	714.20& 15	48& 14				
	815.53& 20	43& 12				
1525.22	664.22@ 15	10.4@ 22				
	861.16@ 8	57@ 4				
	1028.57@ 20	6.0@ 16				
	1089.98@ 8	65@ 3				
	1265.32@ 8	68@ 3	E1		1.27×10^{-3}	
	1410.77@ 8	100.0@ 16	[E1]		1.14×10^{-3}	
1554.07	693.05@ 8	6.9@ 7				
	889.96@ 5	100.0@ 11	(M1)		0.01397	
	1057.79@ 5	55.2@ 14	M1+E2		0.0066 25	
	1118.91@ 10	16.1@ 6	[E1]		1.52×10^{-3}	
	1294.11@ 8	9.6@ 3				
	1439.63@ 5	63.0@ 7	E1		1.12×10^{-3}	
1563.14	734.01& 15	100& 25				

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	$\delta^{\ddagger}$	α	Comments
1563.14	964.54& 20	41& 6				
1608.28	273.21 9	100 3	(M1+E2)	0.33 +13-19	0.288 16	E_{γ}, I_{γ} : weighted average from ($\alpha, 2n\gamma$) ($E_{\gamma}=273.35$ 18) and from ($^{11}\text{B}, 4n\gamma$) ($E_{\gamma}=273.2$ 1).
	524.0 5	68 7	(E2)		0.0195	Mult.: D+Q intraband γ from ($\alpha, 2n\gamma$). δ : from $\gamma(0)$ in ($\alpha, 2n\gamma$). E_{γ} : unweighted average of 523.5 1 from ($^{11}\text{B}, 4n\gamma$) and 524.5 4 from ($\alpha, 2n\gamma$). I_{γ} : unweighted average of 61 5 from ($^{11}\text{B}, 4n\gamma$) and 75 7 from ($\alpha, 2n\gamma$). Mult.: (Q) intraband γ from ($\alpha, 2n\gamma$).
1628.36	215.2 1	44 5				
	767.3 1	100 16				
	964.2 1	61 11				
1630.89	237.3 1	44 15				
	447.2 1	100 12				
	991.9 2	29 9				
1659.09	1162.81@ 5	100.0@ 11	M1		0.00716	
	1399.52@ 10	1.53@ 15				
	1544.44@ 10	1.31@ 15				
1663.78	802.40@ 10	100@ 13				
	1024.66@ 15	41@ 3				
	1167.78@ 10	42@ 4				
	1228.73@ 8	42.5@ 25				
	1403.71@ 8	46@ 3				
1670.41	809.4 1	47 5				
	1006.2 1	100 11				
1711.65	1047.82@ 15	25@ 7				
	1112.62@ 20	13@ 4				
	1215.31@ 10	26@ 5				
	1276.01@ 15	20@ 4				
	1451.91@ 8	100@ 4				
1713.37	304.1 1	61.2 17	(M1+E2)	0.27 +8-11	0.220 7	Other E_{γ} (I_{γ}): 304.2 2 (55 11) in IT decay (1.04 ms) and 304.45 15 (121 6) from ($\alpha, 2n\gamma$).
	586.2 1	100.0 20	(E2)		0.01492	Mult.: D+Q intraband γ from ($\alpha, 2n\gamma$). δ : from ($\alpha, 2n\gamma$). Other E_{γ} : 584.9 3 from IT decay (1.04 ms), 586.1 4 from ($\alpha, 2n\gamma$). Mult.: (Q) intraband γ from ($\alpha, 2n\gamma$).
1740.47	391.5 1	47 5				
	717.3 1	100 7				
1746.45	1082.31@ 8	100@ 4	(M1)		0.00856	
	1250.32@ 10	18.5@ 22				
	1486.52@ 15	3.7@ 15				
1763.50	135.3 1	3.1 9				
	350.4 1	100 6				
	428.2 1	19 3				
	678.7 1	93 7	D+Q#			
	902.5 1	38 4	(Q)#			
1781.36	477.24@ 5	100.0@ 24	M1		0.0691	
	1117.33@ 10	24.4@ 18				
	1284.95@ 8	61.0@ 12	(M1)		0.00561	
1798.53	1538.86@ 20	100@ 50				
	1684.00@ 20	35@ 10				
	1798.37@ 20	78@ 13				
1819.52	191.1 1	72 7				
	406.1 3	16 7				
	484.5 1	23 7				
	734.8 1	100 14				
	958.9 3	16 7				
1864.35	1368.19@ 20	100@ 40				

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	α	Comments
1864.35	1604.55@ 10 1749.73@ 20 1864.21@ 15	80@ 20 20@ 8 42@ 8			
1893.33	490.1 1	100	E2	0.0230	Other E_{γ} : 489.0 5 from (α ,2n γ).
1894.25	263.3 1 500.5 1 1023.8 1	31 10 100 12 31 7			
1897.84	1233.81@ 8 1401.51@ 20 1637.80@ 15 1783.38@ 15	100@ 5 16@ 5 8.2@ 18 11@ 4			
1903.78	550.28& 10 795.94& 15 948.98& 15 1903.50& 10	56& 12 100& 10 69& 6 34& 3	(E2)	1.62×10^{-3}	
1906.83	298.6 1 571.7 1	100 6 80 7			
1907.21	193.84 8	100	E2	0.355	B(E2)(W.u.)= 2.4×10^{-5} . E_{γ} : weighted average of 193.89 16 from (α ,2n γ) and 193.8 1 from (^{11}B ,4n γ) and 193.9 2 from IT decay. Mult.: from α (K)exp in ^{183}Re IT decay (1.04 ms).
1925.18	840.6 1 1063.9 1	81 12 100 12			
1927.55	1287.6 3 1491.8 5	85 10 100 10			
1936.66	173.1 1	100			
1936.66+x	x		(D)		Mult.: D favored in (^{11}B ,4n γ) based on short $T_{1/2}$ for the level it deexcites.
1948.91	946.20@ 20 1097.42@ 10	33@ 7 100@ 8			
1990.99	1327.23@ 15 1494.85@ 20 1555.59@ 10 1876.47@ 15	27@ 9 10@ 5 100@ 18 34@ 5			
2016.89	1165.49@ 15 1352.56@ 20	100@ 18 45@ 14			
2019.94	200.4 1 391.5 2 411.6 9 684.8 2	100 16 32 8 12 4 32 12			
2030.06	1178.64@ 20 1365.97@ 10 1391.12@ 20 1533.73@ 8 1594.75@ 10 1770.51@ 10 1915.09@ 15	3.5@ 12 26.2@ 20 2.0@ 100@ 4 2.3@ 8 1.6@ 4 0.98@ 16	E1 E1	1.17×10^{-3} 1.09×10^{-3}	
2036.97	100.2 1 109.3 1 273.7 1	5 3 8.3 17 100 7			
2039.77	326.5 1 630.23 10	60 3 100 6	D+Q (E2)	0.01262	Other E_{γ} (I γ): 325.71 26 (30 9) from (α ,2n γ). Mult.: from (α ,2n γ). E_{γ} : weighted average of 630.7 4 from (α ,2n γ) and 630.2 1 from (^{11}B ,4n γ). Mult.: (Q) intraband γ from (α ,2n γ).
2137.86	201.2 1 374.3 1	100 6 35 5			
2181.29	287.1 1 550.5 1 1054.2 1	38 8 100 31 58 15			
2186.38+x	249.7 1	100			
2209.68	874.7 2 1124.7 3	100 29 86 29			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E\gamma^{\dagger}$	$I\gamma^{\dagger}$	Mult. ‡	α	Comments
2212.29	305.1 1	100			
2221.68	315.0 1	86 7			
	613.4 1	100 10			
2232.08	195.1 1				
2237.52	496.9 1	76 6			
	834.4 1	100 9			
2238.26	218.4 1	100 13			
	418.8 1	68 16			
	630.0 2	19 13			
2365.21	227.4 1	100 6			
	428.6 1	78 10			
2383.85	344.0 1	39 4			
	670.5 1	100 5			
2454.78	222.5 1	100 9			
	417.9 3	22 4			
2464.02+x	277.7 1	52 4			
	527.4 1	100 7			
2476.58	238.3 1	100 10			
	456.5 1	62 14			
	569.7 4	<9.5			
2483.89	302.9 3	70 20			
	589.6 1	100 30			
	1074 ^b 1	<30			
2485.84	592.5 1	100			
2491.92	310.8 1	7 3			
	597.5 1	100 12			
2513.9	1178.8 3	100			
2538.40	326.1 1	73.1 21			
	631.1 1	100 5			
2563.69	342.1 1	80 9			
	656.7 1	100 11			
2616.45	251.3 1	54 4			
	478.5 1	100 8			
2702.20	247.4 1	100 8			
	470.3 1	28 5			
2734.20	257.6 1	100 23			
	495.8 1	86 18			
2737.78	199.4 1	46.2 16	E1	0.0650	Mult.: from intensity balance in $^{176}\text{Yb}(^{11}\text{B},4n\gamma)$. B(E1)(W.u.)= 1.27×10^{-6} 12.
	525.5 1	100.0 24	D#		
	830.6 1	10.7 12	[M2]	0.0430	Mult.: implied by placement.
2745.23	361.3 1	37 3			
	705.5 1	100 8			
2765.56+x	301.6 1	30 4			
	579.1 1	100 6			
2826.71	334.8 1	100 14			
	342.8 1	71 14			
2829.31	591.7 2	38 8			
	936.0 1	100 12			
2884.32	345.9 1	36.2 22			
	672.0 1	100 5			
2888.78	272.4 1	55 6			
	523.6 1	100 12			
2914.01	350.3 1	83 11			
	692.4 1	100 15			
2971.93	269.7 1	100 8			
	517.0 1	64 8			
3012.26	277.9 1	100 17			
	536.3 2	89 22			
3021.73	483.3 1	100 7			
	809.4 1	28 4			
	1114.4 2	71 7			
3043.46	504.9 1	14.6 19			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Re})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$
3043.46	1136.3 1	100 6	Q [#]	3944.84	772.3 1	100
3048.61	310.9 1	100	D+Q [#]	3986.79	397.2 1	100 12
3086.21+x	320.7 1	28 3			611.7 1	35 4
	622.2 1	100 8			778.8 1	50 8
3117.22	371.9 1	34 3		3986.92	358.5 1	33 10
	733.4 1	100 15			665.0 1	100 14
3172.54	686.7 1	100		4022.94	394.4 1	16 3
3183.26	294.6 1	34 6			774.6 1	100 9
	566.7 1	100 12		4032.8	758.0 3	100
3208.03	470.3 1	100		4058.72	345.6 1	31 5
3248.30	364.0 1	22.6 23			683.7 1	100 6
	710.0 1	100 6		4096.1	1211.8 2	100
3253.71	427.0 1	100		4113.07	368.9 1	100 5
3262.01	290.1 1	66 9			400	
	560.0 1	100 26			738.2 1	57 6
3274.84	360.9 1	58 11			1064	
	711.1 1	100 19		4198.62	382.7 1	100 16
3321.69	437.2 1	100 10			745.9 1	100 13
	783.3 2	46 8		4206.31	353.9 1	43 7
3370.20	1158.0 1	100			714.3 1	100 21
3374.95	326.4 1	77 4		4238.95	340.7 2	24 12
	637.1 1	100 5			667.8 1	100 20
3419.33+x	333.4 2	13 5		4345.92	323.1 1	19 6
	653.7 1	100 8			702.0 1	100 13
3452.48	244.5 1	19.8 25		4375.81	604.7 1	100
	408.9 1	100 5		4401.60	342.8 1	26 6
	430.6 1	75 5			688.5 1	100 7
	568.2 3	12 4		4429.02	406.0 1	14 3
	914.1 1	43 5			800.4 1	100 8
3492.06	374.8 1	36 6		4488.3	1240.0 5	100
	746.9 1	100 15		4510.77	397.7 1	100 8
3499.29	316.1 3	11 5			797.6 3	16 3
	610.5 1	100 13			1136	
3512.3	683.2 5	<59		4595.9	697.6 2	100
	1026.4 3	100 18		4597.66	398.6 ^a 1	52 10
3571.14	309.3 1	100 11			782.4 ^a 1	100 16
	599.0 1	100 7		4722.63	735.7 1	100
3589.67	381.6 1	95 8		4749.60	348.0 1	25 6
	541.2 1	100 8			690.9 1	100 14
3628.66	380.6 1	20 4		4792.9	848.1 1	100
	744.5 1	100 5		4843.51	414.4 2	13 4
3643.79	395.4 1	100 12			820.6 1	100 11
	622.1 1	100 12		4966.3	727.3 4	100
	759.4 1	77 12		5010.9	812.3 2	100
3680.52	407 1	35 10		5065.2	689.4 3	100
	766.5 1	100 25		5076.33	326.9 2	34 17
3713.14	338.3 1	35 3			674.7 1	100 10
	664.5 1	100 4		5099.32	753.4 1	100
3721.5	1183.1 2	100		5266.53	423.1 2	16 6
3744.10	369.4 5	1.5 7			837.5 1	100 13
	695.2 2	6.7 15		5440.3	842.6 2	100
	1006.3 1	100 7		5454.21	377.9 1	62 15
3755.81+x	669.6 1	100			704.6 1	100 23
3771.11	517.4 1	100		5511.0	788.4 3	100
3815.71	363.3 1	100 6		5691.72	426	
	445.6 1	28 3			848.2 1	100 14
	494.1 1	15 3		5706.1	913.2 3	100
	931.4 2	14 3		5769.72	315.4 5	<14
3833.46	650.2 1	100			693.4 1	100 14
3852.37	360 1	25 4		5838.3	773.1 5	100
	735.1 1	100 21		6131.5	865.0 2	100
3898.28	327.1 1	46 11		6178.1	408.4 2	100 33
	636.3 1	100 18			723.9 3	50 33

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

 $\gamma(^{183}\text{Re})$ (continued)

<u>E(level)</u>	<u>$E\gamma^\dagger$</u>	<u>$I\gamma^\dagger$</u>
6211.2	757	100
6569.8	878.1 3	100
7012.5	881	100

† From $^{176}\text{Yb}(^{11}\text{B},4n\gamma)$, except as noted.

‡ From conversion electron data (1960Ne03, 1968Ha39, 1970Ak01) in ϵ decay, except as noted.

§ from $\gamma(\theta)$ (1968Ne01,1974Si14) in $^{181}\text{Ta}(\alpha,2n\gamma)$, assigning $\Delta\pi=(\text{no})$ for intraband transitions.

$^\#$ From $\gamma(\theta)$ in $^{176}\text{Yb}(^{11}\text{B},4n\gamma)$, assigning $\Delta\pi=(\text{no})$ for intraband transitions.

$^\text{@}$ From ^{183}Os ϵ decay (13.0 h).

$^\&$ From ^{183}Os ϵ decay (9.9 h).

$^\text{a}$ Fits placement poorly.

$^\text{b}$ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)

Bands for ¹⁸³Re

¹⁸³Re
₇₅108

Adopted Levels, Gammas (continued)

Bands for ¹⁸³Re

Adopted Levels, Gammas (continued)

Bands for ^{183}Re

^{183}Re IT Decay (1.04 ms) 1981Av04,1966Em02

Parent ^{183}Re : $E=1906.79$ 11; $J\pi=(25/2)+$; $T_{1/2}=1.04$ ms 4; %IT decay=100.

1966Em02: isomer produced in reaction $^{181}\text{Ta}(\alpha,2n)$, $E\alpha=22-38$ MeV; Ge and Ge(Li) detectors (for γ -rays) and single-gap wedge spectrometer (for ce); measured $E\gamma$, I(K x ray), I(ce), isomer $T_{1/2}$; deduced $\alpha(K)\text{exp}(194\gamma)$.

1981Av04: isomer from $^{181}\text{Ta}(\alpha,n)$ and $^{182}\text{W}(\alpha,t)$; Ge(Li) detector (FWHM=3 keV at 662 keV); measured $E\gamma$, $I\gamma$, isomer

$T_{1/2}$.

Total energy release for this decay scheme is 1865 91 cf. QxBR=1906.9 5.

 ^{183}Re Levels

$E(\text{level})^\dagger$	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0 §	5/2+		
114.48 § 16	7/2+		
259.88 § 20	9/2+		
435.25 § 24	11/2+		
639.2 § 3	13/2+		
870.6 § 3	15/2+		
1127.6 § 4	17/2+		
1409.0 § 4	19/2+		
1713.0 § 8	21/2+		
1906.9 5	(25/2)+	1.04 ms 4	%IT=100. E(level): consistent with adopted E(level)=1907.21 15. $T_{1/2}$: weighted average of 1.02 6 ms (1966Em02) and 1.05 6 ms (1981Av04). Other value: 0.90 18 ms (1968Io01).

† From least-squares fit to $E\gamma$, omitting the 260 γ from the 260 level.

‡ From Adopted Levels.

§ (A): π 5/2[402] band (1966Em02).

 $\gamma(^{183}\text{Re})$

$I\gamma$ normalization: from I(γ +ce)(194 γ)=100%.

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger$	Mult. ‡	$\delta^\ddagger$	α	Comments
114.48 16	114.48	23 6	M1+E2	0.24 4	3.45 6	$E\gamma$: weighted average of 114.7 2 (1981Av04) and 114.36 15 (1966Em02).
145.35 12	259.88	43 9	M1+E2	0.37 13	1.68 7	$E\gamma$: weighted average of 145.5 2 (1981Av04) and 145.27 15 (1966Em02).
175.3 2	435.25	47 9	M1+E2	0.48 19	0.95 7	Other I(γ +ce)(175 γ):I(γ +ce)(321 γ)=67:14 (1966Em02).
193.9 2	1906.9	100	E2		0.355	Mult.: $\alpha(K)\text{exp}=0.20$ 7; K/L reported to be consistent with E2, but actual value not stated (1966Em02).
203.9 2	639.2	45 9	M1+E2	0.14 7	0.680 14	Other I(γ +ce)(204 γ):I(γ +ce)(379 γ)=58:21 (1966Em02).
231.6 2	870.6	39 8	(M1+E2)	≤ 0.14	0.480 8	Other I(γ +ce)(232 γ):I(γ +ce)(435 γ)=46:28 (1966Em02).
257.4 2	1127.6	48 9	M1+E2	≤ 0.19	0.358 7	Other I(γ +ce)(257 γ):I(γ +ce)(488 γ)=47:42 (1966Em02). $I\gamma$: may include I(259 γ)=7; see comment on 260 γ from 260 level.
259.9 2	259.88	7.3	E2		0.1366	$E\gamma$: from level-energy difference; γ not resolved by 1981Av04 and 1966Em02 do not state $E\gamma$. $I\gamma$: From I(145 γ) in 1981Av04 and I(γ +ce)(145 γ):I(γ +ce)(259 γ)=82:6 from 1966Em02.
282.3 3	1409.0	20 6	M1+E2	< 0.59	0.258 23	Other I(γ +ce)(282 γ):I(γ +ce)(538 γ)=22:27 (1966Em02).
304.2 2	1713.0	44 9	(M1+E2)	0.27 +8-11	0.220 7	Other I(γ +ce)(304 γ):I(γ +ce)(584 γ)=50:68 (1966Em02).
321.1 3	435.25	12 3	(E2)		0.0721	
379.1 3	639.2	23 6	(E2)		0.0450	
435.5 3	870.6	29 6	(E2)		0.0311	
487.9 3	1127.6	43 9	E2		0.0232	
538.1 3	1409.0	32 6	E2		0.0183	
584.9 3	1713.0	80 15	(E2)		0.01499	

† From 1981Av04, except as noted.

‡ From Adopted Gammas, except as noted.

§ For absolute intensity per 100 decays, multiply by 0.738.

¹⁸³Re IT Decay (1.04 ms) 1981Av04,1966Em02 (continued)

Decay Scheme

Intensities: I(γ+ce) per 100 parent decays
%IT=100

¹⁸³Os ε Decay (13.0 h) 1983Br24

Parent ¹⁸³Os: E=0.0; Jπ=9/2+; T_{1/2}=13.0 h 5; Q(g.s.)=2150 50; %ε+%β⁺ decay=100.

Other references: 1960Ne03, 1968Ha39, 1970Ak01, 1970PIZZ.

1983Br24: high-purity ¹⁸³Os sources from ¹⁸²W(α,n) using enriched targets and followed by chemical separation;

additional sources from W(α,xn) using natural W foils and chemical separation; low-energy photon spectrometer

(FWHM=0.55 keV at 122 keV) and large-volume Ge(Li) spectrometers (FWHM=1.9 keV at 1332 keV); measured E_γ, I_γ, γγ coin, γ(t).

The decay scheme is primarily from 1983Br24. The total energy release for this decay scheme is 2259 56

cf. Q_{xBR}=2150 50.

¹⁸³Re Levels

E(level) [†]	Jπ [‡]	T _{1/2}	Comments
0.0	5/2+	70.0 d 14	T _{1/2} : from Adopted Levels.
114.50 3	7/2+		
259.89 3	9/2+		
435.27 4	11/2+		
496.26 3	9/2-	7.7 ns 5	T _{1/2} : from 1960Ne03.
598.62 11	(5/2)-		No ε+β ⁺ feeding observed; logft _{1ut} >8.5 implies %ε+%β ⁺ <5.
619.04 12	(9/2)-		
639.09 8	13/2+		
664.09 3	11/2-		
851.54 3	(7/2)+		
861.18 4	13/2-		
878.97 21	1/2+		
892.05 7	(7/2-)		
999.59§ 20	(5/2)+		
1002.51 4	(9/2)+		
1183.50 10	(11/2)+		
1304.20 5	(11/2)-		
1525.24 5	(9/2)-		
1554.09 4	(9/2)-		
1659.11 5	(7/2, 9/2)-		
1663.80 5	(11/2)		
1711.72 6	(9/2-)		
1746.46 7	(9/2-, 11/2-)		
1781.38 6	(9/2, 11/2)-		
1798.21 12	(5/2+, 7/2, 9/2+)		
1864.37 8	(7/2, 9/2+)		

Continued on next page (footnotes at end of table)

¹⁸³Os ε Decay (13.0 h) ¹⁹⁸³Br24 (continued)

¹⁸³Re Levels (continued)

E(level) [†]	Jπ [‡]
1897.85 7	(7/2-, 9/2, 11/2+)
1948.91 10	
1991.01 8	(9/2, 11/2+)
2016.89 13	(7/2-, 9/2, 11/2+)
2030.07 5	(9/2+, 11/2+)

[†] From least-squares fit to measured E_γ. note that the 1915γ, 1771γ and 567γ fit their placements poorly. The normalized chisq of the fit is 2.58 cf. a critical value of 1.46.

[‡] From Adopted Levels.

§ No transition feeding the 1000 level was placed; however, the apparent log ft=8.8 is too low for a second-forbidden decay. The evaluator adopts Jπ≤5/2+ from (³He,t) and assumes that an as yet unidentified Γ-ray(s) feeds this level.

β⁺,ε Data

Eε	E(level)	Iβ ^{††}	Iε [†]	Log ft	I(ε+β ⁺) [†]
(120 50)	2030.07		0.320 11	6.1 9	0.320 11
(130 50)	2016.89		0.029 5	7.3 8	0.029 5
(160 50)	1991.01		0.0172 22	7.8 6	0.0172 22
(200 50)	1948.91		0.074 6	7.4 4	0.074 6
(250 50)	1897.85		0.068 5	7.7 3	0.068 5
(290 50)	1864.37		0.0111 22	8.65 24	0.0111 22
(350 50)	1798.21		0.0078 20	9.03 20	0.0078 20
(370 50)	1781.38		0.593 13	7.20 16	0.593 13
(400 50)	1746.46		0.151 6	7.88 14	0.151 6
(440 50)	1711.72		0.128 8	8.04 13	0.128 8
(490 50)	1663.80		0.299 17	7.77 12	0.299 17
(490 50)	1659.11		1.301 23	7.15 11	1.301 23
(600 50)	1554.09		2.45 4	7.06 9	2.45 4
(620 50)	1525.24		0.511 13	7.79 9	0.511 13
(850 50)	1304.20		0.369 19	8.21 7	0.369 19
(970 50)	1183.50		0.14 3	8.76 11	0.14 3
(1150 50)	1002.51		1.27 6	7.96 5	1.27 6
(1150 50)	999.59		0.20 5	8.77 12	0.20 5
(1260 50)	892.05		0.24 3	8.77 7	0.24 3
(1290 50)	861.18		0.05 3	10.2 ^{1u} 3	0.05 3
(1300 50)	851.54		5.20 9	7.46 4	5.20 9
(1490 50)	664.09	0.015 8	17.7 4	7.05 4	17.8 4
(1650 50)	496.26	0.21 7	73.8 14	6.53 4	74.0 14
(1710 50)	435.27	0.0002 2	0.05 4	9.7 4	0.05 4

[†] Absolute intensity per 100 decays.

γ(¹⁸³Re)

I_γ normalization, I(γ+ce) normalization: normalization assumes Σ(I(γ+ce) to g.s.)=100. Negligible ε feeding to the g.s. is expected (ΔJ=2, Δπ=no).

Eγ [†]	E(level)	Iγ ^{†b}	Mult. [‡]	δ§	α	I(γ+ce) ^b	Comments
(20.41 13)	619.04	0.12 [@] 4	[E2]		7.6×10 ³ 3	>0.26 ^{&}	E _γ : from level-energy difference.
*60.44 5		9.3 4					
*61.66 5		9.7 4					
*62.21 5		2.39 20					
*77.740 25		1.27 25					
*88.86 6		0.36 15					
114.43 5	114.50	230.3 9	M1+E2	0.24 4	3.45 6		Mult.: α(K)exp=2.5, K:L1:L2:L3=5.6:1:0.17:0.065 (1970Ak01). L1:L2:L3:M1:N1:O1=6.5: 1.0:0.36:1.5:0.44:0.13 (1960Ne03). K:L1:L2:L3:M=6320:1135: 190:74:370 (1968Ha39).

Continued on next page (footnotes at end of table)

^{183}Os ϵ Decay (13.0 h) $^{1983}\text{Br}24$ (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger b}$	Mult. ‡	$\delta^{\S}$	α	$I(\gamma+ce)^b$	Comments
120.62 5	999.59	0.68 15	[E2]		1.97		
145.39 2	259.89	17.12 15	M1+E2	0.37 13	1.68 7		Mult.: $\alpha(K)_{\text{exp}}=1.42$ (1970Ak01). K:L1:L2:L3:M1=1.6:0.32:0.055:0.02: 0.10 (1960Ne03). K:L1:L2:L3:M=360:62:9.5:3.5:22 (1968Ha39).
150.96 3	1002.51	1.95 15	E2+M1	0.6 2	1.40 10		Mult.: $\alpha(K)_{\text{exp}}=2.0$ (1970Ak01). K:L1=0.19:0.05 (1960Ne03). K:L1:L2:L3:M=40:8.2:3:=1.5:3.4 (1968Ha39).
$\times 153.86$ 10		0.24 10					
$\times 155.29$ 10		0.30 15					
167.85 2	664.09	98.3 9	M1+E2	0.14 7	1.173 22		Mult.: $\alpha(K)_{\text{exp}}=0.89$, K:L1:L2=5:1:0.13 (1970Ak01). K:L1:L2:M1:N1=5.9:1.3:0.17:1.00:0.47 (1960Ne03). K:L1:L2: =1000:215:=25:<106 (1968Ha39). K:L1:=25:7, L2 weak (1968Ha39).
175.370 25	435.27	2.33 15	M1+E2	0.48 19	0.95 7		
180.78 25	1183.50	0.66 15	[M1+E2]		0.7 3		
197.10 4	861.18	1.46 15	M1+E2	0.14 3	0.747 12		Mult.: $\alpha(K)_{\text{exp}}=0.94$ (1970Ak01). K:L1:M=16.5:5:2, L3 weak (1968Ha39).
203.84 10	639.09	0.49 15	M1+E2	0.14 7	0.681 13		Mult.: from Adopted Gammas.
228.02 10	892.05	1.1 2	[E2]		0.207		
236.41 5	496.26	38.1 6	E1		0.0424		Mult.: $\alpha(L1)_{\text{exp}}=0.0051$ (1970Ak01). K:L1:L2:L3:M=<106:7.7:1.7:1.5:3.3 (1968Ha39).
259.92 5	259.89	2.15 10	E2		0.1365		Mult.: $\alpha(K)_{\text{exp}}=0.12$ (1970Ak01). K:L12:L3=0.020:0.006:0.006 (1960Ne03). K:L2:L3:M=4.8:=2:1.3:1.3 (1968Ha39).
273.01 10	892.05	0.26 6	[M1]		0.308		
293.30 10	892.05	0.50 15	[M1]		0.253		
320.80 8	435.27	0.65 10	(E2)		0.0723		Mult.: from Adopted Gammas.
332.15 15	1183.50	0.10 3					
338.53 5	1002.51	0.95 10					
355.35 5	851.54	7.26 15	(E1)		0.01585		Mult.: $\alpha(K)_{\text{exp}}=0.040$ (1970Ak01). K:L1=4.8:0.7 (1968Ha39).
364.925 23	861.18	0.11 2	(E2)		0.0501		Mult.: From Adopted Gammas.
$\times 377.40$ 20		3.7 ^a 10					
$\times 379.18^c$ 20		12 ^{#ac} 4					
379.18 ^c 20	639.09	0.17 ^{#c} 5					
381.74 5	496.26	1000 10	E1		0.01344		Mult.: K:L1=7:1 (1970Ak01). K:L1:L2:L3:M1:N1=1.00:0.12:0.02: 0.018:0.032:0.014 (1960Ne03). K:L1:L2:L3:M=240:40:=7:5.8:12 (1968Ha39).
404.28 8	664.09	0.40 7					
$\times 472.57$ 25		0.05 ^a 3					
477.24 5	1781.38	3.36 8	M1		0.0691		Mult.: $\alpha(K)_{\text{exp}}=0.058$ (1970Ak01). K:L1:L3:M=6.1:1.2:=0.2:0.9 (1968Ha39).
(484.13 11)	598.62	>0.9	E1		0.00791	&	E γ : from level-energy difference.
496.37 5	496.26	7.13 8	M2		0.191		Mult.: $\alpha(K)_{\text{exp}}=0.12$ (1970Ak01). K:L1:M1=0.085:0.017:0.005 (1960Ne03). K:L1:L3=26.5:6.8:0.8 (1968Ha39).
$\times 548.31$ 20		0.20 ^a 6					
566.56 20	1002.51	0.10 ^a 4					
591.54 10	851.54	0.30 8	(M1)		0.0396		Mult.: $\alpha(K)_{\text{exp}}=0.062$ (1968Ha39).
640.24 8	1304.20	0.69 9	[M1]		0.0323		
$\times 653.90$ 20		0.20 ^a 6					
664.22 15	1525.24	0.19 ^a 4					

Continued on next page (footnotes at end of table)

^{183}Os ϵ Decay (13.0 h) $^{1983}\text{Br}24$ (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger b}$	Mult. ‡	α	$I(\gamma+ce)^b$	Comments
687.10 20	1183.50	0.15 4				
693.05 8	1554.09	0.73 7				
737.15 8	851.54	3.10 15	(M1)	0.0225		Mult.: $\alpha(K)\text{exp}=0.028$ (1970Ak01).
742.73 10	1002.51	0.49 ^a 7	[M1]	0.0221		
^x 762.58 10		0.45 7				
802.40 10	1663.80	1.20 ^a 15				
807.94 5	1304.20	6.79 15	M1	0.01783		Mult.: $\alpha(K)\text{exp}=0.013$ (1970Ak01).
851.46 5	851.54	50.84 35	M1	0.01562		Mult.: $\alpha(K)\text{exp}=0.012$ (1970Ak01). K:L1:M1=1.6:0.049:0.008:0.0025 (1960Ne03).
861.16 8	1525.24	1.04 7				
878.91	878.97	2.8 6	E2	0.00615		E γ : from fig. 2 of 1983Br24.
887.94 5	1002.51	8.35 12	(M1)	0.01405		Mult.: $\alpha(K)\text{exp}<0.018$ (1970Ak01). K:L1=3.3:<1.3 (1968Ha39).
889.96 5	1554.09	10.60 12	(M1)	0.01397		Mult.: $\alpha(K)\text{exp}<0.014$ (1970Ak01).
892.10 8	892.05	0.31 8	[E1]	0.00230		$\alpha(K)\text{exp}<0.47$ (1970Ak01).
923.56 20	1183.50	0.15 7				
946.20 20	1948.91	0.20 4				
999.59 20	999.59	0.17 4				
1002.46 8	1002.51	0.49 4				
1024.66 15	1663.80	0.49 ^a 4				
1028.57 20	1525.24	0.11 ^a 3				
1047.82 15	1711.72	0.19 5				
1057.79 5	1554.09	5.85 15	M1+E2	0.0066 25		Mult.: $\alpha(K)\text{exp}=0.0055$ (1970Ak01).
^x 1072.67 15		0.19 4				
1082.31 8	1746.46	1.35 5	(M1)		0.00856	
1089.98 8	1525.24	1.18 5				
1097.42 10	1948.91	0.61 5				
1113.62 20	1711.72	0.10 3				
1117.33 10	1781.38	0.82 6				
1118.91 10	1554.09	1.71 6	[E1]	1.52×10^{-3}		
^x 1128.74 15		0.30 5				
^x 1157.55 20		0.08 4				
1162.81 5	1659.11	13.72 15	M1	0.00716		Mult.: $\alpha(K)\text{exp}=0.0071$ (1970Ak01).
1165.49 15	2016.89	0.22 4				
1167.78 10	1663.80	0.51 5				
1178.64 20	2030.07	0.09 3				
1215.31 10	1711.72	0.20 4				
1228.73 8	1663.80	0.51 3				
1233.81 8	1897.85	0.55 3				
1250.32 10	1746.46	0.25 3				
1265.32 8	1525.24	1.24 5	E1	1.27×10^{-3}		Mult.: $\alpha(K)\text{exp}=0.0008$ (1970Ak01).
^x 1273.67 10		0.36 6				
1276.01 15	1711.72	0.15 3				
1284.95 8	1781.38	2.05 4	(M1)	0.00561		
1294.11 8	1554.09	1.02 3				
^x 1303.05 10		0.20 3				
1327.23 15	1991.01	0.03 ^a 1				
^x 1342.82 10		0.06 3				
^x 1348.61 8		0.69 3				
1352.56 20	2016.89	0.10 ^a 3				
1365.97 10	2030.07	0.67 5	E1	1.17×10^{-3}		Mult.: $\alpha(K)\text{exp}=0.00073$ (1970Ak01).
1368.19 20	1864.37	0.05 2				
^x 1388.12 10		0.24 4				
1391.12 20	2030.07	0.05				
1399.52 10	1659.11	0.21 2				
1401.51 20	1897.85	0.09 ^a 3				
1403.71 8	1663.80	0.55 4				
1410.77 8	1525.24	1.82 3	[E1]	1.14×10^{-3}		
^x 1419.8 3		0.030 15				
^x 1434.52 15		0.09 3				
1439.63 5	1554.09	6.68 7	E1	1.12×10^{-3}		Mult.: $\alpha(K)\text{exp}=0.00058$ (1970Ak01).
^x 1442.40 15		0.09 3				
^x 1444.92 20		0.030 15				

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^{183}Os ϵ Decay (13.0 h) $^{1983}\text{Br}24$ (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger b}$	Mult. §	α	Comments
1451.91 8	1711.72	0.76 3			
1486.52 15	1746.46	0.05 2			
1494.85 20	1991.01	0.011 ^a 6			
1533.73 8	2030.07	2.56 9	E1	1.09×10^{-3}	Mult.: $\alpha(K)\text{exp}=0.0005$ (1970Ak01).
1537.86 20	1798.21	0.04 2			
1544.44 10	1659.11	0.18 2			
1555.59 10	1991.01	0.11 2			
^x 1567.29 10		0.035 ^a 10			
1594.75 10	2030.07	0.06 2			
1604.55 10	1864.37	0.04 1			
^x 1610.96 13		0.035 10			
1637.80 15	1897.85	0.045 10			
^x 1668.9 5		0.011 4			
1684.00 20	1798.21	0.014 4			
^x 1712.84 20		0.013 4			
^x 1725.47 10		0.08 1			
^x 1730.18 20		0.016 5			
1749.73 20	1864.37	0.010 ^a 4			
1770.51 10	2030.07	0.04 1			
1783.38 15	1897.85	0.06 2			
1798.37 20	1798.21	0.031 5			
^x 1855.26 15		0.011 4			
1864.21 15	1864.37	0.021 4			
1876.47 15	1991.01	0.037 6			
1915.09 15	2030.07	0.025 4			E γ : fits placement poorly. E γ =1915.62 5 from least-squares fit.

[†] From $^{1983}\text{Br}24$, except as noted.[‡] From conversion electron data (1960Ne03, 1968Ha39, 1970Ak01) and $I\gamma$ adopted here, except as noted. γ and ce intensity scales were normalized assuming $\alpha(K)\text{exp}(382\gamma)=\alpha(K)(E1 \text{ theory})=0.01123$.[§] From Adopted Gammas.[#] The E γ =379.18 20, $I\gamma$ =12 4 transition placed by $^{1983}\text{Br}24$ from the 639-keV level appears to be highly contaminated. If all its $I\gamma$ is so placed, significant second-forbidden β -decay feeding to the 639 level would be implied and feeding into the 260 level would be excessive. Based on $I(204\gamma)$ and adopted $I(204\gamma):I(379\gamma)=100.0 \ 25:35 \ 3$, only $I\gamma=0.17 \ 5$ deexcites the 639 level, leaving $I\gamma=12 \ 4$ unplaced; presumably, the observed line is highly contaminated.[@] $I\gamma=0.12 \ 4$ ($^{1983}\text{Br}24$) is inconsistent with a reasonable $I(\gamma+\text{ce})$ balance through the 599 and 619 levels. The measured value would imply nearly 9% β feeding to the 619 level which is inconsistent with the intensity balance through the 114 level.[&] Limit determined from intensity balance through the 599 and 619 levels. No substantial β decay is expected to these levels because they deexcite through the 114 level, whose outgoing intensity is already balanced by other incoming transitions. A reasonable limit for the ϵ population of these levels is 2% which would, nevertheless, have a profound affect on the intensity balance.^a Intensity may include contribution from $^{183}\text{Os}(9.9 \text{ h}) \ \epsilon$ decay.^b For absolute intensity per 100 decays, multiply by 0.0916 12.^c Multiply placed; intensity suitably divided.^x γ ray not placed in level scheme.

^{183}Os ϵ Decay (13.0 h) 1983Br24 (continued)

Decay Scheme

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

9/2+ 0.0 13.0 h
 $^{183}_{76}\text{Os}_{107}$
 $\% \epsilon + \% \beta^+ = 100$
 $Q^+ = 2150^{50}$

^{183}Os ϵ Decay (13.0 h) $^{1983}\text{Br}24$ (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

9/2+ 0.0 13.0 h
 $^{183}_{76}\text{Os}_{107}$
 $\% \epsilon + \% \beta^+ = 100$
 $Q^+ = 2150^{50}$

 $^{183}_{75}\text{Re}_{108}$

¹⁸³Os ε Decay (13.0 h) 1983Br24 (continued)

Decay Scheme (continued)

Intensities: I(γ+ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

9/2+ 0.0 13.0 h
¹⁸³₇₆Os₁₀₇
 %ε+%β⁺=100
 Q⁺=2150⁵⁰

^{183}Os ϵ Decay (9.9 h) $^{1983}\text{Br}24,^{1970}\text{Ak}01$

Parent ^{183}Os : $E=170.70$ 7; $J\pi=1/2^-$; $T_{1/2}=9.9$ h 3; $Q(\text{g.s.})=2150$ 50; $\% \epsilon + \% \beta^+$ decay=85 2.

$^{183}\text{Os}-\% \epsilon + \% \beta^+$ decay: assuming $\Sigma(I(\gamma+\text{ce})$ to g.s.)=85 2. ϵ branching deduced from $\%IT(^{183}\text{Os})=15$ 2 if negligible $\epsilon + \beta^+$ branch to g.s., but $\log f^{lu}_t > 8.5$ only limits $\% \epsilon + \% \beta^+$ to < 26 .

Other references: 1960Ne03, 1968Ha39, 1970PIZZ.

$^{1983}\text{Br}24$: high-purity ^{183}Os sources from $^{182}\text{W}(\alpha,3n)$ using isotopically enriched targets and followed by chemical separation; additional sources from $\text{W}(\alpha, xn)$ using natural W foils and chemical separation; low-energy photon spectrometer (FWHM=0.55 keV at 122 keV) and large-volume Ge(Li) spectrometers (FWHM=1.9 keV at 1332 keV); measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, $\gamma(t)$.

$^{1970}\text{Ak}01$: sources from Os fraction or Os from Ir fraction decay following 660 MeV proton bombardment of Au, or from decay of separated Ir isotopes produced by 100 MeV ^{22}Ne bombardment of Ho; β spectrographs and $2\pi/2$ spectrometer (for $E(\text{ce}) > 800$); Ge(Li) detectors; measured $E\gamma$, $I\gamma$, $I(\text{ce})$, $\gamma\gamma$ coin (100 ns resolving time).

The decay scheme is primarily from $^{1983}\text{Br}24$. The total energy release for this decay scheme is 2102 260

cf.QxBR=1973 63.

 ^{183}Re Levels

$E(\text{level})^\dagger$	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0	5/2+	70.0 d 14	$T_{1/2}$: from Adopted Levels.
114.33 5	7/2+		
598.82 6	(5/2)-		
700.61 6	(1/2)-		
828.98 8	(3/2)-		
878.91 5	1/2+		
954.78 4	(3/2+)		
1034.73 4	(3/2)+		
1040.70 9	(5/2)+		
1066.09 9	(3/2)		
1101.95 4	(1/2)+		
1107.89 4	(3/2)+		
1353.76 5	(3/2+)		
1414.60 10	(1/2-, 3/2)		
1563.13 14	$\leq (1/2-, 3/2, 5/2+)$		
1903.93 8	(1/2+, 3/2+)		

† From least-squares fit to $E\gamma$, omitting the 1904 γ which fits its placement poorly.

‡ From Adopted Levels.

 β^+, ϵ Data

$E\epsilon$	$E(\text{level})$	$I\beta^{+\dagger}$	$I\epsilon^\dagger$	$\text{Log } ft$	$I(\epsilon + \beta^+)^\dagger$
(420 50)	1903.93		0.87 6	7.11 14	0.87 6
(760 50)	1563.13		0.22 4	8.29 11	0.22 4
(910 50)	1414.60		0.40 7	8.20 10	0.40 7
(970 50)	1353.76		0.97 19	7.87 10	0.97 19
(1210 50)	1107.89		21.9 6	6.73 5	21.9 6
(1220 50)	1101.95		53.7 16	6.34 5	53.7 16
(1250 50)	1066.09		0.5 4	8.4 4	0.5 4
(1280 50)	1040.70		0.42 6	9.25 ^{1u} 10	0.42 6
(1290 50)	1034.73		3.1 5	7.63 8	3.1 5
(1440 50)	878.91	0.0011 7	2.0 3	7.92 8	2.0 3
(1490 50)	828.98		0.4 5	8.7 6	0.4 5
(2320 ‡ 50)	0.0	0.13 13	13 13	8.8 ^{1u} 5	13 13

† For intensity per 100 decays, multiply by 0.85 2.

‡ Existence of this branch is questionable.

 $\gamma(^{183}\text{Re})$

$I\gamma$ normalization: assuming $\Sigma(I(\gamma+\text{ce})$ to g.s.)=85 2. ϵ branching deduced from $\%IT(^{183}\text{Os})=15$ 2 if negligible $\epsilon + \beta^+$ branch to g.s., but $\log f^{lu}_t > 8.5$ only limits $\% \epsilon + \% \beta^+$ to < 26 .

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^{183}Os ϵ Decay (9.9 h) $^{1983}\text{Br}24, 1970\text{Ak}01$ (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger}\&$	Mult. ‡	$\delta^{\S}$	α	$I(\gamma+\text{ce})\&$	Comments
$^{*}66.15\ 3$							$E\gamma$: from 1970Ak01; placed by authors from a 665 level known from ^{183}Os ϵ decay (13.0 h) but not expected to be fed in this decay. Placement implies high multipolarity and γ is otherwise unknown so placement is excluded here and in Adopted Levels, Gammas. $I(\gamma+\text{ce})=1.64$ from 1970Ak01 if $I(\gamma+\text{ce})(1102\gamma)=100$. Mult.: L2/L3=1 (1970Ak01). $E\gamma$: from 1970Ak01; not reported by 1983Br24. Mult.: L1/L2=9 (1970Ak01); $\alpha(\text{L1})\text{exp}=2.9$. L1:L2=65:7.5 (1968Ha39). From 1960Ne03, 1968Ha39, and 1970Ak01. δ calculated from L1/L2=65/7.5 (1968Ha39) and $I\gamma$ from relative electron intensities (1968Ha39, 1970Ak01) and adopted α .
67.24 3	1101.95	1.75 18	M1+E2	≈ 0.075	≈ 2.93		$I\gamma$: $I\gamma=0.45$ 11 (1983Br24) is inconsistent with intensity balance through the 955-keV level. Authors indicate that this transition may include a component from $^{183}\text{Os}(13\text{ h})$ decay. The adopted $I(\gamma+\text{ce})$ is calculated from the intensity balance through the 955-keV level.
80.03 4	1034.73		[M1]		9.79	<1.9	$I\gamma$: calculated from intensity balance through 114-keV level. Mult.: from Adopted Gammas. $E\gamma$: from 1970Ak01; placed by authors between the 1353 level and an otherwise unknown level. Placement rejected by evaluator.
101.79 5	700.61	0.42 17	[E2]		3.84		
114.35 7	114.33	1.44 12	M1+E2	0.24 4	3.46 6		
$^{*}126.2\ 1$		0.38 13					
128.30 8	828.98	0.28 [@] 6	[M1]		2.53		
147.11 10	1101.95	0.91 25	(M1)		1.718		Mult.: $\alpha(\text{K})\text{exp}=1.25$. K:L1=18:4 (1968Ha39). $E\gamma$: from 1970Ak01; placed by authors from an 828 level to a 664 level known from ^{183}Os ϵ decay (13.0 h), but adopted spin change is prohibitively large so evaluator has rejected that placement.
$^{*}163.2\ 1$							
230.10 15	828.98	0.71 [@] 23	[M1]		0.492		
237.00 15	1066.09	0.5 5	[M1]		0.453		
245.90 5	1353.76	0.63 25	(M1)		0.410		Mult.: $\alpha(\text{K})\text{exp}=0.50$.
251.92 8	1353.76	0.80 10	(M1)		0.383		Mult.: K:L1=0.016:0.003 (1960Ne03). $\alpha(\text{K})\text{exp}=0.36$.
365.51 8	1066.09	0.34 12	[M1]		0.1400		
401.32 8	1101.95	0.85 7					
484.49 5	598.82	4.52 23	E1		0.00790		Mult.: $\alpha(\text{K})\text{exp}=0.0056$ ($E\gamma$ misprinted as 84.7 in table 2 of 1970Ak01).
535.62 25	1414.60	0.009 [@] 5					
550.28 10	1903.93	0.38 8					
585.60 10	1414.60	0.42 [@] 11					
714.20 15	1414.60	0.20 [@] 6					
$^{*}724.60\ 20$		0.18 [@] 8					
734.01 15	1563.13	0.32 [@] 8					
$^{*}762^{\#}\ 1$		0.25 13					
795.94 15	1903.93	0.68 7					

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^{183}Os ϵ Decay (9.9 h) $^{1983}\text{Br}24,1970\text{Ak}01$ (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger\&$	Mult. ‡	α	Comments
815.53 20	1414.60	0.18 5			
829.01 18	828.98	0.26 7			
840.58 8	954.78	1.31 16			
^x 853.37 15		0.67 9			
878.91 5	878.91	4.0 5	E2	0.00615	Mult.: $\alpha(K)\text{exp}=0.0041$.
926.06 20	1040.70	0.26 7	(E2)	0.00552	Mult.: from Adopted Gammas.
948.98 15	1903.93	0.47 4			
954.88 8	954.78	2.82 4	E2	0.00519	Mult.: $\alpha(K)\text{exp}=0.0043$.
964.54 20	1563.13	0.13 2			
993.43 15	1107.89	0.35 4			
1034.68 5	1034.73	12.30 12	M1+E2	0.007 3	Mult.: $\alpha(K)\text{exp}=0.0072$. K:L1=2.1:=0.7 (1968Ha39).
1040.77 10	1040.70	0.59 8	(M1)	0.00944	Mult.: from Adopted Gammas.
1101.93 5	1101.95	100.0 10	(E2)	0.00390	Mult.: K:L1=6.05:1 (1968Ha39).
					% $I\gamma=49.2$ 12 based on recommended decay scheme normalization.
^x 1104.66 15		1.1 4			
1107.93 5	1107.89	45.7 4	M1	0.00808	Mult.: $\alpha(K)\text{exp}=0.0060$. K:L1=5.65:1.1 (1968Ha39).
^x 1110.44 20		0.61 12			
^x 1161.11 20		1.1 3			
^x 1168# 1		0.19 6			
^x 1173.99 10		0.38@ 15			
^x 1283.42 15		0.22@ 8			
^x 1331.08 10		0.15 8			
1353.57 10	1353.76	0.35 5	(E2)	0.00265	Mult.: $\alpha(K)\text{exp}=0.0025$.
^x 1468.91 25		0.03 1			
^x 1473.13 25		0.03 1			
^x 1562.60 10		0.06 2			
^x 1626.39 10		0.13@ 2			
^x 1642# 2		0.08 3			
^x 1650.02 10		0.06 2			
^x 1678.48 10		0.07 2	(E2)	0.00189	Mult.: $\alpha(K)\text{exp}=0.0016$.
^x 1707# 2		0.09 4			
^x 1725# 2		0.08 3			
^x 1787# 2		0.10 4			
^x 1806.71 13		0.19 3	(E2)	1.72×10^{-3}	Mult.: $\alpha(K)\text{exp}=0.0009$.
^x 1826.06 25		0.16@ 2	(M1)	0.00264	Mult.: $\alpha(K)\text{exp}=0.0016$.
1903.50 10	1903.93	0.23 2	(E2)	1.62×10^{-3}	Mult.: $\alpha(K)\text{exp}=0.0018$.
					$E\gamma$: fits placement poorly; omitted from least-squares fit.
^x 1919.00 25		0.04 1			Mult.: $\alpha(K)\text{exp}=0.0028$.
^x 1948.13 25		0.07 2			

† From 1983Br24, except as noted.

‡ Based on conversion electron data from 1970Ak01 and $I\gamma$ adopted here, except as noted. The γ and ce intensity scales were normalized so $\alpha(K)\text{exp}(1102\gamma)=\alpha(K)(E2\text{ theory})=0.00321$.

$\S$ From Adopted Gammas.

Unplaced γ from 1970Ak01. $I\gamma$ from 1970Ak01 renormalized so $I(1102\gamma)=100$ as in 1983Br24.

@ Transition may include contribution from $^{183}\text{Os}(13.0\text{ h})\ \epsilon$ decay.

& For absolute intensity per 100 decays, multiply by 0.492 13.

^x γ ray not placed in level scheme.

¹⁸³Os ε Decay (9.9 h) 1983Br24,1970Ak01 (continued)
Decay Scheme

Intensities: I(γ+ε) per 100 parent decays

¹⁸³Os₁₀₇ 170.70 9.9 h
 1/2-
 %ε+%β⁺=85.2
 Q⁺(g.s.)=2150⁵⁰

¹⁷⁶Yb(¹¹B,4nγ) 2000Pu01,1998Ha51

2000Pu01: E=55 MeV; CAESAR array (6 Compton-suppressed coaxial Ge detectors, 2 planar Ge LEPS); pulsed beam (1 ns pulse width, 1.7 μs pulse separation); measured Eγ, Iγ, γγ coin, γγ(t), γ(θ), excit (49-61 MeV).

1998Ha51: E=57, 52 MeV; pulsed 52 MeV beam (10 μs on, 2 ms off); NORDBALL detector array; measured Eγ, Iγ, γγ coin, lifetimes; 50 pA beam to reduce random coincident events.

¹⁸³Re Levels

E(level) [†]	Jπ [‡]	T _{1/2}	Comments
0.0 ^{\$}	5/2+		
114.52 [#]	7	7/2+	
259.81 ^{\$}	7	9/2+	
435.22 [#]	8	11/2+	
496.23 ^b	10	9/2-	
598.82 ^{&}	12	5/2-	
617.28 ^{&}	9	9/2-	
638.95 ^{\$}	9	13/2+	
664.06 ^c	11	11/2-	
759.18 ^{&}	14	13/2-	
851.58 [@]	8	7/2+	
861.06 ^b	11	13/2-	
870.42 [#]	10	15/2+	
1002.55 [@]	8	9/2+	
1022.77 ^{&}	16	17/2-	
1084.70 ^c	12	15/2-	
1127.25 ^{\$}	10	17/2+	
1183.68 [@]	8	11/2+	
1335.06 ^b	12	17/2-	
1348.50 ^a	16	15/2-	
1393.64 [@]	9	13/2+	
1402.91 ^{&}	18	21/2-	
1409.51 [#]	11	19/2+	

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{11}\text{B},4n\gamma)$ 2000Pu01,1998Ha51 (continued) ^{183}Re Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	T _{1/2}	Comments
1413.20 ⁿ 11	13/2-		
1608.23 ^c 13	19/2-		
1628.32 ^o 12	15/2-		
1630.90 [@] 10	15/2+		
1670.36 ⁿ 13	(15/2)		
1713.44 ^s 12	21/2+		
1740.12 ^a 17	19/2-		
1763.46 ^p 12	17/2-		
1819.49 ^o 12	17/2-		
1892.99 ^{&} 20	25/2-		
1894.25 [@] 10	17/2+		
1906.81 ^b 13	21/2-		
1907.19 ^d 14	25/2+	1.04 ms 4	T _{1/2} : from 2000Pu01. Other: 0.82 ms 2 from 1998Ha51.
1925.13 ⁿ 13	(17/2)		
1927.51 15	15/2+		
1936.62 ^p 13	19/2-		
1936.62+x ^{qu}	(21/2)	10 ns 4	T _{1/2} : from 2000Pu01.
2019.89 ^o 14	19/2-		
2036.93 ^s 14	(19/2+)		
2039.84 [#] 13	23/2+		
2137.82 ^p 14	21/2		
2181.32 [@] 10	19/2+		
2186.35+x ^q 8	(23/2)		
2209.65 ⁿ 20	(19/2)		
2211.91 ^e 14	27/2+		
2221.65 ^c 14	23/2-		
2232.04 ^r 17	(21/2+)		
2237.18 ^a 18	23/2-		
2238.26 ^o 14	21/2-		
2365.17 ^p 15	23/2-		
2383.92 ^s 13	25/2+		
2454.73 ^s 18	(23/2+)		
2463.99+x ^q 8	(25/2)		
2476.45 ^o 15	23/2-		
2483.90 [@] 13	21/2+		
2485.50 ^{&} 22	29/2-		
2491.93 ^m 12	21/2+		
2513.9 ⁿ 4	(21/2)		
2538.02 ^d 14	29/2+		
2563.66 ^b 15	25/2-		
2616.41 ^p 15	25/2-		
2702.16 ^r 18	(25/2+)		
2734.13 ^o 15	25/2-		
2737.40 ^f 14	29/2-	6.0 ns ^t 5	
2745.29 [#] 14	27/2+		
2765.53+x ^q 10	(27/2)		
2826.72 ^m 13	25/2+		
2828.96 ^a 21	27/2-		
2883.95 ^e 15	31/2+		
2888.74 ^p 16	27/2-		
2913.98 ^c 15	27/2-		
2971.89 ^s 19	(27/2+)		
3012.17 ^o 18	27/2-		
3021.38 ^h 14	(29/2)		
3043.08 ⁱ 15	(29/2+)		
3048.22 ^g 16	31/2-		
3086.18+x ^q 11	(29/2)		
3117.29 ^s 15	29/2+		
3172.20 ^{&} 24	33/2-		
3183.22 ^p 17	29/2-		
3207.65 ^j 15	(31/2)		
3247.93 ^d 15	33/2+		
3253.72 ^m 17	29/2+		

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{11}\text{B},4n\gamma)$ 2000Pu01,1998Ha51 (continued) ^{183}Re Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	Comments
3261.97 ^r 19	(29/2+)	
3274.82 ^b 16	29/2-	
3321.31 ^h 16	(31/2)	
3369.83 ⁱ 16	(31/2)	
3374.57 ^f 16	33/2-	
3419.30+x ^q 13	(31/2)	
3452.10 ^k 14	(31/2)	
3492.12 [#] 16	31/2+	
3499.25 ^p 19	31/2-	
3512.0 ^a 4	31/2-	
3571.10 ^s 20	(31/2+)	
3589.29 ^j 16	(33/2)	
3628.29 ^e 16	35/2+	
3643.43 ^h 15	(33/2)	
3680.50 ^c 18	31/2-	
3712.76 ^g 17	35/2-	
3721.12 ⁱ 25	(33/2)	
3743.71 ^l 16	(33/2)	
3755.78+x ^q 15	(33/2)	
3771.12 ^m 20	33/2+	
3815.33 ^k 15	(33/2)	
3833.42 ^p 20	33/2-	
3852.43 ^s 17	33/2+	
3898.23 ^r 21	(33/2+)	
3944.5 ^{&} 3	37/2-	
3986.40 ^j 16	(35/2)	
3986.55 ^h 17	(35/2)	
4022.57 ^d 16	37/2+	
4032.8 ^b 4	33/2-	
4058.34 ^f 17	37/2-	
4095.75 ⁱ 25	(35/2)	
4112.69 ^l 17	(35/2)	
4198.24 ^k 16	(35/2)	
4206.38 [#] 17	35/2+	
4238.91 ^s 22	(35/2+)	
4345.55 ^h 17	(37/2)	
4375.82 ^m 22	37/2+	
4401.22 ^g 18	39/2-	
4428.65 ^e 17	39/2+	
4487.9 ⁱ 6	(37/2)	
4510.39 ^l 19	(37/2)	
4595.8 ^r 3	(37/2+)	
4597.29 ^k 17	(37/2)	
4722.25 ^h 19	(39/2)	
4749.21 ^f 18	41/2-	
4792.6 ^{&} 3	41/2-	
4843.14 ^d 18	41/2+	
4966.2 ^s 5	(39/2+)	
5010.5 ^k 3	(39/2)	
5065.2 ^m 4	41/2+	
5075.94 ^g 19	43/2-	
5098.95 ^h 19	(41/2)	
5266.17 ^e 19	43/2+	
5439.9 ^k 3	(41/2)	
5453.83 ^f 20	45/2-	
5510.7 ^h 4	(43/2)	
5691.34 ^d 21	45/2+	
5705.8 ^{&} 4	45/2-	
5769.34 ^g 21	47/2-	
5838.3 ^m 7	45/2+	
6131.2 ^e 3	47/2+	
6177.7 ^f 3	49/2-	

Continued on next page (footnotes at end of table)

¹⁷⁶Yb(¹¹B,4n γ) 2000Pu01,1998Ha51 (continued)

¹⁸³Re Levels (continued)

E(level) [†]	J π [‡]	Comments
6212.1	(49/2-)	Proposed by authors to be J=49/2 member of K π =29/2- band built on 2737 level, but 6178 level, instead, has been adopted here as that member (as proposed by 2000Pu01).
6569.4 ^d 4	49/2+	
7013.3 ^e	(51/2+)	

[†] From least-squares fit to E γ , assigning 1 keV uncertainty to data for which the authors gave no uncertainty.

[‡] Authors' suggested values.

§ (A): π 5/2[402] band, α =+1/2.

(B): π 5/2[402] band, α =-1/2.

@ (C): π 7/2[404] band.

& (D): π 1/2[541] band, α =+1/2. J=1/2 band member not identified; calculated E=700 (2000Pu01).

a (E): π 1/2[541] band, α =-1/2. J=3/2, 7/2, 11/2 members not identified by 2000Pu01.

b (F): π 9/2[514] band, α =+1/2.

c (G): π 9/2[514] band, α =-1/2.

d (H): K π =25/2+ band, α =+1/2. π 5/2[402] ν 9/2[624] ν 11/2[615] configuration (1998Ha51, 2000Pu01) probably dominates the 1907-keV bandhead.

e (I): K π =25/2+ band, α =-1/2. See comment on signature partner band.

f (J): K π =29/2- band, α =+1/2. π 9/2[514] ν 9/2[624] ν 11/2[615], α =+1/2 band (1998Ha51, 2000Pu01).

g (K): K π =29/2- band, α =-1/2. π 9/2[514] ν 9/2[624] ν 11/2[615], α =-1/2 band (1998Ha51, 2000Pu01).

h (L): K=(25/2) band.

i (M): Band based on (29/2+) 3043. Possibly a 3-quasiparticle intrinsic state coupled to a γ -vibration phonon, consistent with observed strong interband transitions (2000Pu01).

j (N): K=(31/2) band, based on 3208 level.

k (O): K=(31/2) band, based on 3452 level.

l (P): K=(33/2) band.

m (Q): π 1/2[660] band.

n (R): K π =13/2- band. Bandhead may be a π 9/2[514] K+2 γ vibration state (2000Pu01).

o (S): K π =15/2- band.

p (T): K π =17/2- band.

q (U): K=(21/2) band.

r (V): K π =19/2+ band, α =+1/2.

s (W): K π =19/2+ band, α =-1/2.

t From time-difference spectrum (2000Pu01), using 311 γ , 637 γ , 665 γ gates above the isomer and 305 γ , 525 γ , 631 γ gates below it. Other T_{1/2}: <10 ns (1998Ha51).

u X<75 keV to account for non-observance of transition feeding the 1937 level. The 1937 level has a 10 ns 4 isomeric feeding component attributed to a low energy transition for which low detection efficiency or strong electron conversion could have rendered it unobservable.

 $\gamma(^{183}\text{Re})$

E γ [†]	E(level)	I γ [†]	Mult. [‡]	α	Comments
x	1936.62+x		(D)		Mult.: the short half-life favors a D assignment (2000Pu01).
100.2 1	2036.93	3 2			
109.3 1	2036.93	5 1			
114.5 1	114.52	1010 30	D+Q		Mult.: A ₂ =-0.58 8.
135.3 1	1763.46	7 2			
141.9 1	759.18	306 12			
145.3 1	259.81	630 15	D+Q		Mult.: A ₂ =-0.51 11.
151.0 1	1002.55	8 1			
167.8 1	664.06	526 20	D		Mult.: A ₂ =-0.39 6.
173.1 1	1936.62	162 8			
175.3 1	435.22	710 20	D+Q		Mult.: A ₂ =-0.44 10.
181.1 1	1183.68	15 2			
182.0 1	617.28	90 7			
191.1 1	1819.49	31 3			
193.8 1	1907.19	1000 18			Mult.: E2 (1998Ha51).
195.1 1	2232.04	74 7			
197.0 1	861.06	511 16	D		Mult.: A ₂ =-0.30 7.
199.4 1	2737.40	229 8	E1	0.0650	Mult.: from α (exp)=0.08 5 based on intensity balance.
200.4 1	2019.89	25 4			
201.2 1	2137.82	83 5			

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{11}\text{B},4n\gamma)$ 2000Pu01,1998Ha51 (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger}$	Mult. ‡	Comments
203.7 1	638.95	640 15	D	Mult.: $A_2=-0.26$ 13.
209.9 1	1393.64	31 4		
215.2 1	1628.32	25 3		
218.4 1	2238.26	31 4		
222.5 1	2454.73	55 5		
223.6 1	1084.70	419 13		
227.4 1	2365.17	67 4		
231.5 1	870.42	545 16	D	Mult.: $A_2=-0.33$ 17.
236.5 1	496.23	45 7		
237.3 1	1630.90	15 5		
238.3 1	2476.45	21 2		
244.5 1	3452.10	16 2		
247.4 1	2702.16	39 3		
249.7 1	2186.35+x	158 23		
250.3 1	1335.06	230 9		
251.3 1	2616.41	39 3		
256.9 1	1127.25	565 18		
257.6 1	2734.13	22 5		
259.8 1	259.81	111 5		
263.3 1	1894.25	18 6		
263.7 1	1022.77	675 30		
269.7 1	2971.89	36 3		
272.4 1	2888.74	27 3		
273.2 1	1608.23	164 7		
273.7 1	2036.93	60 4		
277.7 1	2463.99+x	50 4		
277.9 1	3012.17	18 3		
282.3 1	1409.51	326 12		
287.1 1	2181.32	10 2		
290.1 1	3261.97	23 3		
294.6 1	3183.22	23 4		
298.6 1	1906.81	101 6		
301.6 1	2765.53+x	21 3		
302.9 3	2483.90	7 2		
304.1 1	1713.44	600 17		
305.1 1	2211.91	850 50		
309.3 1	3571.10	28 3		
310.8 1	2491.93	5 2		
310.9 1	3048.22	303 9	D+Q	$A_2=-0.15$ 8.
315.0 1	2221.65	76 6		
315.4 5	5769.34	<2		
316.1 3	3499.25	4 2		
320.7 1	3086.18+x	17 2		
320.8 1	435.22	228 7		
323.1 1	4345.55	6 2		
326.1 1	2538.02	256 10		
326.4 1	3374.57	116 6		
326.5 1	2039.84	72 4		
326.9 2	5075.94	10 5		
327.1 1	3898.23	13 3		
332.1 1	1183.68	11 2		
333.4 2	3419.30+x	5 2		
334.8 1	2826.72	14 2		
338.3 1	3712.76	71 7		
340.7 2	4238.91	6 3		
342.1 1	2563.66	44 5		
342.8 1	2826.72	10 2		
	4401.22	19 4		
344.0 1	2383.92	44 4		
345.6 1	4058.34	34 5		
345.9 1	2883.95	97 6		
348.0 1	4749.21	9 2		
350.3 1	2913.98	45 6		

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{11}\text{B},4n\gamma)$ 2000Pu01,1998Ha51 (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger}$	Mult. [‡]	Comments
350.4 1	1763.46	229 13		
353.9 1	4206.38	6 1		
357.5 1	617.28	17 3		
358.5 1	3986.55	7 2		
360 1	3852.43	7 1		
360.9 1	3274.82	21 4		
361.3 1	2745.29	32 3		
363.3 1	3815.33	72 4		
364.0 1	3247.93	49 5		
364.8 1	861.06	64 6		
368.9 1	4112.69	83 4		
369.4 5	3743.71	2 1		
371.9 1	3117.29	21 2		
374.3 1	2137.82	29 4		
374.8 1	3492.12	12 2		
377.9 1	5453.83	8 2		
379.2 1	638.95	340 10		
380.3 1	1402.91	565 20		
380.6 1	3628.29	26 5		
381.6 1	3589.29	38 3		
381.7 1	496.23	960 50		
382.7 1	4198.24	38 6		
391.0 1	1393.64	28 5		
391.5 1	1740.12	20 2		
391.5 2	2019.89	8 2		
394.4 1	4022.57	15 3		
395.4 1	3643.43	26 3		
397.2 1	3986.40	26 3		
397.7 1	4510.39	63 5		
398.6 1	4597.29	16 3		E γ : fits placement poorly.
400 [§]	4112.69			
406.0 1	4428.65	9 2		
406.1 3	1819.49	7 3		
407 1	3680.50	7 2		
408.4 2	6177.7	6 2		
408.9 1	3452.10	81 4		
411.6 9	2019.89	3 1		
414.4 2	4843.14	6 2		
417.9 3	2454.73	12 2		
418.8 1	2238.26	21 5		
420.7 1	1084.70	142 10		
423.1 2	5266.17	5 2		
426	5691.34			Reported by 1998Ha51 only.
427.0 1	3253.72	18 2		
428.2 1	1763.46	43 8		
428.6 1	2365.17	52 7		
430.6 1	3452.10	61 4		
435.2 1	870.42	403 13		
437.2 1	3321.31	39 4		
445.6 1	3815.33	20 2		
447.2 1	1630.90	34 4		
456.5 1	2476.45	13 3		
470.3 1	2702.16	11 2		
	3207.65	106 5		Mult.: A ₂ =-0.08 15.
473.9 1	1335.06	98 9		
478.5 1	2616.41	72 6		
483.3 1	3021.38	69 5		
484.3 1	598.82	509 18		
484.5 1	1819.49	10 3		
488.4 1	1127.25	576 12		
490.1 1	1892.99	390 17		
494.1 1	3815.33	11 2		
495.8 1	2734.13	19 4		

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{11}\text{B},4n\gamma)$ 2000Pu01,1998Ha51 (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger}$	Mult. ‡	Comments
496.9 1	2237.18	25 2		
500.5 1	1894.25	59 7		
502.8 1	617.28	65 9		
504.9 1	3043.08	23 3		
517.0 1	2971.89	23 3		
517.4 1	3771.12	23 2		
523.5 1	1608.23	100 8		
523.6 1	2888.74	49 6		
525.5 1	2737.40	196 12	D	Mult.: $A_2=-0.26$ 7.
527.4 1	2463.99+x	97 7		
536.3 2	3012.17	16 4		
539.1 1	1409.51	429 14		
541.2 1	3589.29	40 3		
550.5 1	2181.32	26 8		
560.0 1	3261.97	35 9		
566.7 1	3183.22	67 8		
568.2 3	3452.10	10 3		
569.7 4	2476.45	<2		
571.7 1	1906.81	81 7		
579.1 1	2765.53+x	69 4		
586.2 1	1713.44	980 20		
589.2 1	1348.50	38 3		
589.6 1	2483.90	10 3		
591.7 2	2828.96	10 2		
592.5 1	2485.50	224 10		
597.5 1	2491.93	69 8		
599 §	598.82			
599.0 1	3571.10	28 2		
604.7 1	4375.82	43 7		
610.5 1	3499.25	38 5		
611.7 1	3986.40	9 1		
613.4 1	2221.65	88 9		
622.1 1	3643.43	26 3		
622.2 1	3086.18+x	61 5		
630.0 2	2238.26	6 4		
630.2 1	2039.84	119 7		
631.1 1	2538.02	487 25		
636.3 1	3898.23	28 5		
637.1 1	3374.57	151 8		
650.2 1	3833.42	16 3		
653.7 1	3419.30+x	39 3		
656.7 1	2563.66	55 6		
664.5 1	3712.76	205 8		
665.0 1	3986.55	21 3		
667.8 1	4238.91	25 5		
669.6 1	3755.78+x	21 2		
670.5 1	2383.92	113 6		
672.0 1	2883.95	268 14		
674.7 1	5075.94	29 3		
678.7 1	1763.46	213 15	D+Q	Mult.: $A_2=-0.66$ 15.
683.2 5	3512.0	<10		
683.7 1	4058.34	110 7		
684.8 2	2019.89	8 3		
686.7 1	3172.20	110 7		
688.5 1	4401.22	72 5		
689.4 3	5065.2	12 2		
690.9 1	4749.21	36 5		
692.4 1	2913.98	54 8		
693.4 1	5769.34	14 2		
695.2 2	3743.71	9 2		
697.6 2	4595.8	15 4		
702.0 1	4345.55	31 4		
704.6 1	5453.83	13 3		

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(^{11}\text{B},4n\gamma)$ 2000Pu01,1998Ha51 (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger}$	Mult. ‡	Comments
705.5 1	2745.29	87 7		
710.0 1	3247.93	217 12		
711.1 1	3274.82	36 7		
714.3 1	4206.38	14 3		
717.3 1	1740.12	43 3		
723.9 3	6177.7	3 2		
727.3 4	4966.2	8 2		
733.4 1	3117.29	61 9		
734.8 1	1819.49	43 6		
735.1 1	3852.43	28 6		
735.7 1	4722.25	22 4		
738.2 1	4112.69	47 5		
744.5 1	3628.29	128 7		
745.9 1	4198.24	38 5		
746.9 1	3492.12	33 5		
749.2 1	1413.20	37 3		
753.4 1	5098.95	14 2		
757	6212.1			$E\gamma$: reported by 1998Ha51 only. Also, see comment on 6212 level.
758.0 3	4032.8	17 5		
759.4 1	3643.43	20 3		
766.5 1	3680.50	20 5		
767.3 1	1628.32	57 9		
772.3 1	3944.5	42 5		
773.1 5	5838.3	4 1		
774.6 1	4022.57	92 8		
778.8 1	3986.40	13 2		
782.4 1	4597.29	31 5		$E\gamma$: fits placement poorly.
783.3 2	3321.31	18 3		
788.4 3	5510.7	6 2		
797.6 3	4510.39	10 2		
800.4 1	4428.65	63 5		
809.4 1	1670.36	26 3		
	3021.38	19 3		
812.3 2	5010.5	12 4		
820.6 1	4843.14	47 5		
830.6 1	2737.40	53 6		
834.4 1	2237.18	33 3		
837.5 1	5266.17	31 4		
840.6 1	1925.13	21 3		
842.6 2	5439.9	11 3		
848.1 1	4792.6	17 3		
848.2 1	5691.34	21 3		
851.6 1	851.58	22 7		
865.0 2	6131.2	9 2		
874.7 2	2209.65	7 2		
878.1 3	6569.4	4 2		
881	7013.3			Reported by 1998Ha51 only.
887.9 1	1002.55	8 1		
902.5 1	1763.46	87 9	(Q)	Mult.: $A_2=+0.20$ 17 from table 1, +0.14 7 from text of 2000Pu01.
913.2 3	5705.8	5 2		
914.1 1	3452.10	35 4		
917.1 1	1413.20	112 7	(Q)	Mult.: $A_2=+0.32$ 15 (from table 1 of 2000Pu01; uncertainty is 0.14 in text).
923.8 1	1183.68	20 3		
931.4 2	3815.33	10 2		
936.0 1	2828.96	26 3		
958.5 1	1393.64	31 4		
958.9 3	1819.49	7 3		
964.2 1	1628.32	35 6		
991.9 2	1630.90	10 3		
1006.2 1	1670.36	55 6		
1006.3 1	3743.71	135 9		Mult.: $A_2=+0.13$ 16.
1023.8 1	1894.25	18 4		
1026.4 3	3512.0	17 3		

Continued on next page (footnotes at end of table)

$^{176}\text{Yb}(\text{}^{11}\text{B}, 4n\gamma)$ $^{2000}\text{Pu01}, 1998\text{Ha51}$ (continued) **$\gamma(^{183}\text{Re})$ (continued)**

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger}$	Mult. ‡	Comments
1054.2 1	2181.32	15 4		
1063.9 1	1925.13	26 3		
1064 §	4112.69			
1074 # 1	2483.90	<3		
1114.4 2	3021.38	49 5		
1124.7 3	2209.65	6 2		
1136 §	4510.39			
1136.3 1	3043.08	157 9	Q	Mult.: $A_2=+0.48$ 27.
1158.0 1	3369.83	58 4		
1178.8 3	2513.9	6 2		
1183.1 2	3721.12	31 4		
1211.8 2	4095.75	20 3		
1240.0 5	4487.9	5 2		
1287.6 3	1927.51	33 4		
1491.8 5	1927.51	39 4		

† From 2000Pu01, except as noted. $E\gamma$ data from 1998Ha51 (uncertainties unstated) are in excellent agreement. Intensities are not reported by 1998Ha51.

‡ From $\gamma(\theta)$ (2000Pu01), except as noted.

§ γ shown in figure 1 only; absent in table 1 of 2000Pu01.

Placement of transition in the level scheme is uncertain.

 $^{181}\text{Ta}(\alpha, 2n\gamma)$ 1968Ne01, 1974Si14, 1983Av06

Others: 1966Em02, 1968Io01, 1988BeYU.

1966Em02: $E(\alpha)=22-38$ MeV (see ^{183}Re IT decay (1.04 ms) dataset).

1968Ne01: $E(\alpha)=19.8-38$ MeV; measured $E\gamma$, $I\gamma$ (Ge(Li), 28 MeV); $\gamma\gamma$ coin; $\gamma(\theta)$, ce spectra (single-gap electron spectrometer), excit.

1974Si14: $E(\alpha)=25-63$ MeV; Ge(Li) (FWHM=3.5 keV at 1 MeV); measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, $\gamma(\theta)$ ($\theta(\text{lab})=55^\circ, 70^\circ, 90^\circ$), excit.

1983Av06: $E(\alpha)=16-30$ MeV.

1988BeYU: $E(\alpha)=28-32$ MeV; measured $\gamma(t)$.

 ^{183}Re Levels

$E(\text{level})^{\dagger}$	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0 §	5/2+		
114.43 § 7	7/2+		
259.72 § 11	9/2+		
435.18 § 13	11/2+		
496.21 # 17	9/2-	7.9 ns 4	$T_{1/2}$: from 1988BeYU. Other: 7 ns 1 (1974Si14).
599.02 @ 25	5/2-	1.96 ns 5	$T_{1/2}$: from 1988BeYU (stated $E(\text{level})=899$ presumed to be in error). Other values: 2.0 ns 1 (1974Ma26) and 2.1 ns 2 (1974Si14).
619.1 @ 3	9/2-		From ^{183}Os ϵ decay (13 h).
639.02 § 15	13/2+		
664.15 # 20	11/2-		
760.9 @ 4	13/2-		
851.2 5	7/2+		This level was identified as the 7/2+ member of the 7/2[404] rotational band observed in decay. The γ ray branching ratios disagree substantially with those observed in decay.
861.19 # 22	13/2-		
870.39 § 17	15/2+		
1024.2 @ 4	17/2-		
1084.68 # 22	15/2-		
1127.13 § 22	17/2+		
1334.95 # 25	17/2-		
1404.2 @ 6	21/2-		
1409.40 § 24	19/2+		
1608.5 # 3	19/2-		
1713.8 § 3	21/2+		

Continued on next page (footnotes at end of table)

¹⁸¹Ta($\alpha, 2n\gamma$) ¹⁹⁶⁸Ne01, ¹⁹⁷⁴Si14, ¹⁹⁸³Av06 (continued)

¹⁸³Re Levels (continued)

E(level) [†]	Jπ [‡]	T _{1/2}	Comments			
1893.2@ 8	25/2-		T _{1/2} : weighted average of 1.02 ms 6 (1966Em02) and 1.05 ms 6 (1981Av04). Other value 0.90 ms 18 (1968Io01).			
1907.7 3	(25/2)+	1.04 ms 4				
2039.7§ 4	23/2+					
[†] From least-squares fit to E _γ . [‡] As proposed by 1974Si14 based on γ(θ) measurements. [§] (A): π 5/2[402] band. [#] (B): π 9/2[514] band. [@] (C): π 1/2[541] band.						
<u>γ(¹⁸³Re)</u>						
Eγ [†]	E(level)	Iγ [‡]	Mult. [§]	δ [#]	α	Comments
(20.1 4)	619.1		[E2]		8.2×10 ³ 9	Eγ: from level-energy difference.
114.48 7	114.43	54.5 10	D+Q			Mult.: A ₂ =-0.056 14, A ₄ =+0.013 14 (1968Ne01); A ₂ =+0.01 5, A ₄ =+0.18 4 (1974Si14).
141.79 18	760.9	10.5 10	Q			Mult.: A ₂ =+0.38 10 (1974Si14).
145.31 11	259.72	21.4 10	D+Q	0.12 +6-12		Mult.: A ₂ =+0.032 25, A ₄ =-0.007 25 (1968Ne01); A ₂ =-0.15 10, A ₄ =+0.05 5 (1974Si14). .
167.90@ 11	664.15	25.3 5	D+Q	0.16 +2-3		Mult.: A ₂ =-0.003 20, A ₄ =+0.011 20 (1968Ne01); A ₂ =-0.05 2, A ₄ =-0.03 5 (1974Si14).
175.38 9	435.18	27.4 5	D+Q	0.15 3		Mult.: A ₂ =-0.007 20, A ₄ =+0.008 20 (1968Ne01); A ₂ =0.00 5, A ₄ =+0.20 8 (1974Si14).
193.89 16	1907.7	18.3 7				Mult.: A ₂ =+0.08 5, A ₄ =0.10 5 (1974Si14).
197.05@ 15	861.19	24.0 5	D+Q	0.14 3		Mult.: A ₂ =-0.010 23, A ₄ =+0.038 23 (1968Ne01); A ₂ =-0.09 4, A ₄ =0.00 5 (1974Si14).
203.73 10	639.02	100.0 22	D+Q	0.14 +3-4		Mult.: A ₂ =-0.016 30, A ₄ =-0.020 30 (1968Ne01); A ₂ =-0.05 5, A ₄ =+0.09 8 (1974Si14).
223.48@ 11	1084.68	15.8 5	D+Q	0.11 +3-5		Mult.: A ₂ =-0.034 24, A ₄ =-0.041 25 (1968Ne01); A ₂ =-0.09 5, A ₄ =0.00 8 (1974Si14).
231.29 11	870.39	16.3 5	D+Q	0.10 +4-10		Mult.: A ₂ =-0.08 4, A ₄ =0.00 5 (1968Ne01); A ₂ =-0.08 5, A ₄ =0.00 5 (1974Si14).
236.2 3	496.21		D			Eγ: from 1968Ne01. Iγ: I(236γ):I(382γ)=4.1 6:115 15 (1968Ne01).
250.09@ 14	1334.95	12.5 8	D+Q	0.10 +4-10		Mult.: A ₂ =-0.09 13, A ₄ =-0.17 13 (1968Ne01).
256.43 21	1127.13	12 2	D+Q	0.14 +5-10		Mult.: A ₂ =-0.13 6, A ₄ =+0.03 6 (1968Ne01); A ₂ =-0.01 8, A ₄ =-0.03 5 (1974Si14).
258.8 3	259.72	7 2	Q			Mult.: A ₂ =-0.015 40, A ₄ =-0.06 4 (1968Ne01); A ₂ =+0.06 8, A ₄ =+0.02 7 (1974Si14).
263.33 13	1024.2	18.9 10	Q			Mult.: A ₂ =+0.15 10, A ₄ =-0.10 5 (1974Si14).
273.35 18	1608.5	7.1 5	D+Q	0.33 +14-19		Mult.: A ₂ =+0.23 4, A ₄ =-0.14 4 (1968Ne01); A ₂ =+0.23 8 (1974Si14).
282.20 18	1409.40	8.7 5	D+Q	0.39 +20-39		Mult.: A ₂ =+0.10 9, A ₄ =-0.06 9 (1968Ne01); A ₂ =-0.15 10, A ₄ =-0.10 10 (1974Si14).
^x 288.5 3		10.0 2	D+Q			Mult.: A ₂ =+0.06 12, A ₄ =-0.18 13 (1968Ne01); A ₂ =+0.11 10, A ₄ =-0.05 10 (1974Si14).
304.45 15	1713.8	13.3 10	D+Q	0.27 +8-11		Mult.: A ₂ =-0.19 10, A ₄ =-0.10 10 (1974Si14).
320.92 17	435.18	7.3 5	Q			Eγ: weighted average from 1968Ne01 and 1974Si14. Mult.: A ₂ =+0.10 4, A ₄ =-0.02 5 (1968Ne01); A ₂ =+0.03 8, A ₄ =-0.03 5 (1974Si14).
325.71 26	2039.7	1.6 5	D+Q			Mult.: A ₂ =+0.19 6, A ₄ =-0.14 7 (1968Ne01); A ₂ =+0.15 10, A ₄ =-0.10 10 (1974Si14).
^x 350.6 4		6.5 5				Mult.: A ₂ =-0.09 5 (1974Si14).
365.20 25	861.19	2.1 5	Q			Mult.: A ₂ =+0.25 10 (1974Si14). Possibly the known 1763 to 1413 transition, but none of the gammas known to deexcite the 1413 level is reported in (α,2nγ).
380.0 4	639.02	15.7 10	Q			Mult.: A ₂ =+0.72 20 (1974Si14).
						Mult.: A ₂ =+0.12 10 (1974Si14).

Continued on next page (footnotes at end of table)

$^{181}\text{Ta}(\alpha, 2n\gamma)$ $^{1968}\text{Ne01}, ^{1974}\text{Si14}, ^{1983}\text{Av06}$ (continued) $\gamma(^{183}\text{Re})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger$	Mult. [§]	α	Comments
380.0 4	1404.2	15.7 10	Q		$E\gamma$: weighted average from 1968Ne01 and 1974Si14. Mult.: $A_2=+0.12$ 10 (1974Si14).
381.88 19	496.21	83.0 10	D		Mult.: $A_2=-0.054$ 10, $A_4=-0.008$ 10 (1968Ne01); $A_2=-0.07$ 2, $A_4=-0.05$ 3 (1974Si14).
420.48 11	1084.68	4.6 5	Q		Mult.: $A_2=+0.33$ 17, $A_4=-0.39$ 18 (1968Ne01); $A_2=0.00$ 15 (1974Si14).
435.45 20	870.39	12.3 5	Q		Mult.: $A_2=+0.24$ 10, $A_4=-0.15$ 11 (1968Ne01); $A_2=+0.25$ 5 (1974Si14).
474.2 3	1334.95	3.0 5	E2	0.0250	Mult.: $A_2=-0.06$ 15 (1974Si14).
484.59 24	599.02	31.0 5	D		$E\gamma$: weighted average from 1968Ne01 and 1974Si14. Mult.: $A_2=-0.03$ 3, $A_4=+0.03$ 3 (1968Ne01); $A_2=-0.03$ 2 (1974Si14).
488.2 3	1127.13	9.0 8	Q		$E\gamma$: weighted average from 1968Ne01 and 1974Si14. Mult.: $A_2=+0.35$ 10 (1974Si14).
489.0 5	1893.2	8.0 8	Q		$E\gamma$: from 1974Si14. Mult.: $A_2=+0.35$ 10 (1974Si14).
496.4 7	496.21				$E\gamma, I\gamma$: from 1968Ne01. $I(496\gamma):I(382\gamma)=1.1$ 3:115 15 (1968Ne01).
^x 503.4 4		2.5 5	D+Q		Mult.: $A_2=-0.45$ 10 (1974Si14).
524.5 4	1608.5	5.3 5	(Q)		Mult.: $A_2=0.0$ 4, $A_4=-0.2$ 4 (1968Ne01).
539.32 23	1409.40	10.0 5	Q		Mult.: $A_2=+0.31$ 15, $A_4=+0.07$ 15 (1968Ne01); $A_3=+0.16$ 3 (1974Si14).
586.1 4	1713.8	11.0 5	(Q)		Mult.: $A_2=+0.07$ 12, $A_4=-0.17$ 13 (1968Ne01); $A_2=+0.17$ 3 (1974Si14).
630.7 4	2039.7	5.4 5	(Q)		$E\gamma$: weighted average from 1968Ne01 and 1974Si14. Mult.: $A_2=+0.05$ 15 (1974Si14).
^x 678.9 3		4.0 5	D+Q		$E\gamma$: weighted average from 1968Ne01 and 1974Si14. Mult.: $A_2=-0.18$ 5 (1974Si14). 1974Si14's placement from an otherwise unknown 2393 level in the 5/2[402] band is inconsistent with Adopted Levels, Gammas and is rejected by the evaluator. It might deexcite a known 1763 level.
737.0 6	851.2	1.7& 5			$E\gamma$: from 1974Si14.
851.0 6	851.2	2.5& 5			$E\gamma$: from 1974Si14.

[†] Weighted average of data from 1968Ne01, 1974Si14, 1983Av06, except as noted. Data from these three sources are in excellent agreement.

[‡] Relative intensity for $E\alpha=27$ MeV from 1974Si14, except as noted. 1968Ne01 report $I\gamma$ for $E\alpha=28$ MeV and 1983Av06 for $E\alpha=20, 25$ and 30 MeV. Branching deduced from these five sets of intensities are in poor to fair agreement.

[§] From $\gamma(0)$ (1968Ne01 and/or 1974Si14).

[#] From $\gamma(0)$ (1968Ne01).

[@] Transition was observed by 1974Si14 to contain a 21 ns 2 component.

[&] $I\gamma(737)/I\gamma(851)=0.68$ 24 (1974Si14) compared with an adopted value of 0.061 3; also, two known weaker branches from the 851 level were not observed by 1974Si14.

^x γ ray not placed in level scheme.

 $^{182}\text{W}(^3\text{He}, d), (\alpha, t)$ $^{1971}\text{Lu01}$

$^{1971}\text{Lu01}$: isotopically-enriched targets; Enge broad-range spectrograph; DWBA calculations.

$^{182}\text{W}(^3\text{He}, d)$: $E(^3\text{He})=28$ MeV, FWHM=25 keV; $\theta(\text{lab})=15^\circ-55^\circ$.

$^{182}\text{W}(\alpha, t)$: $E(^4\text{He})=30$ MeV, FWHM=11 keV; $\theta(\text{lab})=45^\circ$ and 60° .

 ^{183}Re Levels

E(level) [†]	L	$C^2S^\ddagger$	Comments
0.0 [§]	2	0.74	
603 [@]	3	0.56	C^2S : 0.35 from (α, t) .
620 [@]	5	1.53	C^2S : 1.34 from (α, t) .
667 [#]	4, 5	0.44	C^2S : 0.19 from (α, t) .
702 [@]	1	0.03	
835 [@]	1	0.04	
881 ^{&}	0	0.33	C^2S : 0.29 from (α, t) .
899 [@]	(3)	0.12	C^2S : 0.09 from (α, t) .
961 ^{&}	(2)	0.07	C^2S : 0.04 from (α, t) .
998 ^{&}	2	0.06	C^2S : 0.06 from (α, t) .

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$^{182}\text{W}(^3\text{He,d}),(\alpha,t)$ 1971Lu01 (continued) ^{183}Re Levels (continued)

E(level) [†]	L	C ² S [‡]	Comments
1039 ^a	2	0.51	C ² S: 0.41 from (α,t).
1064			
1075			
1125 ^a	(2)	0.06	C ² S: 0.09 from (α,t).
1290			
1309	5	0.71	Likely configuration: π 11/2[505] (1971Lu01). C ² S: 0.46 from (α,t).
1338			
1422	00	0.61	Likely configuration: π 1/2[660] (1971Lu01). C ² S: 0.44 from (α,t).
1470	2,3	0.71	Likely configuration: π 3/2[651] (1971Lu01). C ² S: 0.72 from (α,t).
1532	(2)		
1631	(0)		
1653	(0)		

[†] Mean value from (α,t) and ($^3\text{He,d}$). E(level) from ($^3\text{He,d}$) at different angles deviated from the average value by <5 keV and authors estimate uncertainties of about 2 and 3 keV, respectively, in E from (α,t) and ($^3\text{He,d}$). However, E from 1971Lu01 ranges from 7 keV high to 5 keV low compared with precise adopted values, so the evaluator assigns a 7 keV uncertainty in Adopted Levels to E(level) data taken from this dataset.

[‡] From ($^3\text{He,d}$). Values from (α,t) are given in comments. The authors' DWBA calculations were normalized to agree with theory for the g.s..

§ (A): 5/2[402] band.

(B): 9/2[514] band.

@ (C): 1/2[541] band.

& (D): 1/2[400] band.

^a (E): 3/2[402] band.

Adopted Levels, Gammas $Q(\beta^-)=-3460\ 50$; $S(n)=7130\ 50$; $S(p)=5510\ 110$; $Q(\alpha)=3210\ 50$ 2012Wa38. ^{183}Os Levels

Cross Reference (XREF) Flags

A ^{183}Os IT Decay (9.9 h)
 B ^{183}Os IT Decay (≈ 30 ns)
 C ^{183}Ir ϵ Decay
 D $^{170}\text{Er}(^{18}\text{O}, 5n\gamma)$
 E $^{186}\text{W}(\alpha, 7n\gamma), ^{185}\text{Re}(p, 3n\gamma)\dots$

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
0.0 ^c	9/2+ [§]	ABCDE	13.0 h 5	$\% \epsilon + \% \beta^+ = 100$. $\mu = (-)0.794\ 14$ (1980Ha24); $Q = +3.1\ 3$ (1985Ha41). μ : NMR on oriented nuclei; from $g = (-)0.176\ 3$. Q : from static nuclear orientation with γ detection; relative to $^{186}\text{Os}(137)$. $J\pi$: $J=9/2$ from atomic beam (1975Ru06). π from comparison of μ with Nilsson prediction (-0.77) for $9/2[624]$ orbital. $T_{1/2}$: from 1960Ne03, corrected for feeding by 9.9-h isomer (1975Ar33). Other values: 13.5 h 10 (1966Be47), 14 h (1976Ka22), 15.4 h 3 (1958Fo47).
96.39 ^d 7	11/2+ [§]	BCDE		$J\pi$: M1+E2 intraband 96γ to $9/2+$ g.s..
170.73 ⁱ 7	1/2- [@]	A C E	9.9 h 3	$\% \epsilon + \% \beta^+ = 85\ 2$; $\% \text{IT} = 15\ 2$. $\% \text{IT}$ from IT decay (9.9 h). $J\pi$: M4 171γ to $9/2+$ g.s.. $T_{1/2}$: from 1960Ne03 in IT decay (9.9 h). Other values: 10 h 1 (1958Fo47), 9.1 h (1976Ka22).
219.24 ^c 8	13/2+ [§]	B DE		$J\pi$: D+Q intraband 123γ to $11/2+$ 96; stretched Q intraband 219γ to $9/2+$ g.s..
258.34 ⁱ 8	3/2- [@]	CDE		$J\pi$: M1+E2 88γ to $1/2-$ 171.
273.08 ⁱ 8	5/2- [@]	CD		$J\pi$: intraband E2 102γ to $1/2-$ 171; intraband 15γ to $3/2-$ 258.
375.48 ^d 8	15/2+ [§]	B DE		$J\pi$: D+Q 156γ to $13/2+$ 219; stretched Q intraband 279γ to $11/2+$ 96.
392.52 ^f 6	(7/2)-	CDE		$J\pi$: E1 393γ to $9/2+$ g.s.; band assignment.
395.22 ^k 10	1/2- ^{&}	C		$J\pi$: M1+E2 137γ to $3/2-$ 258; band assignment.
453.08 ^k 8	3/2- ^{&}	C		$J\pi$: intraband M1+E2 58γ to $1/2-$ 395; M1(+E2) 283γ to $5/2-$ 273.
487.04 ⁱ 9	7/2- [@]	CDE		$J\pi$: stretched Q intraband 229γ to $3/2-$ 258; intraband 214γ to $5/2-$ 273.
509.91 ⁱ 10	9/2- [@]	CD		$J\pi$: intraband stretched E2 237γ to $5/2-$ 273.
512.52 ^g 6	7/2- [#]	CD		$J\pi$: E1 513γ to $9/2+$ g.s.; M1(+E2) 120γ to $(7/2)-$ 392; band assignment.
513.12 ^k 8	5/2- ^{&}	C		$J\pi$: E2 342γ to $1/2-$ 171; M1(+E2) 26γ to $7/2-$ 487.
541.56 ^c 9	17/2+ [§]	B DE		$J\pi$: intraband M1+E2 166γ to $15/2+$ 375; intraband E2 322γ to $13/2+$ 219.
544.41 ^h 8	5/2- ^a	C		$J\pi$: E2 374γ to $1/2-$ 171; M1+E2 32γ to $7/2-$ 512.
558.31 ^e 7	(9/2)- ^a	CDE		$J\pi$: M1+E2 166γ to $(7/2)-$ 392; E1 462γ to $11/2+$ 96.
582.24 ^j 9	(3/2)- ^a	C		$J\pi$: M1 324γ to $3/2-$ 258; M1 309γ to $5/2-$ 273; E2(+M1) 412γ to $1/2-$ 171.
620.82 ^k 10	7/2- ^{&}	C		$J\pi$: M1+E2 348γ to $5/2-$ 273; intraband 168γ to $3/2-$ 453. Intraband M1(+E2) 108γ to $5/2-$ 513.
646.35 ^g 8	9/2- [#]	CD		$J\pi$: M1(+E2) 254γ to $(7/2)-$ 392; intraband 134γ to $7/2-$ 512.54.
655.36 ^h 11	(7/2)- ^a	C		$J\pi$: E1 655γ to $9/2+$ g.s.; 111γ to $5/2-$ 544; band assignment.
669.12 ^j 9	(5/2)- ^a	C		$J\pi$: E2 499γ to $1/2-$ 171; M1 396γ to $5/2-$ 273; band assignment.
714.06 11	9/2+	C		$J\pi$: M1(+E2) 618γ to $11/2+$ 96; M1+E2 714γ to $9/2+$ g.s.; 332γ from (5/2+) 1046.
731.62 ^b 10	7/2+ ^a	C		$J\pi$: E2+M1 732γ to $9/2+$ g.s.; (M1) 521γ from (5/2+) 1253.
748.96 ^f 7	(11/2)-	CDE		$J\pi$: D+Q intraband 191γ to $(9/2)-$ 558; Q intraband 357γ to $(7/2)-$ 392.
763.86 ^j 12	(7/2)- ^a	C		$J\pi$: E2(+M1) 491γ to $5/2-$ 273; 253γ to $9/2-$ 510; band assignment.
764.07 ^d 9	19/2+ [§]	B DE		$J\pi$: Q intraband 389γ to $15/2+$ 375; intraband D+Q 222γ to $17/2+$ 541.
793.03 ^b 16	(11/2)+ ^a	C		$J\pi$: E2 697γ to $11/2+$ 96; 793γ to $9/2+$ g.s.; band assignment.
800.57 13	(5/2)+	C		$J\pi$: E2 800γ to $9/2+$ g.s.; $\log ft = 7.5$ from $5/2-$.
812.50 ^g 7	11/2- [#]	D		$J\pi$: intraband 166γ to $9/2-$ 647; intraband 300γ to $7/2-$ 513.
832.06 10	(3/2, 5/2, 7/2)-	C		$J\pi$: M1 319γ to $(5/2)-$ 513.
848.24 ⁱ 13	11/2- [@]	DE		$J\pi$: Q intraband 361γ to $7/2-$ 487.
850.23 13	(3/2, 5/2, 7/2)-	C		$J\pi$: E2(+M1) 592γ to $3/2-$ 258; E2 458γ to $(7/2)-$ 393.

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Adopted Levels, Gammas (continued) ^{183}Os Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
879.61 ⁱ 12	13/2-@	D		$J\pi$: intraband 370 γ to 9/2- 510.
896.77 14	(7/2)+	C		$J\pi$: M1+E2 897 γ to 9/2+ g.s.; (M1) 356 γ from (5/2)+ 1253.
944.35 12	(3/2, 5/2)-	C		$J\pi$: E2+M1 671 γ to 5/2- 273; possible 774 γ to 1/2- 171.
951.45 ^c 9	21/2+§	B DE		$J\pi$: intraband D+Q 187 γ to 19/2+ 764; Q 410 γ to 17/2+ 541.
958.18 ^e 8	(13/2)-a	DE		$J\pi$: D+Q intraband 209 γ to (11/2)- 749; intraband Q 400 γ to (9/2)- 558.
964.88 14	(3/2, 5/2)-	C		$J\pi$: M1 706 γ to 3/2- 258; M1+E2 692 γ to 5/2- 273.
1010.97 ^g 8	13/2-#	D		$J\pi$: intraband 199 γ to 11/2- 812; intraband 365 γ to 9/2- 647.
1039.24 22	(5/2, 7/2, 9/2)-	C		$J\pi$: M1 552 γ to 7/2- 487.
1045.96 12	(5/2+)	C		$J\pi$: M1+E2 932 γ from (3/2)+ 1978; (E2) 1046 γ to 9/2+ g.s..
1054.38 14	(5/2, 7/2, 9/2)-	C		$J\pi$: M1 567 γ to 7/2- 487.
1179.76 ^f 8	(15/2)-	DE		$J\pi$: intraband D+Q 222 γ to (13/2)- 958; intraband (E2) 431 γ to (11/2)- 749.
1180.90 17	(3/2, 5/2)-	C		$J\pi$: E2 786 γ to (1/2)- 395; 728 γ to 3/2- 453.
1236.77 14	(7/2)+	C		$J\pi$: M1+E2 505 γ to 7/2+ 732; (M1) 523 γ to 9/2+ 714; possible 1140 γ to 11/2+ 96.
1236.87 ^g 9	15/2-#	D		$J\pi$: intraband 226 γ to 13/2- 1011; intraband 425 γ to 11/2- 812.
1252.97 15	(5/2)+	C		$J\pi$: M1 356 γ to $J \geq 7/2$ 897; M1+E2 725 γ from (3/2)+ 1978.
1255.84 ^d 9	23/2+§	B DE		$J\pi$: intraband Q 492 γ to 19/2+ 764; intraband (M1+E2) 304 γ to 21/2+ 951.
1295.44 18	(5/2)+	C		$J\pi$: M1+E2 495 γ to (5/2)+ 801; possible 581 γ to 9/2+ 714; M1 683 γ from (3/2)+ 1978.
1324.04 ⁱ 17	15/2-@	DE		$J\pi$: intraband 476 γ to 11/2- 848.
1332.61 23	(1/2, 3/2, 5/2)-	C		$J\pi$: M1+E2 1074 γ to 3/2- 258.
1369.91 ⁱ 13	17/2-@	D		$J\pi$: intraband 490 γ to 13/2- 880.
1420.91 ^e 9	(17/2)-a	DE		$J\pi$: intraband D+Q 241 γ to (15/2)- 1180, intraband Q 463 γ to (13/2)- 958 in ($^{18}\text{O}, 5n\gamma$).
1442.86 ^c 10	25/2+§	B DE		$J\pi$: D+Q intraband 187 γ to 23/2+ 1256; intraband 481 γ to 21/2+ 951.
1482.91 ^m 10	19/2(+)	D		$J\pi$: D+Q 941 γ to 17/2+ 541; stretched Q 1108 γ to 15/2+ 375.
1560.27 ⁿ 9	(15/2)-	D	<3 ns ^s	$J\pi$: (D) 1185 γ to 15/2+ 375 interpreted as D $\Delta J=0$ in ($^{18}\text{O}, 5n\gamma$); 602 γ to (13/2)- 958; 1341 γ to 13/2+ 219; band assignment.
1583.55 ⁿ 10	(17/2)-	D		$J\pi$: 1042 γ to 17/2+ 541; 1208 γ to 15/2+ 375; band assignment.
1661.94 ^f 9	(19/2)-	DE		$J\pi$: D+Q 241 γ to (17/2)- 1420; stretched Q intraband 482 γ to (15/2)- 1180 in ($^{18}\text{O}, 58n\gamma$).
1665.06 ⁿ 10	(19/2)-	DE		$J\pi$: D 244 γ to (17/2)- 1420; stretched Q 485 γ to (15/2)- 1180; band assignment.
1690.60 ^l 11	21/2(+)	D		$J\pi$: D+Q 927 γ to 19/2+ 764; stretched Q 1149 γ to 17/2+ 541.
1779.19 ⁿ 9	(21/2)-	D		$J\pi$: intraband D+Q 114 γ to (19/2)- 1665; intraband stretched Q 196 γ to (17/2)- 1584; 523 γ to 23/2+ 1256.
1815.16 10	21/2+	D		$J\pi$: 864 γ to 21/2+ 951, 1274 γ to 17/2+ 542 in ($^{18}\text{O}, 5n\gamma$); 1051 γ to 19/2+ 763.97.
1844.38 ^d 11	27/2+§	B DE		$J\pi$: intraband 401 γ to 25/2+ 1443; Q intraband 589 γ to 23/2+ 1256.
1911.55 16	(3/2-, 5/2, 7/2-)	C		$J\pi$: 1459 γ to (3/2)- 453; 1519 γ to (7/2)- 392.
1921.06 23	1/2, 3/2, 5/2-	C		$J\pi$: 1526 γ to (1/2)- 395; 1468 γ to (3/2)- 453.
1922.11 ^e 12	(21/2)-a	D		$J\pi$: stretched Q 501 γ to (17/2)- 1420 in ($^{18}\text{O}, 5n\gamma$).
1925.66 ⁿ 9	(23/2)-	D		$J\pi$: intraband D 146 γ to (21/2)- 1779; stretched Q 264 γ to (19/2)- 1662.
1925.94 ^m 11	23/2(+)	D		$J\pi$: D+Q 975 γ to 21/2+ 951; stretched Q 1162 γ to 19/2+ 764.
1977.92 14	(3/2)+	C		$J\pi$: M1+E2 932 γ to (5/2+) 1046; 1705 γ to 5/2- 273; 1807 γ to 1/2- 171; M1 683 γ to $\pi=+$ 1295.
2017.53 ^c 11	29/2+§	B DE		$J\pi$: Q intraband 575 γ to 25/2+ 1443; intraband 173 γ to 27/2+ 1844.
2083.46 23	(1/2, 3/2, 5/2-)	C		$J\pi$: 1688 γ to (1/2)- 395.
2101.38 ⁿ 11	(25/2)-	D		$J\pi$: D intraband 176 γ to (23/2)- 1926; stretched Q intraband 322 γ to (21/2)- 1779; band assignment.
2150.58 ^f 19	(23/2)-	D		$J\pi$: stretched Q intraband 489 γ to (19/2)-; 1662 in ($^{18}\text{O}, 5n\gamma$).
2175.68 ^l 10	25/2(+)	D		$J\pi$: D+Q 920 γ to 23/2+ 1256; stretched Q 1224 γ to 21/2+ 951.
2209.73 ^o 11	(23/2+)	D	<3 ns ^s	$J\pi$: D+Q 1258 γ to 21/2+ 951; (Q) 1446 γ to 19/2+ 764; band assignment.
2219.14 23	(5/2-, 7/2)	C		$J\pi$: 1710 γ to 9/2- 510 and 1455 γ to (7/2)- 764; $\log ft=7.7$ ($\log f^{lu}_t < 8.5$) from 5/2- in ϵ decay.
2249.38 22	(5/2+, 7/2)	C		$J\pi$: 2250 γ to 9/2+ g.s.; 1857 γ to (7/2)- 992; $\log ft=7.3$ ($\log f^{lu}_t < 8.5$) from 5/2- in ϵ decay.
2254.62 19	3/2(-), 5/2, 7/2(-)	C		$J\pi$: 1801 γ to 3/2- 453; 1862 γ to (7/2)- 392; $\log ft=7.1$ from 5/2- in ϵ decay.

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Adopted Levels, Gammas (continued) ^{183}Os Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	T _{1/2}	Comments
2258.37 14	(7/2)	C		J π : 1544 γ to 9/2+ 714; 1494 γ to (7/2)- 764; log ft=6.8 from 5/2- in ϵ decay; 1748 γ to 9/2- 510.
2273.83 10	(7/2)-	C		J π : E2 1653 γ to (7/2)- 621; log ft=6.1 from 5/2- (log f ^{lut} <8.5); 2274 γ to 9/2+ g.s..
2300.06 10	(5/2)-	C		J π : E1 1063 γ to (7/2)+ 1237; 1905 γ to (1/2)- 395; log ft=6.1 (log f ^{lut} <8.5) from 5/2-.
2305.17 ⁿ 11	(27/2-)	D		J π : Q intraband 380 γ to (23/2-) 1926; intraband $\Delta J=1$ 204 γ to (25/2-) 2101.
2310.52 23	3/2, 5/2, 7/2(-)	C		J π : log ft=7.2 (log f ^{lut} <8.5) from 5/2- in ϵ decay; 1857 γ to 3/2- 453.
2338.46 10	25/2+	D		J π : D+Q 1083 γ to 23/2+ 1256; Q 1387 γ to 21/2+ 951; 896 γ to 25/2+ 1442.
2402.41 ^e 16	(25/2-) ^a	D		J π : Q intraband 480 γ to (21/2-) 1922.
2459.62 ^m 11	(27/2+)	D		J π : 615 γ to 27/2+ 1844; intraband 534 γ to 23/2(+) 1926; band assignment.
2470.65 ^o 13	(25/2+)	D		J π : intraband 261 γ to (23/2+) 2210.
2511.25 23	(5/2+, 7/2)	C		J π : log ft=7.1 (log f ^{lut} <8.5) from 5/2- in ϵ decay; 1797 γ to 9/2+ 714.
2521.86 ^d 12	31/2+ [§]	B DE		J π : Q intraband 678 γ to 27/2+ 1844.
2536.42 ⁿ 12	(29/2-)	D		J π : Q intraband 435 γ to (25/2-) 2101; intraband $\Delta J=1$ 231 γ to (27/2-) 2305.
2599.47 ^f 20	(27/2-)	D		J π : Q intraband 449 γ to (23/2-) 2151.
2674.37 ^c 13	33/2+ [§]	B DE		J π : Q intraband 657 γ to 29/2+ 2017.
2746.76 ^l 11	29/2(+)	D		J π : stretched Q 1304 γ to 25/2+ 1443; 729 γ to 29/2+ 2017.
2754.21 ^o 13	(27/2+)	D		J π : intraband 284 γ to (25/2+) 2470; intraband 545 γ to (23/2+) 2210.
2792.72 ⁿ 13	(31/2-)	D		J π : Q intraband 488 γ to (27/2-) 2305; intraband 256 γ to (29/2-) 2536.
2870.8 ^e 4	(29/2-) ^a	D		J π : Q intraband 468 γ to (25/2-) 2402.
3029.11 ^f 19	(31/2-)	D		J π : Q intraband 430 γ to (27/2-) 2599.
3046.00 ^o 14	(29/2+)	D		J π : intraband 292 γ to (27/2+) 2754; intraband 575 γ to (25/2+) 2471.
3067.32 12	(29/2+)	D		J π : D+Q 1223 γ to 27/2+ 1844; 1050 γ to 29/2+ 2017; 546 γ to 31/2+ 2522..
3074.99 ⁿ 13	(33/2-)	D		J π : Q intraband 539 γ to (29/2-) 2536; intraband $\Delta J=1$ 282 γ to (31/2-) 2793.
3077.42 ^m 12	(31/2+)	D		J π : D+Q 1060 γ to 29/2+ 2017; 1233 γ to 27/2+ 1844; intraband 618 γ to (27/2+) 2459.
3094.36 14		D		J π : 624 γ to (25/2+) 2470, 340 γ to (27/2+) 2754 favor J=23/2 to J=29/2.
3278.63 ^d 14	35/2+ [§]	B DE		J π : Q intraband 757 γ to 31/2+ 2522.
3340.3 ^e 5	(33/2-) ^a	D		J π : Q intraband 470 γ to (29/2-) 2871.
3363.42 ^l 12	(33/2+)	D		J π : 689 γ to 33/2+ 2674; 1346 γ to 29/2+ 2017; intraband 617 γ to 29/2(+) 2746; 841 γ to (31/2+) 2522.
3377.50 ⁿ 14	(35/2-)	D		J π : Q intraband 585 γ to (31/2-) 2793; intraband 303 γ to (33/2-) 3075.
3383.42 ^r 16	(31/2-)	D		J π : 847 γ to 29/2- 2536; band assignment.
3404.48 ^c 17	37/2+ [§]	B DE		J π : Q intraband 730 γ to 33/2+ 2674.
3419.71 14	(29/2+, 31/2+)	D		J π : (29/2+, 31/2+) in table 1 and (29/2+, 31/2-) in fig. 2 of 2001Sh41. 1575 γ to 27/2+ 1844.
3430.80 13	(29/2, 31/2+)	D		J π : (29/2+, 31/2+) in table 1 and (29/2-, 31/2+) in fig. 2 of 2001Sh41. 1586 γ to 27/2+ 1844.
3505.51 ^f 18	(35/2-)	D		J π : Q intraband 476 γ to (31/2-) 3029.
3707.47 ⁿ 15	(37/2-)	D		J π : Q intraband 633 γ to (33/2-) 3075; intraband 330 γ to (35/2-) 3377.
3764.73 15	($\geq 25/2$)	D		J π : 719 γ to (29/2+) 3046.
3766.00 ^m 16	(35/2+)	D		J π : 1244 γ to 31/2+ 2522; intraband 689 γ to (31/2+) 3077; 1092 γ to 33/2+ 2674.
3785.82 ^p 12	(33/2+)	D	<3 ns ^s	J π : stretched Q 1768 γ to 29/2+ 2017; 1111 γ to 33/2+ 2674.
3876.3 ^e 5	(37/2-) ^a	D		J π : Q intraband 536 γ to (33/2-) 3340.
3884.52 ^p 14	(35/2+)	D		J π : intraband (M1) 99 γ to (33/2+) 3786.
3986.62 ^r 15	(35/2-)	D		J π : D 912 γ to (33/2-) 3075; intraband 603 γ to (31/2-) 3383.
4031.17 ⁿ 16	(39/2-)	D		J π : Q intraband 654 γ to (35/2-) 3377.
4075.64 ^f 16	(39/2-)	D		J π : Q intraband 570 γ to (35/2-) 3505.
4088.62 ^d 16	39/2+ [§]	D		J π : Q intraband 810 γ to 35/2+ 3278.
4116.79 ^p 13	(37/2+)	D		J π : D intraband 232 γ to (35/2+) 3884; 1442 γ to 33/2+ 2674.
4181.78 ^c 19	41/2+ [§]	B DE		J π : Q intraband 777 γ to 37/2+ 3404.

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Adopted Levels, Gammas (continued) ^{183}Os Levels (continued)

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
4181.78+x	$\geq 41/2$	B	≈ 30 ns	%IT=100. J π : implied isomeric γ to 41/2+ 4182. $T_{1/2}$: from ^{183}Os IT decay (≈ 30 ns). J π : D intraband 282 γ to (37/2+) 4117; intraband 514 γ to (35/2+) 3884. J π : Q intraband 715 γ to (37/2-) 3707. J π : Q intraband 620 γ to (37/2-) 3876. J π : Q 644 γ to (39/2-) 4031; intraband 599 γ to (39/2-) 4075. J π : D 972 γ to (37/2-) 3707; intraband 693 γ to (35/2-) 3987. J π : D intraband 318 γ to (39/2+) 4398; intraband 600 γ to (37/2+) 4117. J π : Q 739 γ to (39/2-) 4075; intraband 783 γ to (39/2-) 4031. J π : intraband 843 γ to 39/2+ 4088. J π : 256 γ to (39/2-) 4679; (E1) 133 γ from J $\leq$ (43/2) 5068. J π : Q intraband 755 γ to 41/2+ 4182. J π : intraband 347 γ to (41/2+) 4716; intraband 665 γ to (39/2+) 4399. J π : D, $\Delta J=1$ 351 γ to (41/2+) 4716; (E1) 133 γ to J $\leq$ (43/2) 4935. Other $T_{1/2}$: ≈ 30 ns for this and/or 5167 level from ($\alpha, 7n\gamma$). Other $T_{1/2}$: ≈ 30 ns for this and/or 5067 level from ($\alpha, 7n\gamma$). J π : D+Q 451 γ to (41/2+) 4716; 1079 γ to 39/2+ 4088. J π : Q intraband 696 γ to (41/2-) 4496. J π : (Q) intraband 770 γ to (41/2-) 4423. J π : intraband 711 γ to (43/2-) 4675. J π : intraband 727 γ to (39/2-) 4679. J π : intraband 374 γ to (43/2+) 5063; intraband 721 γ to (41/2+) 4716. J π : 410 γ to (43/2-) 5065. J π : 474 γ to (43/2-) 5068. J π : 427 γ to (43/2+) 5167. J π : intraband 804 γ to (43/2-) 4814. J π : Q intraband 761 γ to 45/2+ 4936. J π : intraband 396 γ to (45/2, 47/2-) 5478. J π : 737 γ to (43/2+) 5167. J π : 785 γ to (45/2-) 5193. J π : intraband 879 γ to (47/2-) 5386. J π : intraband 803 γ to (45/2, 47/2-) 5478; intraband 407 γ to (47/2, 49/2-) 5873. J π : 507 γ to 5905. J π : intraband 843 γ to (47/2-) 5618. J π : 721 γ to (47/2, 49/2-) 5874; 314 γ to (49/2, 51/2-) 6280. J π : intraband 417 γ to (49/2, 51/2-) 6280.
4398.57p 14	(39/2+)	D		
4422.58n 18	(41/2-)	D		
4496.4e 5	(41/2-) ^a	D		
4675.01f 17	(43/2-)	D		
4679.06r 15	(39/2-)	D		
4716.30p 14	(41/2+)	D		
4814.14n 19	(43/2-)	D		
4931.92d 19	43/2+ [§]	D		
4934.77 15	(41/2+)	D		
4936.88c 22	45/2+ [§]	D		
5063.63p 15	(43/2+)	D		
5067.68 15	(43/2-)	b D	27 ns ^s 3	
5167.61 15	(43/2+)	b D	24 ns ^s 2	
5192.4e 5	(45/2-) ^a	D		
5192.68n 21	(45/2-)	D		
5386.01f 20	(47/2-)	D		
5406.26r 25	(43/2-)	D		
5437.63p 18	(45/2+)	D		
5477.92q 18	(45/2, 47/2-)	D		
5542.05 18		D		
5594.28 17		D		
5618.04n 22	(47/2-)	D		
5698.08c 24	49/2+ [§]	D		
5874.06q 18	(47/2, 49/2-)	D		
5904.94 17		D		
5977.7n 11	(49/2-)	D		
6173.51f 22	(51/2-)	D		
6280.92q 18	(49/2, 51/2-)	D		
6412.24 20		D		
6461.0n 4	(51/2-)	D		
6594.71 18		D		
6697.49q 19	(51/2, 53/2-)	D		

[†] From least-squares fit to E γ , excluding the 441.9 γ , 782.14 γ and 1767.5 γ , all of which fit their placement particularly poorly, along with lines for which the placement is questionable; χ^2 of fit is 4.6 cf. the critical value of 1.2.

[‡] Values given without further comment are based on band structure deduced from ($^{18}\text{O}, 5n\gamma$).

[§] Definite J π is assigned to members of 9/2[624] band based on smooth progression of level energies and established J π =9/2+ for g.s. and M1+E2 multipolarity for intraband 96 γ .

Definite J π is assigned to members of 7/2[514] band based on smooth progression of level energies and established J π =7/2- for 513 level and M1(+E2) multipolarity for intraband 255 γ .

@ J π (171 level) from M4 171 γ to 9/2+ g.s.. Definite J π assigned to remaining band members based on energy sequence, J π (171 level) and on M1+E2 multipolarity for 88 γ to 3/2- 258.

& Definite J π assigned to 1/2[510] band based on progression of level energies and independently-determined J π (513)=5/2- and M1+E2 multipolarity for 59 γ connecting J=3/2 and 1/2 band members.

a Band assignment.

b (A): 7/2[633] band.

c (B): 9/2[624], $\alpha=+1/2$ g.s. band. Band parameters: E $_0$ =-37, A=8.1, B=32.2 (J=9/2 through 15/2).

d (C): 9/2[624], $\alpha=-1/2$ g.s. band.

e (D): 7/2[503], $\alpha=+1/2$ band. Band parameters: E $_0$ =326, A=19.2, B=-52.3 (J=7/2 through 13/2).

f (E): 7/2[503], $\alpha=-1/2$ band. See comment on signature partner band.

g (F): 7/2[514] band. Band parameters: E $_0$ =461, A=14.8, B=7.9 (J=7/2 through 13/2).

h (G): 5/2[512] band. Band parameters: E $_0$ =505, A=15.8 (J=5/2, 7/2).

i (H): 1/2[521] band. Band parameters: E $_0$ =175, A=16.6, a=+0.83 (J=1/2 through 7/2).

j (I): 3/2[512] band. Band parameters: E $_0$ =564, A=15.0 (J=3/2, 5/2, 7/2).

k (J): 1/2[510] band. Band parameters: E $_0$ =395, A=14.3, a=+0.12 (J=1/2 through 7/2).

l (K): Band based on 21/2+, $\alpha=+1/2$. $\nu_{13/2}$ coupled to γ -vibrational band.

m (L): Band based on 19/2+, $\alpha=-1/2$. $\nu_{13/2}$ coupled to γ -vibrational band.

Footnotes continued on next page

Adopted Levels, Gammas (continued) ^{183}Os Levels (continued)

ⁿ (M): Band based on (15/2-), 1560. Possible configuration= $\nu 9/2[624]\pi(1/2[541]+5/2[402])$.

^o (N): Band based on 23/2+.

^p (O): Band based on 33/2+.

^q (P): Band based on (45/2,47/2-).

^r (Q): γ cascade based on (31/2-).

^s From ($^{18}\text{O},5n\gamma$).

 $\gamma(^{183}\text{Os})$

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	$\delta^{\dagger}$	α	Comments
96.39	96.3 [±] 1	100 [±]	M1+E2	-0.39 4	6.11 10	Other δ : -0.65 22 from $\gamma(0)$ in $^{186}\text{W}(\alpha,7n\gamma)$, $\text{Re}(p,3n\gamma)$.
170.73	170.7 1	100	M4		208	B(M4)(W.u.)=1.03 15. Mult.: from sub-shell ratios in IT decay (9.9 h).
219.24	122.7 [±] 2	26 [±] 3	(M1+E2) [§]	-0.42 [§] 14	2.95 12	Mult.: D+Q intraband γ from ($^{18}\text{O},5n\gamma$). I γ : other I(123 γ):I(219 γ)=100:61 13 in $^{186}\text{W}(\alpha,7n\gamma)$, $\text{Re}(p,3n\gamma)$ (but 123 γ was contaminated in that reaction), and 100 11:26 3 from ^{183}Os IT decay (=30 ns).
	219.3 [#] 2	100 11	(E2) [§]		0.244	I γ : from ^{183}Os IT decay (=30 ns).
258.34	87.5 1	100	E2+M1	0.85 +18-16	7.96 14	
273.08	14.7 2	=2.5	[M1]		276 12	I γ : from I(γ +ce) and α in ϵ decay.
	102.2 1	100 15	E2		3.99	
375.48	156.1 [±] 1	85 [±] 4	(M1+E2) [§]	-0.42 [§] 14	1.46 8	Other I γ : 105 10 from IT decay (=30 ns), 89 11 from ($\alpha,7n\gamma$).
	279.0 [±] 1	100 [±] 4	(E2)		0.1137	Mult.: D+Q intraband γ from ($^{18}\text{O},5n\gamma$). Mult.: stretched Q intraband γ from ($^{18}\text{O},5n\gamma$).
392.52	392.5 1	100	E1		0.01307	
395.22	136.8 1	100	M1+E2	0.4 1	2.16 7	
453.08	57.9 2	=1.1	M1+E2	0.4 4	11 11	
	179.8 2	6.6 11	[M1+E2]		0.8 3	
	194.7 1	32 5	M1		0.850	
	282.5 1	100 15	M1(+E2)	0.11 +52-11	0.30 6	
487.04	213.9 2	7.6 12	[M1+E2]		0.46 20	
	228.68 7	100 15	E2		0.213	E γ : weighted average of 228.7 1 from ($^{18}\text{O},5n\gamma$), 228.6 1 from ϵ decay and 228.9 2 from ($\alpha,7n\gamma$).
509.91	236.8 1	100	E2		0.190	
512.52	119.90 9	14.8 22	M1(+E2)	≤ 0.52	3.22 14	E γ : weighted average of 119.9 1 from ($^{18}\text{O},5n\gamma$) and 119.9 2 from ϵ decay. Other I γ : 29 6 from ($^{18}\text{O},5n\gamma$).
	512.66 9	100 13	E1		0.00727	E γ : weighted average of 512.7 1 from ($^{18}\text{O},5n\gamma$) and 512.5 2 from ϵ decay.
513.12	26.1 2	1.57 24	M1(+E2)	<0.1	62 12	
	118.0 2	=4.8	[E2]		2.26	
	239.9 1	81 14	M1		0.477	
	254.9 1	57 9	M1		0.403	
	342.4 1	100 14	E2		0.0622	
541.56	166.1 [±] 1	46.9 [±] 21	M1+E2 [§]	-0.33 [§] 8	1.26 4	Other I(166 γ):I(322 γ)=40 4:100 10 from IT decay (=30 ns). 49 7:100 8 from ($\alpha,7n\gamma$).
	322.4 [±] 1	100 [±] 4	E2 [§]		0.0739	
544.41	31.6 2	0.80 12	M1+E2	0.34 +12-15	120 70	
	91.1 2	5.3 8	M1		7.35 12	
	151.7 2	3.1 5	[M1+E2]		1.3 5	
	271.3 1	100 15	M1		0.340	
	286.1 2	65 10	M1		0.294	
	373.8 2	13.3 20	E2		0.0486	

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. †	$\delta^{\dagger}$	α	Comments
558.31	165.72 8	100 5	M1+E2	0.7 4	1.11 18	E γ : weighted average of 165.7 2 from ϵ decay, 165.7 1 from ($^{18}\text{O},5n\gamma$) and 165.81 20 from ($\alpha,7n\gamma$). I γ : from ($^{18}\text{O},5n\gamma$).
	461.9 $\frac{1}{2}$ 1	41.1 $\frac{1}{2}$ 20	E1		0.00910	E γ : weighted average of 461.9 2 from ϵ decay, 461.9 1 from ($^{18}\text{O},5n\gamma$) and 461.8 2 from ($\alpha,7n\gamma$). I γ : from ($^{18}\text{O},5n\gamma$).
	558.4@ 2	34 6	E1		0.00607	
582.24	128.9 2	41 6	M1(+E2)	0.4 4	2.6 3	
	309.2 2	16 3	M1		0.238	
	323.9 2	54 8	M1		0.210	
	411.5 1	100 15	E2(+M1)		0.07 4	
620.82	107.6 2	15.6 24	M1(+E2)	<0.11	4.55	
	167.7 2	8.0 12	[E2]		0.611	
	347.8 1	100 16	M1+E2	0.9 +4-3	0.122 21	
646.35	133.9 $\frac{1}{2}$ 1	40 $\frac{1}{2}$ 7				
	253.9 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 7	M1(+E2)		0.28 13	Other E γ : 254.4 2 from ϵ decay.
655.36	110.8 2	15.7 21	[E2]		2.89 5	
	168 1	$\approx$ 5.7	[M1+E2]		0.9 4	
	655.4 2	100 15	E1		0.00437	
669.12	124.3 2	31 5	E2(+M1)	$\geq$ 3.4	1.89 6	
	156.2 2	6.9 10	[M1+E2]		1.2 4	
	181.8 2	14.2 22	[M1+E2]		0.7 3	
	273.8 2	30 4	E2		0.1205	
	276.7 2	$\approx$ 10	[M1+E2]		0.22 11	
	396.1 2	16.7 25	M1		0.1226	
	410.7 2	48 8	[M1+E2]		0.07 4	
	498.5 1	100 15	E2		0.0230	
714.06	617.7 2	100 15	M1(+E2)	0.4 +5-4	0.035 8	
	714.1 2	34 5	M1+E2	1.0 +6-4	0.018 4	
731.62	635.2 2	7.9 11	[E2]		0.01295	
	731.6 2	100 14	M1+E2	1.0 +7-4	0.017 4	
748.96	190.5 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(M1+E2)		0.6 3	Mult.: D+Q intraband γ from ($^{18}\text{O},5n\gamma$).
	356.5 $\frac{1}{2}$ 1	69 $\frac{1}{2}$ 3	(E2)		0.0555	Other E γ (I γ): 356.2 2 ($\approx$ 32) from ϵ decay, 356.37 20 from ($\alpha,7n\gamma$). Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$). Reported only in ($^{18}\text{O},5n\gamma$). Absent in ($^{18}\text{O},5n\gamma$).
	529.8 $\frac{1}{2}$ 1	21.5 $\frac{1}{2}$ 12	[E1]		0.00678	
	748.9@ 2	46 6	[E1]		0.00336	
763.86	250.7 2	100 14	[M1+E2]		0.29 14	
	253 1	$\approx$ 19	[M1+E2]		0.28 13	
	276.7 2	13 6	[M1+E2]		0.22 11	
	490.7 2	56 8	E2(+M1)	>2	0.028 5	
764.07	222.4 $\frac{1}{2}$ 1	33.9 $\frac{1}{2}$ 15	(M1+E2) §	-0.23 § 5	0.570 12	Other I γ : 29 7 from ($\alpha,7n\gamma$) but 67 7 from IT decay ($\approx$ 30 ns). Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
	388.7 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(E2)		0.0437	
793.03	137.4 2	$\approx$ 11	[M2]		15.40	
	696.9 2	100 15	E2		0.01054	
	792.6@ 2	61 9	[M1, E2]		0.014 7	
800.57	800.3 2	100	E2		0.00783	
812.50	166.2 $\frac{1}{2}$ 1	20 $\frac{1}{2}$ 4				
	254.2 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 5				
	300.0 $\frac{1}{2}$ 1	78 $\frac{1}{2}$ 4				
832.06	176.6 2	12.2 19	[M1+E2]		0.8 3	
	211.2 2	30 5	[M1+E2]		0.48 20	
	249.7 2	31 5	[M1+E2]		0.29 14	
	319.1 2	100 16	M1		0.219	
	345 1	$\approx$ 25	[M1+E2]		0.12 6	
	379.0 2	27 5	E2+M1	1.7 +11-4	0.070 14	
	573.8 2	81 13	(E2)		0.01637	
848.24	361.2 $\frac{1}{2}$ 1	100 $\frac{1}{2}$	(E2) §		0.0535	
850.23	267.7 2	32 5	[M1+E2]		0.24 12	
	457.9 2	$\approx$ 100	(E2)		0.0284	

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	$\delta^{\dagger}$	α	Comments
850.23	592.0 2	92 13	E2 (+M1)	1.9 +24-6	0.021 5	
879.61	369.7 $\frac{1}{2}$ 1	100 $\frac{1}{2}$				
896.77	896.8 2	100	M1+E2	1.5 +14-5	0.0088 18	
944.35	457.9 2	=21	[M1, E2]		0.06 3	
	551.5 2	12.7 19				
	671.2 2	100 15	E2+M1	1.2 +6-4	0.019 4	
	685.8 2	37 6				
	773.8 [@] 2	24 4				
951.45	187.3 $\frac{1}{2}$ 1	16.4 $\frac{1}{2}$ 7	(M1+E2) §		0.7 3	Other I γ : 24 6 from (α ,7n γ) for possible doublet; 81 9 from IT decay (=30 ns), presumably also for a doublet. §: -0.27 6 from (α ,7n γ) for presumed doublet.
	409.9 $\frac{1}{2}$ 1	100.0 $\frac{1}{2}$	(E2) §		0.0379	
958.18	209.2 $\frac{1}{2}$ 1	54.2 $\frac{1}{2}$ 25	(M1+E2) §		0.49 21	
	399.9 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(E2) §		0.0405	
964.88	691.9 2	100 15	E2+M1	1.2 +7-4	0.018 4	
	706.4 2	35 5	M1		0.0271	
	794.2 2	23 22				
1010.97	198.5 $\frac{1}{2}$ 1	32 $\frac{1}{2}$ 7				
	262.0 $\frac{1}{2}$ 1	71 $\frac{1}{2}$ 4				
	364.7 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4				
1039.24	552.2 2	67 10	M1		0.0512	
	766.1 [@] 2	100 17				
1045.96	245.2 2	4.9 7	[M1+E2]		0.31 14	
	314.4 2	45 7	M1+E2	0.5 +4-5	0.20 4	
	332.0 2	11.0 17	[E2]		0.0679	
	1045.9 3	100 15	(E2)		0.00454	
1054.38	544.6 2	6.8 10				
	567.2 2	13.8 21	M1		0.0477	
	781.3 2	100 15	E2 (+M1)	≥ 1.7	0.0099 17	
1179.76	221.5 $\frac{1}{2}$ 1	20.8 $\frac{1}{2}$ 10	(M1+E2)		0.42 18	Other E γ : 221.89 20 from (α ,7n γ). Mult.: D+Q intraband γ from $^{170}\text{Er}(^{18}\text{O},5\text{n}\gamma)$.
	367.2 $\frac{1}{2}$ 1	25.3 $\frac{1}{2}$ 10				
	430.8 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(E2)		0.0332	Mult.: Q intraband γ from ($^{18}\text{O},5\text{n}\gamma$).
1180.90	727.9 2	70 10				
	785.6 2	100 15	E2		0.00814	
1236.77	505.1 2	41 6	M1+E2	1.0 +5-3	0.043 9	
	522.8 2	100 15	(M1)		0.0590	
	1140.2 3	50 47				
1236.87	226.0 $\frac{1}{2}$ 1	30 $\frac{1}{2}$ 3				
	278.7 $\frac{1}{2}$ 1	77 $\frac{1}{2}$ 3				
	424.5 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 3				
1252.97	356.2 2	=27.5	M1		0.1628	
	521.3 2	100 15	(M1)		0.0595	
1255.84	304.4 $\frac{1}{2}$ 1	19.2 $\frac{1}{2}$ 9	(M1+E2) §	-0.18 $\frac{1}{2}$ 6	0.244 5	Other I γ : 13 4 from (α ,7n γ).
	491.9 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(E2)		0.0237	Mult.: Q intraband γ from ($^{18}\text{O},5\text{n}\gamma$).
1295.44	494.9 2	100 16	E2+M1	1.7 +11-5	0.035 7	
	581.4 [@] 2	18 3				
1324.04	475.8 $\frac{1}{2}$ 1	100 $\frac{1}{2}$	[E2] §		0.0258	Other E γ : 475.39 20 from Re(p,3n γ).
1332.61	1059.7 3	53 8				
	1074.1 3	100 16	M1+E2	0.9 +7-5	0.0071 16	
1369.91	490.3 $\frac{1}{2}$ 1	100 $\frac{1}{2}$				
1420.91	241.0 $\frac{1}{2}$ 1	11.6 $\frac{1}{2}$ 11	(M1+E2) §		0.33 15	Other E γ : 240.63 20 from (α ,7n γ).
	462.8 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(E2) §		0.0276	Other E γ : 462.25 20 from (α ,7n γ).
1442.86	186.8 $\frac{1}{2}$ 1	6.07 $\frac{1}{2}$ 24	(M1+E2)		0.7 3	Mult.: D+Q intraband γ from ($^{18}\text{O},5\text{n}\gamma$). §: -0.18 6 from (α ,7n γ) for presumed doublet.
						Other I γ : 17 4 from $^{186}\text{W}(\alpha,7\text{n}\gamma)$, Re(p,3n γ); 48 6 from ^{183}Os IT decay (=30 ns).
	491.4 $\frac{1}{2}$ 1	100 $\frac{1}{2}$ 4	(E2)		0.0238	Mult.: Q intraband γ from ($^{18}\text{O},5\text{n}\gamma$).
1482.91	718.9 $\frac{1}{2}$ 5	30 $\frac{1}{2}$ 3				

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	$\delta^{\dagger}$	α	Comments
1482.91	941.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	D+Q			Mult.: from $^{170}\text{Er}(^{18}\text{O},5n\gamma)$.
	1107.5 $\frac{5}{2}$ 1	73 $\frac{3}{2}$ 3	Q			Mult.: from $^{170}\text{Er}(^{18}\text{O},5n\gamma)$.
1560.27	602.1 $\frac{3}{2}$ 1	88 $\frac{3}{2}$ 18				
	1184.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6	(D)			Mult.: DCO in $(^{18}\text{O},5n\gamma)$ interpreted as D, $\Delta J=0$ transition.
	1341.0 $\frac{3}{2}$ 1	$\approx 6\frac{3}{2}$				
1583.55	(23.3)					E_{γ} : from level-energy difference.
	819.6 $\frac{3}{2}$ 2	22.9 $\frac{3}{2}$ 21				
	1042.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4				Mult.: interpreted by authors as $\Delta J=0$ transition in $(^{18}\text{O},5n\gamma)$.
	1207.6 $\frac{3}{2}$ 1	27.1 $\frac{3}{2}$ 21				
1661.94	240.9 $\frac{3}{2}$ 1	5.5 $\frac{3}{2}$ 4	(M1+E2)		0.33 15	E_{γ} : 243.03 20 in $(\alpha,7n\gamma)$ may be for a doublet.
						Mult.: D+Q intraband γ from $(^{18}\text{O},5n\gamma)$.
	425.3 $\frac{3}{2}$ 1	12.2 $\frac{3}{2}$ 4				
	482.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)		0.0249	E_{γ} : 483.96 20 in $(\alpha,7n\gamma)$ may be for a doublet.
						Mult.: Q intraband γ from $(^{18}\text{O},5n\gamma)$.
	898.1 $\frac{3}{2}$ 3	6.3 $\frac{3}{2}$ 4				
1665.06	244.2 $\frac{3}{2}$ 1	4.7 $\frac{3}{2}$ 4	D			E_{γ} : 243.03 20 in $(\alpha,7n\gamma)$ may be for a doublet.
						Mult.: from $(^{18}\text{O},5n\gamma)$.
	485.4 $\frac{3}{2}$ 5	100 $\frac{3}{2}$ 4	Q			E_{γ} : 483.96 20 in $(\alpha,7n\gamma)$ may be for a doublet.
						Mult.: from $(^{18}\text{O},5n\gamma)$.
1690.60	738.7 $\frac{3}{2}$ 5	54 $\frac{3}{2}$ 4				
	926.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	D+Q			Mult.: from $(^{18}\text{O},5n\gamma)$.
	1149.0 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	Q			Mult.: from $(^{18}\text{O},5n\gamma)$.
1779.19	114.2 $\frac{3}{2}$ 1	19.0 $\frac{3}{2}$ 16	(M1+E2)		3.2 7	Mult.: D+Q intraband γ from $(^{18}\text{O},5n\gamma)$.
	117.3 $\frac{3}{2}$ 1	30.2 $\frac{3}{2}$ 16	D+Q			Mult.: from $(^{18}\text{O},5n\gamma)$.
	195.5 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	(E2)		0.359	Mult.: Q intraband γ from $(^{18}\text{O},5n\gamma)$.
	296.3 $\frac{3}{2}$ 1	56 $\frac{3}{2}$ 3				
	523.3 $\frac{3}{2}$ 1	56 $\frac{3}{2}$ 3				
	827.8 $\frac{3}{2}$ 1	76 $\frac{3}{2}$ 3				Mult.: interpreted by authors in $(^{18}\text{O},5n\gamma)$ as $\Delta J=0$ transition.
						Mult.: from $(^{18}\text{O},5n\gamma)$.
	1015.0 $\frac{3}{2}$ 1	34.9 $\frac{3}{2}$ 16	D			
1815.16	863.7 $\frac{3}{2}$ 1	32 $\frac{3}{2}$ 3				
	1051.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6				
	1273.6 $\frac{3}{2}$ 1	39 $\frac{3}{2}$ 3				
1844.38	401.3 $\frac{3}{2}$ 1	13.8 $\frac{3}{2}$ 6				
	588.5 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)		0.01543	Other E_{γ} : 587.8 in IT decay (≈ 30 ns), 588.2 2 from $(\alpha,7n\gamma)$.
						Mult.: Q intraband γ from $(^{18}\text{O},5n\gamma)$.
1911.55	1399.1 3	100 15	[M1, E2]		0.0038 12	
	1424.1 3	28 4				
	1458.8 3	38.0 24	[M1, E2]		0.0035 10	
	1519.0 3	37 6	[M1, E2]		0.0032 9	
1921.06	1468.0 3	100 15				
	1525.8 3	15.7 24				
1922.11	501.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)		0.0227	Mult.: Q intraband γ from $(^{18}\text{O},5n\gamma)$.
	552.2 $\frac{3}{2}$ 1	26.7 $\frac{3}{2}$ 13				
1925.66	146.3 $\frac{3}{2}$ 1	33.3 $\frac{3}{2}$ 15	(M1)		1.90	Mult.: D intraband γ from $(^{18}\text{O},5n\gamma)$.
	260.6 $\frac{3}{2}$ 1	83 $\frac{3}{2}$ 4	(E2)		0.1404	Mult.: Q intraband γ from $(^{18}\text{O},5n\gamma)$.
	263.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	Q			Mult.: from $(^{18}\text{O},5n\gamma)$.
	669.9 $\frac{3}{2}$ 1	15.6 $\frac{3}{2}$ 7				
1925.94	441.9 $\frac{3}{2}$ 1	18.9 $\frac{3}{2}$ 27				E_{γ} : fits placement poorly.
	669.5 $\frac{3}{2}$ 5	21.6 $\frac{3}{2}$ 27				
	974.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	D+Q			Mult.: from $(^{18}\text{O},5n\gamma)$.
	1161.8 $\frac{3}{2}$ 1	46.0 $\frac{3}{2}$ 27	Q			Mult.: from $(^{18}\text{O},5n\gamma)$.
1977.92	682.5 2	22 4	M1		0.0296	
	724.9 2	100 15	M1+E2	0.8 +5-4	0.019 4	
	931.9 2	71 11	M1+E2	1.5 +15-5	0.0081 16	
	1705.3 3	55 8				

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	$\delta^{\dagger}$	α	Comments
1977.92	1806.9 3	18 16				
2017.53	173.2 $\frac{3}{2}$ 1	1.39 $\frac{3}{2}$ 20				
	574.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)		0.01631	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2083.46	1630.8 3	≈ 100				
	1687.8 3	80 13				
2101.38	175.6 $\frac{3}{2}$ 1	13.9 $\frac{3}{2}$ 7	(M1)		1.135	Mult.: D intraband γ from ($^{18}\text{O},5n\gamma$).
	322.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)		0.0740	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2150.58	485.3 $\frac{3}{2}$ 5	77 $\frac{3}{2}$ 4	Q			Mult.: from ($^{18}\text{O},5n\gamma$).
	488.7 $\frac{3}{2}$ 2	100 $\frac{3}{2}$ 4	(E2)		0.0241	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2175.68	485.2 $\frac{3}{2}$ 1	54.8 $\frac{3}{2}$ 24				
	732.2 $\frac{3}{2}$ 5	50.0 $\frac{3}{2}$ 24				
	920.0 $\frac{3}{2}$ 1	59.5 $\frac{3}{2}$ 24	D+Q			Mult.: from ($^{18}\text{O},5n\gamma$).
	1224.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	Q			Mult.: from ($^{18}\text{O},5n\gamma$).
2209.73	954.1 $\frac{3}{2}$ 1	65 $\frac{3}{2}$ 4				Mult.: interpreted by authors in ($^{18}\text{O},5n\gamma$) as $\Delta J=0$ transition.
	1258.2 $\frac{3}{2}$ 1	58 $\frac{3}{2}$ 4	D+Q			Mult.: from ($^{18}\text{O},5n\gamma$).
	1445.5 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(Q)			Mult.: from ($^{18}\text{O},5n\gamma$).
2219.14	1455.0 3	77 12				
	1709.5 3	100 15				
2249.38	1517.5 3	46 7				
	1857.1 3	100 14				
	2249.8 [@] 3	23 3				
2254.62	1404.4 3	33 5				
	1801.3 3	58 9				
	1862.3 3	100 16				
2258.37	1494.3 3	28 4				
	1544.4 3	40 5				
	1638.0 3	25 4				
	1700.0 3	100 16				
	1747.9 3	23 4				
	1866.1 3	46 7				
	2258.7 [@] 3	67 11				
2273.83	1377.0 3	5.6 8	[E1]		1.20×10^{-3}	
	1441.7 3	17 3				
	1473.7 3	9.4 14				
	1509.8 3	25 4	[M1]		0.00414	
	1542.4 3	7.8 12	[E1]		1.12×10^{-3}	
	1559.5 3	61 9				
	1604.5 3	13.3 22				
	1618.9 3	16.1 22				
	1652.8 3	83 13	E2		0.00202	
	1760.3 3	49 7				
	1763.6 3	12.8 17				
	1820.9 3	15.0 22				
	1881.8 3	8.3 13				
	2000.6 3	100 17				
	2273.6 [@] 3	17 3				
2300.06	1063.2 3	56 8	E1		1.74×10^{-3}	
	1403.4 3	11.8 18	[E1]		1.19×10^{-3}	
	1498.8 3	12.4 18				
	1568.5 3	28 4				
	1630.8 3	≈ 100	(E2)		0.00206	
	1644.8 3	11.8 18				
	1717.8 3	25 4				
	1755.3 3	65 10				
	1787.0 3	59 9				
	1812.8 3	20 3				
	1848.0 3	14.7 24				
	1904.7 3	21 3				
	1907.7 3	65 10				
2305.17	203.7 $\frac{3}{2}$ 1	12.8 $\frac{3}{2}$ 7				Mult.: interpreted by authors in ($^{18}\text{O},5n\gamma$) as $\Delta J=1$ transition.
	379.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)		0.0466	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	α	Comments
2310.52	1728.6 3	83 13			
	1857.1 3	100 17			
2338.46	523.3 $\frac{3}{2}$ 1	29.5 $\frac{3}{2}$ 23			
	895.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5			
	1082.6 $\frac{3}{2}$ 1	36.4 $\frac{3}{2}$ 23	D+Q		Mult.: from ($^{18}\text{O},5n\gamma$).
	1387.0 $\frac{3}{2}$ 1	38.6 $\frac{3}{2}$ 23	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
2402.41	480.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.0252	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2459.62	533.7 $\frac{3}{2}$ 1	92 $\frac{3}{2}$ 4			
	615.3 $\frac{3}{2}$ 5	=28 $\frac{3}{2}$			
	1016.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4			
	1203.8 $\frac{3}{2}$ 1	48 $\frac{3}{2}$ 4			
2470.65	260.9 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
2511.25	1797.1 3	88 12			
	1890.5 3	100 16			
2521.86	677.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.01121	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2536.42	231.1 $\frac{3}{2}$ 2	11.0 $\frac{3}{2}$ 4			Mult.: interpreted by authors in ($^{18}\text{O},5n\gamma$) as $\Delta J=1$ transition.
	435.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)	0.0324	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2599.47	448.9 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.0299	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2674.37	656.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.01202	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2746.76	571.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6			
	728.9 $\frac{3}{2}$ 5	9 $\frac{3}{2}$ 3			
	902.4 $\frac{3}{2}$ 1	17 $\frac{3}{2}$ 3			
	1303.9 $\frac{3}{2}$ 1	57 $\frac{3}{2}$ 3	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
2754.21	283.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6			
	544.5 $\frac{3}{2}$ 1	39 $\frac{3}{2}$ 6			
2792.72	256.3 $\frac{3}{2}$ 1	8.7 $\frac{3}{2}$ 4			
	487.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)	0.0242	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
2870.8	468.4 $\frac{3}{2}$ 3	100 $\frac{3}{2}$	(E2)	0.0268	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3029.11	429.7 $\frac{3}{2}$ 3	100 $\frac{3}{2}$	(E2)	0.0335	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3046.00	291.9 $\frac{3}{2}$ 1	70 $\frac{3}{2}$ 10			
	575.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 10			
3067.32	545.8 $\frac{3}{2}$ 1	25 $\frac{3}{2}$ 13			
	1049.9 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 13			
	1222.8 $\frac{3}{2}$ 1	88 $\frac{3}{2}$ 13	D+Q		Mult.: from ($^{18}\text{O},5n\gamma$).
3074.99	282.3 $\frac{3}{2}$ 1	10.2 $\frac{3}{2}$ 5			Mult.: interpreted by authors in ($^{18}\text{O},5n\gamma$) as $\Delta J=1$ transition.
	538.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(E2)	0.0190	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3077.42	617.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 3			
	1059.9 $\frac{3}{2}$ 1	52 $\frac{3}{2}$ 3	D+Q		Mult.: from ($^{18}\text{O},5n\gamma$).
	1233.2 $\frac{3}{2}$ 2	13 $\frac{3}{2}$ 3			
3094.36	340.2 $\frac{3}{2}$ 1	89 $\frac{3}{2}$ 11			
	623.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 11			
3278.63	756.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00882	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3340.3	469.5 $\frac{3}{2}$ 3	100 $\frac{3}{2}$	(E2)	0.0267	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3363.42	616.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4			
	689.0 $\frac{3}{2}$ 5	16 $\frac{3}{2}$ 4			
	841.4 $\frac{3}{2}$ 1	72 $\frac{3}{2}$ 4			
	1345.9 $\frac{3}{2}$ 1	84 $\frac{3}{2}$ 4			
3377.50	302.5 $\frac{3}{2}$ 1	10.3 $\frac{3}{2}$ 6			
	584.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	(E2)	0.01566	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3383.42	847.0 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
3404.48	730.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00952	Other E_{γ} : 729.7 2 from ($\alpha,7n\gamma$).
					Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3419.71	1575.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
3430.80	1586.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
3505.51	476.4 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.0257	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3707.47	330.2 $\frac{3}{2}$ 5	6.9 $\frac{3}{2}$ 8			
	632.5 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	(E2)	0.01308	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3764.73	670.4 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 7			
	718.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 7			
3766.00	689.0 $\frac{3}{2}$ 3	100 $\frac{3}{2}$ 8			

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	α	Comments
3766.00	1091.6 $\frac{3}{2}$ 1	33 $\frac{3}{2}$ 8			I_{γ} : uncertainty of 0 in 2001Sh41 appears to be a misprint; it should presumably be 1 as for other transitions of comparable intensity.
3785.82	1243.8 $\frac{3}{2}$ 4 (20.9)	$\approx 8\frac{3}{2}$			E_{γ} : from level-energy difference.
	354.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 14			
	365.6 $\frac{3}{2}$ 2	79 $\frac{3}{2}$ 14			
	718.8 $\frac{3}{2}$ 1	43 $\frac{3}{2}$ 14			
	1111 $\frac{3}{2}$	$\approx 14\frac{3}{2}$			
	1263.9 $\frac{3}{2}$ 1	43 $\frac{3}{2}$ 7			
	1767.5 $\frac{3}{2}$ 1	43 $\frac{3}{2}$ 7	Q		E_{γ} : fits placement poorly. Mult.: from ($^{18}\text{O},5n\gamma$).
3876.3	536.0 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.0192	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
3884.52	98.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(M1)	5.86	Mult.: from $\alpha(\text{exp})=6.0$ 7 from intensity balance in ($^{18}\text{O},5n\gamma$).
3986.62	603.2 $\frac{3}{2}$ 3	100 $\frac{3}{2}$ 5			
	911.7 $\frac{3}{2}$ 1	55 $\frac{3}{2}$ 5	D		Mult.: from ($^{18}\text{O},5n\gamma$).
4031.17	526.0 $\frac{3}{2}$ 3	17.5 $\frac{3}{2}$ 16	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
	653.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	(E2)	0.01214	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
4075.64	570.1 $\frac{3}{2}$ 1	79 $\frac{3}{2}$ 5	(E2)	0.01662	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
	698.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 16	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
4088.62	810.0 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00763	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
4116.79	232.4 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	(M1)	0.520	Mult.: D intraband γ from ($^{18}\text{O},5n\gamma$).
	1442.4 $\frac{3}{2}$ 1	6.8 $\frac{3}{2}$ 17			
4181.78	777.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00833	Other E_{γ} : 776.6 2 in ($\alpha,7n\gamma$), 776.8 in ^{183}Os IT decay (≈ 30 ns). Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
4181.78+x	(x)				From ^{183}Os IT decay (≈ 30 ns).
4398.57	281.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	(M1)	0.307	Mult.: D intraband γ from ($^{18}\text{O},5n\gamma$).
	513.8 $\frac{3}{2}$ 1	20.7 $\frac{3}{2}$ 17			
	1120.4 $\frac{3}{2}$ 5	$\approx 3.4\frac{3}{2}$	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
4422.58	715.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00996	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
4496.4	620.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.01368	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
4675.01	599.3 $\frac{3}{2}$ 1	42 $\frac{3}{2}$ 6			
	643.9 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
4679.06	692.5 $\frac{3}{2}$ 1	44 $\frac{3}{2}$ 6			
	971.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6	D		Mult.: from ($^{18}\text{O},5n\gamma$).
4716.30	317.6 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	(M1)	0.222	Mult.: D intraband γ from ($^{18}\text{O},5n\gamma$).
	599.6 $\frac{3}{2}$ 1	79 $\frac{3}{2}$ 4			
4814.14	738.5 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	Q		Mult.: from ($^{18}\text{O},5n\gamma$).
	782.7 $\frac{3}{2}$ 1	50 $\frac{3}{2}$ 5			
4931.92	843.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
4934.77	255.8 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	[E1]	0.0360	
4936.88	755.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00886	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
5063.63	347.4 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 6			
	665.0 $\frac{3}{2}$ 1	63 $\frac{3}{2}$ 6			
5067.68	133.0 $\frac{3}{2}$ 1	5.3 $\frac{3}{2}$ 13	(E1)	0.188	B(E1)(W.u.)= 1.6×10^{-7} 5. Mult.: $I(\gamma+\text{ce})(133\gamma)/I(\gamma+\text{ce})(256\gamma)=1$ in ($^{18}\text{O},5n\gamma$) only if mult is E2 for 256 γ and E1 for 133 γ .
	351.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 4	D		Mult.: from ($^{18}\text{O},5n\gamma$).
5167.61	451.3 $\frac{3}{2}$ 1	100 $\frac{3}{2}$ 5	D+Q		Mult.: from ($^{18}\text{O},5n\gamma$).
	1079.0 $\frac{3}{2}$ 1	19.0 $\frac{3}{2}$ 24			Mult.: from ($^{18}\text{O},5n\gamma$).
5192.4	696.0 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.01057	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).
5192.68	770.1 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00849	Mult.: (Q) intraband γ from ($^{18}\text{O},5n\gamma$).
5386.01	711.0 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
5406.26	727.2 $\frac{3}{2}$ 2	100 $\frac{3}{2}$			
5437.63	374.0 $\frac{3}{2}$ 1	60 $\frac{3}{2}$ 20			
	721.3 $\frac{3}{2}$ 3	100 $\frac{3}{2}$ 20			
5477.92	410.4 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
5542.05	474.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
5594.28	426.7 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
5618.04	803.9 $\frac{3}{2}$ 1	100 $\frac{3}{2}$			
5698.08	761.2 $\frac{3}{2}$ 1	100 $\frac{3}{2}$	(E2)	0.00871	Mult.: Q intraband γ from ($^{18}\text{O},5n\gamma$).

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Os})$ (continued)

E(level)	$E\gamma^{\dagger}$	$I\gamma^{\dagger}$	E(level)	$E\gamma^{\dagger}$	$I\gamma^{\dagger}$
5874.06	396.2 ‡ 1	100 ‡	6412.24	507.3 ‡ 1	100 ‡
5904.94	310.7 ‡ 1	100 ‡ 6	6461.0	843.0 ‡ 3	100 ‡
	737.3 ‡ 1	32 ‡ 3	6594.71	314.0 ‡ 1	88 ‡ 6
5977.7	785 ‡ 1	100 ‡		720.6 ‡ 1	100 ‡ 6
6173.51	787.5 ‡ 1	100 ‡		1052.5 ‡ 1	69 ‡ 6
6280.92	407.1 ‡ 1	100 ‡ 7	6697.49	416.7 ‡ 1	100 ‡ 8
	803.1 ‡ 1	29 ‡ 4		823.3 ‡ 1	42 ‡ 8

† From ^{183}Ir ε decay, except as noted.

‡ From $^{170}\text{Er}(^{18}\text{O},5n\gamma)$.

§ From $\gamma(\theta)$ in $\text{W}(\alpha,7n\gamma), \text{Re}(p,3n\gamma)$, assigning $\Delta\pi=(\text{no})$ for intraband transitions.

$^{\#}$ From $\text{W}(\alpha,xn\gamma), \text{Re}(p,3n\gamma)$; uncertainty unstated by authors.

$^{\circledast}$ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)

Bands for ¹⁸³Os

^{183}Os IT Decay (9.9 h) 1960Ne03,1968Ha39,1970Ak01

Parent ^{183}Os : E=170.70 7; $J\pi=1/2^-$; $T_{1/2}=9.9$ h 3; %IT decay=15 2.

^{183}Os -%IT decay: the mean of 0.16 2 (1960Ne03) and 0.14 2 (1968Ha39). Other values: 0.29 10 (1988Ro13), 0.16 (1970Ak01).

Total energy release for this decay scheme is 23.8 19 cf. QxBR=25.6 34.

 ^{183}Os Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0	9/2+		
170.7 1	1/2-	9.9 h 3	$T_{1/2}$: from 1960Ne03. Other values: 10 h 1 (1958Fo47), 9.1 h (1976Ka22).

[†] From $E\gamma$.

[‡] From Adopted Levels.

 $\gamma(^{183}\text{Os})$

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger}$	Mult.	α	Comments
170.7 1	170.7	0.478 7	M4	208	$I\gamma$: from $I(\gamma+ce)=100$ and α . Mult.: from L1:L2:L3:M3:N3=0.69:0.21:1.00:0.39:0.17 (1960Ne03), K:L1:L2:L3=0.62:0.59:0.126:1.0 (1968Ha39), K:L1:L2:L3=0.7:0.6:0.15:1.0 (1970Ak01).

[†] From Adopted Gammas.

[‡] For absolute intensity per 100 decays, multiply by 0.15 2.

Decay Scheme

Intensity: $I(\gamma+ce)$
per 100 parent decays
%IT=15 2

^{183}Os IT Decay (≈ 30 ns) 1985Pe07

Parent ^{183}Os : E=4180.2+x; $J\pi=ge41/2$; $T_{1/2}=30$ ns; %IT decay=100.

1985Pe07: ≈ 30 ns isomer produced in $^{50}\text{Ti}(^{136}\text{Xe}, 3n\gamma)$, E=622 MeV; pulsed beam (pulse width ≈ 1 ns, pulse separation 110 ns); recoil shadow technique to differentiate delayed and prompt radiation; shielded array of 2 Ge (one Compton-suppressed) and 10 NaI detectors; measured $E\gamma$, $I\gamma$, isomer $T_{1/2}$, γ multiplicity.

Total energy release for this decay scheme is 3470 223 cf. QxBR=4180.

 ^{183}Os Levels

E(level) [‡]	$J\pi^{\dagger}$	$T_{1/2}$	Comments
0.0 §	9/2+		
96.3 #	11/2+		
219.2 §	13/2+		
375.3 #	15/2+		
541.3 §	17/2+		
763.6 #	19/2+		

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^{183}Os IT Decay (≈ 30 ns) $^{1985}\text{Pe07}$ (continued) **^{183}Os Levels (continued)**

E(level) [‡]	J π [†]	T _{1/2}	Comments
951.0 §	21/2+		
1254.7 #	23/2+		
1442.1 §	25/2+		
1842.5 #	27/2+		
2016.7 §	29/2+		
2519.9 #	31/2+		
2673.7 §	33/2+		
3276.6 #	35/2+		
3403.4 §	37/2+		
4180.2 #	41/2+		
4180.2+x	$\geq 41/2$	≈ 30 ns	%IT=100.

[†] From Adopted Levels.[‡] From least-squares fit to E γ , assigning equal weight to all E γ data.§ (A): 9/2[624], $\alpha=+1/2$ g.s. band.# (B): 9/2[624], $\alpha=-1/2$ g.s. band. **$\gamma(^{183}\text{Os})$**

E γ	E(level)	I γ [‡]	Mult. [†]	δ [†]	α	Comments
x	4180.2+x					
122.7	219.2	17 2	(M1+E2)	-0.42 14	2.95 12	
156.0	375.3	20 2	(M1+E2)	-0.42 14	1.46 8	
x159.2		22 2				
165.8	541.3	19 2	M1+E2	-0.33 8	1.27 4	
187.4 §	951.0	26 § 3	(M1+E2)		0.7 3	I γ : implied branching is very much larger than adopted value; γ is probably a doublet, the second component being the known 25/2+ to 23/2+ transition from the 1442 level.
	1442.1	26 § 3	(M1+E2)		0.7 3	Placed by evaluator; see comment on 187 γ from 952 level.
219.2	219.2	65 7	(E2)		0.245	
222.1	763.6	20 2	(M1+E2)	-0.23 5	0.572 12	
x232.1		43 4				
x255.1		26 3				
279.2	375.3	19 2	(E2)		0.1135	
x281.2		48 5				
x317.5		56 6				
321.9	541.3	48 5	E2		0.0743	
x351.0		46 5				
x386.1		35 4				
388.7	763.6	30 3	(E2)		0.0437	
409.7	951.0	32 3	(E2)		0.0379	
x434.4		37 4				
x450.8		28 3				
x462.6		33 3				
x487.2		20 2				
491.1 §	1254.7	54 § 6	(E2)		0.0238	
	1442.1	54 § 6	(E2)		0.0238	
574.6	2016.7	17 2	(E2)		0.01631	
587.8	1842.5	11 2	(E2)		0.01547	
x647.8		30 3				
657.0	2673.7	24 3	(E2)		0.01201	
677.4	2519.9	11 2	(E2)		0.01122	
729.7	3403.4		(E2)		0.00953	
756.7	3276.6	13 2	(E2)		0.00882	
776.8	4180.2	11 2	(E2)		0.00834	

[†] From Adopted Gammas.[‡] Absolute intensity per 100 decays.

§ Multiply placed; undivided intensity given.

x γ ray not placed in level scheme.

¹⁸³Os IT Decay (≈30 ns) 1985Pe07 (continued)

Decay Scheme

Intensities: I(γ+ce) per 100 parent decays
& Multiply placed; undivided intensity given
%IT=100

¹⁸³Ir ε Decay 1988Ro13

Parent ¹⁸³Ir: E=0.0; Jπ=5/2-; T_{1/2}=58 min 6; Q(g.s.)=3460 50; %ε+%β⁺ decay=100.

Other measurements: 1975La22, 1961Di04, 1961La05.

1988Ro13: Source produced by bombardment of Pt-B alloy target with 200 MeV p or 280 MeV ³He; Isocele mass separator, two HPGe detectors (FWHM 1.9 keV at 1.3 MeV) for γ spectroscopy (Eγ=15-2500), magnetic spectrometer (for

E(ce)=44-340 keV) and cooled Si(Li) detector for electron measurements; measured Eγ, Iγ, I(ce), γγ coin.

Total energy release for this decay scheme is 3556 323 cf. QxBR=3460 50.

¹⁸³Os Levels

E(level) [†]	Jπ [‡]	T _{1/2}	E(level) [†]	Jπ [‡]
0.0	9/2+		748.76 17	(11/2-)
96.23 11	11/2+		763.82 12	(7/2)-
170.70 7	1/2-	9.9 h [‡] 3	792.93 17	(11/2)+
258.32 8	3/2-		800.56 13	(5/2)+
273.04 8	5/2-		832.03 11	(3/2, 5/2, 7/2)-
392.48 8	(7/2)-		850.20 13	(3/2, 5/2, 7/2)-
395.19 10	1/2-		896.76 14	7/2+
453.05 9	3/2-		944.31 12	(3/2, 5/2)-
486.99 10	7/2-		964.83 16	(3/2, 5/2)-
509.88 11	9/2-		1039.19 22	(5/2, 7/2, 9/2)-
512.54 12	7/2-		1045.95 12	(5/2)+
513.09 8	5/2-		1054.34 14	(5/2, 7/2, 9/2)-
544.38 9	5/2-		1180.87 17	(3/2, 5/2)-
558.15 14	(9/2)-		1236.76 15	(7/2)+
582.21 10	(3/2)-		1252.96 15	5/2+
620.78 10	7/2-		1295.46 18	(5/2, 7/2)+
646.88 22	9/2-		1332.58 23	(1/2, 3/2, 5/2)-
655.32 11	(7/2)-		1911.52 17	(3/2-, 5/2, 7/2-)
669.09 9	(5/2)-		1921.03 23	1/2, 3/2, 5/2-
714.01 11	9/2+		1977.95 15	(3/2)+
731.58 11	7/2+		2083.43 23	(1/2, 3/2, 5/2-)

Continued on next page (footnotes at end of table)

^{183}Ir ε Decay 1988Ro13 (continued) **^{183}Os Levels (continued)**

$E(\text{level})^\dagger$	$J\pi^\ddagger$
2219.11 24	(5/2-, 7/2)
2249.34 23	(5/2+, 7/2)
2254.58 19	3/2(-), 5/2, 7/2(-)
2258.31 14	(7/2)
2273.79 10	(7/2)-
2300.03 11	(5/2)-
2310.49 23	3/2, 5/2, 7/2(-)
2511.21 23	(5/2+, 7/2)

† From least-squares fit to $E\gamma$ omitting transitions whose placement is uncertain.

‡ From Adopted Levels.

 β^+, ε Data

$E\varepsilon$	$E(\text{level})$	$I\beta^+^\ddagger$	$I\varepsilon^\ddagger$	$\text{Log } ft$	$I(\varepsilon+\beta^+)^\ddagger^\ddagger$	Comments
(950 50)	2511.21		0.46 8	7.13 11	0.46 8	
(1150 50)	2310.49		0.54 9	7.24 10	0.54 9	
(1160 50)	2300.03		8.1 10	6.07 8	8.1 10	
(1190 50)	2273.79		7.6 10	6.12 9	7.6 10	
(1200 50)	2258.31		1.6 3	6.81 10	1.6 3	
(1210 50)	2254.58		0.84 13	7.09 9	0.84 13	
(1210 50)	2249.34		0.54 9	7.28 10	0.54 9	
(1240 50)	2219.11		0.23 4	7.68 10	0.23 4	
(1380 50)	2083.43		0.53 8	7.41 9	0.53 8	
(1480 50)	1977.95	0.0016 9	2.2 4	6.86 10	2.2 4	
(1540 50)	1921.03	0.0007 4	0.61 11	7.45 10	0.61 11	
(1550 50)	1911.52	0.0012 6	0.92 13	7.28 9	0.92 13	
(2130 50)	1332.58	0.016 4	0.74 13	7.65 9	0.76 13	
(2160 50)	1295.46	0.0030 15	0.13 6	8.44 21	0.13 6	
(2210§ 50)	1252.96					$I(\varepsilon+\beta^+)$: more intensity deexcites than feeds this level.
(2280 50)	1180.87	0.010 2	0.32 6	8.08 10	0.33 6	
(2410 50)	1054.34	0.069 15	1.5 3	7.45 10	1.6 3	
(2410 50)	1045.95	0.048 12	1.04 22	7.62 11	1.09 23	
(2420 50)	1039.19	0.0055 13	0.118 23	8.57 10	0.124 24	
(2500 50)	964.83	0.054 12	0.98 20	7.68 11	1.03 21	
(2520 50)	944.31	0.067 13	1.15 19	7.61 9	1.22 20	
(2560 50)	896.76	0.066 19	1.0 3	7.68 13	1.1 3	
(2610 50)	850.20	0.048 9	0.68 10	7.87 9	0.73 11	
(2630 50)	832.03	0.14 2	1.9 3	7.44 9	2.0 3	
(2660 50)	800.56	0.14 4	1.8 5	7.48 13	1.9 5	
(2670 50)	792.93	0.103 19	1.30 20	7.61 9	1.40 22	
(2700 50)	763.82	0.054 16	0.65 18	7.93 14	0.70 20	
(2710 50)	748.76	0.014 3	0.16 4	8.55 12	0.17 4	
(2730 50)	731.58	0.10 4	1.1 5	7.71 19	1.2 5	
(2750 50)	714.01	<0.02	<0.8	>9.31u	<0.8	
(2790 50)	669.09	0.20 4	2.0 4	7.47 10	2.2 4	
(2800 50)	655.32	0.08 3	0.8 3	7.86 16	0.9 3	
(2810 50)	646.88	0.096 22	0.92 20	7.81 11	1.02 22	
(2840 50)	620.78	0.30 7	2.8 6	7.34 11	3.1 7	
(2880 50)	582.21	0.26 6	2.2 4	7.44 10	2.5 5	
(2900 50)	558.15	0.18 6	1.5 4	7.62 14	1.7 5	
(2920 50)	544.38	0.31 12	2.5 10	7.41 18	2.8 11	
(2950 50)	513.09	0.33 12	2.6 9	7.41 16	2.9 10	
(2950 50)	512.54	0.20 12	1.5 9	7.6 3	1.7 10	
(2950 50)	509.88	0.13 5	1.0 4	7.83 17	1.1 4	
(2970 50)	486.99	0.59 18	4.3 13	7.19 15	4.9 15	
(3010 50)	453.05	0.62 17	4.3 11	7.20 13	4.9 13	
(3060 50)	395.19	0.26 12	1.6 8	7.64 22	1.9 9	
(3070 50)	392.48	0.34 22	2.2 14	7.5 3	2.5 16	
(3200 50)	258.32	2.7 13	14 7	6.74 21	17 8	

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^{183}Ir ϵ Decay 1988Ro13 (continued) β^+, ϵ Data (continued)

E_ϵ	E(level)	$I\beta^{\pm\dagger}$	$I\epsilon^{\ddagger}$	Log ft	$I(\epsilon+\beta^+)^{\dagger\ddagger}$	Comments
(3360 50)	96.23	0.23 15	1.0 6	7.9 3	1.2 8	
(3460 § 50)	0.0	<1.1	<12	>8.5 1u	<13	$I(\epsilon+\beta^+)$: calculated assuming log f^{lu}_t >8.5.

$\dagger$ Calculated from decay scheme intensity balances, assigning $0.5I\gamma \pm 0.5I\gamma$ to transitions with uncertain placements. About 20% of observed transition intensity remains unplaced, so the weaker feedings may be unreliable.

$\ddagger$ Absolute intensity per 100 decays.

§ Existence of this branch is questionable.

 $\gamma(^{183}\text{Os})$

$I\gamma$ normalization: assuming $\Sigma(I(\gamma+\epsilon)$ to g.s.+171 level)=93% 7 based on $I\beta(\text{g.s.})<13\%$ if log f^{lu}_t >8.5 and negligible expected feeding of 171 level ($\Delta J=3$, $\Delta\pi=\text{yes}$). The $Q(\beta^-)$ value and complexity of the decay scheme suggest that significant unobserved transition intensity may exist.

$E\gamma^\dagger$	E(level)	$I\gamma^{\ddagger c}$	Mult. §	$\delta^{\#}$	α	$I(\gamma+\epsilon)^c$	Comments
14.7 2	273.04		[M1]		276 12	97 14	$I(\gamma+\epsilon)$: calculated from the intensity balance at the 273 level assuming no direct ϵ feeding to that level. Authors estimated $I(\gamma+\epsilon)=60$ from coincidence intensities.
26.1 2	513.09	0.33 5	M1(+E2)	<0.1	62 12		Mult., δ : $I(\gamma+\epsilon)=21.0$ from authors' coin spectrum analysis implies $\alpha(\text{exp})=63$ 9 and $\delta<0.1$.
31.6 2	544.38	0.120 18	M1+E2	0.34 +12-15	120 70		Mult., δ : $I(\gamma+\epsilon)=15.0$ from authors' coin spectrum analysis implies $\alpha(\text{exp})=124$ 19 and $\delta=0.34$.
57.9 2	453.05	=0.50@	M1+E2	0.4 4	11 11		Mult., δ : $I(\gamma+\epsilon)=5.4$ from authors' coin spectrum analysis implies $\alpha(\text{exp})=11$ and $\delta=0.4$.
$\times$ 84.7 2		0.62 9					
87.5 1	258.32	54 8	E2+M1	0.85 +18-16	7.96 14		% $I\gamma=5.3$ 6 assuming adopted decay scheme normalization. Mult.: L1:L2:L3:M:N+=24 4:61 9; 52 8:35 5:9.7 15; $\alpha(\text{L2})\text{exp}=1.13$ 24. δ : from $\alpha(\text{L2})\text{exp}$.
91.1 2	544.38	0.80 12	M1		7.35 12		Mult.: $\alpha(\text{L1})\text{exp}=1.25$ 25.
96.2 2	96.23	6.1 9	M1+E2	-0.39 4	6.13 10		% $I\gamma=0.63$ 10 assuming adopted decay scheme normalization. Mult., δ : L1:L2=4.4 7:1.8 3; sign of δ from Adopted Gammas. $\alpha(\text{L1})\text{exp}=0.72$ 15 implies $\delta=0.3$ +4-3.
102.2 1	273.04	14.0 21	E2		3.99		% $I\gamma=1.37$ 25 assuming adopted decay scheme normalization. Mult.: from L1:L2:L3:M:N+=2.1 3; 17.0 26:16.0 24:9.9 15:7.5 11; $\alpha(\text{L})\text{exp}=2.5$ 5.
107.6 2	620.78	3.9 6	M1(+E2)	<0.11	4.55		Mult.: L1:L2=1.00 15:0.20 3; $\alpha(\text{L1})\text{exp}=0.26$ 5.
110.8 2	655.32	2.2 3	[E2]		2.89 5		
118.0 2	513.09	=1.0@	[E2]		2.26		
119.9 2	512.54	3.4 5	M1(+E2)	≤ 0.52	3.22 14		Mult.: $\alpha(\text{K})\text{exp}=2.9$ 6.
124.3 2	669.09	3.7 6	E2(+M1)	≥ 3.4	1.89 6		Mult.: $\alpha(\text{K})\text{exp}=0.57$ 12.
128.9 2	582.21	4.5 7	M1(+E2)	0.4 4	2.6 3		Mult.: $\alpha(\text{K})\text{exp}=2.0$ 4.

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^{183}Ir ϵ Decay 1988Ro13 (continued) $\gamma(^{183}\text{Os})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger c}$	Mult. [§]	$\delta^{\#}$	α	Comments
136.8 1	395.19	13.0 20	M1+E2	0.4 1	2.16 7	Mult.: K:L1:L2=15.0 23:3.2 5:0.56 8. $\alpha(K)\text{exp}=1.15\ 24$ implies $\delta=1.0\ +4-3$.
137.4 2	792.93	=0.50 [@]	[M2]		15.40	
151.7 2	544.38	0.46 7	[M1+E2]		1.3 5	
156.2 2	669.09	0.83 12	[M1+E2]		1.2 4	
165.7 2	558.15	8.9 14	M1+E2	0.7 4	1.11 18	Mult.: $\alpha(K)\text{exp}=0.85\ 18$.
167.7 2	620.78	2.0 3	[E2]		0.611	
168 1	655.32	=0.8 [@]	[M1+E2]		0.9 4	
170.7 1	170.70		M4		208	$E\gamma$: isomeric transition populated primarily directly in the reaction. Mult.: K:L1:L2:L3:M=6.1 9:6.0 9:1.20 18: 9.1 14:6.1 9.
176.6 2	832.03	0.78 12	[M1+E2]		0.8 3	
179.8 2	453.05	3.1 5	[M1+E2]		0.8 3	
181.8 2	669.09	1.70 26	[M1+E2]		0.7 3	
^x 183.2 2		0.33 5				
190.7 2	748.76	0.78 12	(M1+E2)		0.6 3	
194.7 1	453.05	15.0 23	M1		0.850	Mult.: K:L1=13.0 20:2.3 3; $\alpha(K)\text{exp}=0.87\ 18$.
^x 198.2 2		0.54 8				
^x 199.8 2		0.52 8				
211.2 2	832.03	1.9 3	[M1+E2]		0.48 20	
213.9 2	486.99	5.0 8	[M1+E2]		0.46 20	
228.6 1	486.99	66 10	E2		0.213	Mult.: $\alpha(K)\text{exp}=0.13\ 3$.
236.8 1	509.88	16.0 24	E2		0.190	Mult.: $\alpha(K)\text{exp}=0.17\ 4$. $\delta(M1,E2)=2.0\ +17-6$ from $\alpha(K)\text{exp}$.
239.9 1	513.09	17 3	M1		0.477	Mult.: $\alpha(K)\text{exp}=0.48\ 10$.
245.2 2	1045.95	0.49 7	[M1+E2]		0.31 14	
249.7 2	832.03	2.0 3	[M1+E2]		0.29 14	
250.7 2	763.82	6.3 9	[M1+E2]		0.29 14	
253 1	763.82	=1.2 [@]	[M1+E2]		0.28 13	
254.4 2	646.88	8.1 12	M1 (+E2)&		0.28 13	Mult.: $\alpha(K)\text{exp}(254.4+254.9)=0.34\ 7$.
254.9 1	513.09	12.0 18	M1&		0.403	Mult.: $\alpha(K)\text{exp}(254.4+254.9)=0.34\ 7$.
267.7 2	850.20	1.20 18	[M1+E2]		0.24 12	
271.3 1	544.38	15.0 23	M1		0.340	Mult.: $\alpha(K)\text{exp}=0.32\ 7$.
273.8 2	669.09	3.6 5	E2 ^a		0.1205	Mult.: $\alpha(K)\text{exp}<0.14$.
276.7 ^e 2	669.09	=1.2 ^{@e}	[M1+E2]		0.22 11	
	763.82	0.8 ^{@e} 4	[M1+E2]		0.22 11	
282.5 1	453.05	47 7	M1 (+E2)	0.11 +52-11	0.30 6	Mult.: K:L1=11.5 17:3.0 5; $\alpha(K)\text{exp}=0.25\ 5$.
286.1 2	544.38	9.8 15	M1		0.294	Mult.: K:L1=11.5 17:3.0 5; $\alpha(K)\text{exp}=0.30\ 6$.
309.2 2	582.21	1.8 3	M1		0.238	Mult.: $\alpha(K)\text{exp}=0.26\ 5$.
314.4 2	1045.95	4.5 7	M1+E2	0.5 +4-5	0.20 4	Mult.: $\alpha(K)\text{exp}=0.16\ 3$.
319.1 2	832.03	6.4 10	M1		0.219	Mult.: $\alpha(K)\text{exp}=0.23\ 5$.
323.9 2	582.21	5.9 9	M1		0.210	Mult.: $\alpha(K)\text{exp}=0.22\ 5$.
^x 330.7 2		1.1 2				
332.0 2	1045.95	1.10 17	[E2]		0.0679	
342.4 1	513.09	21 3	E2		0.0622	$\alpha(K)\text{exp}=0.036\ 7$.
345 1	832.03	=1.6 [@]	[M1+E2]		0.12 6	
347.8 1	620.78	25 4	M1+E2	0.9 +4-3	0.122 21	Mult.: $\alpha(K)\text{exp}=0.100\ 21$.
356.2 ^e 2	748.76	=0.25 ^{@e}	(E2)		0.0556	
	1252.96	=1.1 ^{@e}	M1&		0.1628	Mult.: $\alpha(K)\text{exp}(\text{doublet})=0.046\ 10$.
^x 361.7 2		1.4 2	E2+M1	1.9 +13-5	0.076 14	Mult.: $\alpha(K)\text{exp}=0.057\ 12$.
^x 370.4 2		0.43 7				
^x 371.5 2		0.64 10				
373.8 2	544.38	2.0 3	E2		0.0486	Mult.: $\alpha(K)\text{exp}<0.05$. $\delta(M1,E2)>1$ from $\alpha(K)\text{exp}$.
379.0 2	832.03	1.7 3	E2+M1	1.7 +11-4	0.070 14	Mult.: $\alpha(K)\text{exp}=0.053\ 11$.
392.5 1	392.48	100 15	E1		0.01307	% $I\gamma=9.8\ 19$ assuming adopted decay scheme normalization. Mult.: $\alpha(K)\text{exp}=0.013\ 3$.
396.1 2	669.09	2.0 3	M1		0.1226	Mult.: $\alpha(K)\text{exp}=0.125\ 26$.

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¹⁸³Ir ε Decay 1988Ro13 (continued)

 $\gamma(^{183}\text{Os})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger c}$	Mult. [§]	$\delta^{\#}$	α	Comments
^x 409.1 2		0.47 7				
410.7 2	669.09	5.8 9	[M1+E2]		0.07 4	$\alpha(K)\text{exp}=0.036\ 7$ for doublet.
411.5 1	582.21	11.0 17	E2(+M1)&		0.07 4	Mult.: $\alpha(K)\text{exp}(410.7+411.5)=0.026\ 7$.
^x 417.1 2		0.85 13				
^x 434.1 2		0.37 6				
^x 436.9 2		0.76 11				
^x 442.1 2		0.52 8				
^x 443.8 2		0.48 7				
^x 450.6 2		1.7 3	M1(+E2)	0.4 4	0.079 15	Mult.: $\alpha(K)\text{exp}=0.065\ 14$.
457.9 ^e 2	850.20	=3.8@e	(E2)&		0.0284	Mult.: $\alpha(K)\text{exp}(\text{doublet})=0.029\ 6$; this is the dominant placement.
	944.31	=1.4@e	[M1+E2]		0.06 3	
461.9 2	558.15	4.0 6	E1		0.00910	Mult.: $\alpha(K)\text{exp}=0.0075\ 16$.
^x 464.9 2		0.71 11				
^x 470.5 2		0.60 9				
490.7 2	763.82	3.5 5	E2(+M1)	>2	0.028 5	Mult.: $\alpha(K)\text{exp}=0.020\ 4$.
494.9 2	1295.46	3.2 5	E2+M1	1.7 +11-5	0.035 7	Mult.: $\alpha(K)\text{exp}=0.028\ 6$.
498.5 1	669.09	12.0 18	E2		0.0230	Mult.: $\alpha(K)\text{exp}=0.017\ 4$.
^x 501.7 2		0.45 7				
505.1 2	1236.76	1.40 21	M1+E2	1.0 +5-3	0.043 9	Mult.: $\alpha(K)\text{exp}=0.036\ 7$.
512.5 2	512.54	23 3	E1		0.00727	Mult.: $\alpha(K)\text{exp}=0.0078\ 16$.
^x 519.5 2		0.66 10				
521.3 2	1252.96	4.0 6	(M1)&		0.0595	Mult.: $\alpha(K)\text{exp}(521.3+522.8)=0.096\ 10$.
522.8 2	1236.76	3.4 5	(M1)&		0.0590	Mult.: $\alpha(K)\text{exp}(521.3+522.8)=0.096\ 10$.
544.6 2	1054.34	0.88 13				
551.5 2	944.31	0.85 13				
552.2 2	1039.19	1.20 18	M1		0.0512	Mult.: $\alpha(K)\text{exp}=0.058\ 12$.
558.4 ^d 2	558.15	3.0 5	E1		0.00607	Mult.: $\alpha(K)\text{exp}<0.013\ 3$.
^x 559.3 2		0.93 14				
567.2 2	1054.34	1.80 27	M1		0.0477	Mult.: $\alpha(K)\text{exp}=0.050\ 11$.
573.8 2	832.03	5.2 8	(E2)		0.01637	Mult.: $\alpha(K)\text{exp}=0.0077\ 16$.
581.4 ^d 2	1295.46	0.58 9				
^x 585.3 2		2.0 3	E2+M1	1.4 +8-4	0.025 5	Mult.: $\alpha(K)\text{exp}=0.020\ 4$.
592.0 2	850.20	3.5 5	E2(+M1)	1.9 +24-6	0.021 5	Mult.: $\alpha(K)\text{exp}=0.017\ 4$.
617.7 2	714.01	18.0 27	M1(+E2)	0.4 +5-4	0.035 8	Mult.: $\alpha(K)\text{exp}=0.029\ 6$.
^x 620.2 2		1.8 3				
^x 622.8 2		2.1 3	E2+M1	2.2 +45-8	0.018 4	Mult.: $\alpha(K)\text{exp}=0.014\ 3$.
635.2 2	731.58	2.2 3	[E2]		0.01295	
^x 637.2 2		3.7 6				
^x 639.0 2		0.79 12				
655.4 2	655.32	14.0 21	E1		0.00437	Mult.: $\alpha(K)\text{exp}=0.0043\ 9$.
^x 661.6 2		0.96 14				
^x 663.8 2		0.89 13				
671.2 2	944.31	6.7 10	E2+M1	1.2 +6-4	0.019 4	Mult.: $\alpha(K)\text{exp}=0.016\ 3$.
^x 678.3 2		2.6 4				
^x 679.9 2		4.3 7				
682.5 2	1977.95	1.9 3	M1		0.0296	Mult.: $\alpha(K)\text{exp}=0.026\ 6$.
685.8 2	944.31	2.5 4				
^x 686.5 2		2.0 3				
691.9 2	964.83	6.5 10	E2+M1	1.2 +7-4	0.018 4	Mult.: $\alpha(K)\text{exp}=0.015\ 3$.
696.9 2	792.93	4.6 7	E2		0.01054	Mult.: $\alpha(K)\text{exp}=0.0065\ 14$.
706.4 2	964.83	2.3 3	M1		0.0271	Mult.: $\alpha(K)\text{exp}=0.026\ 5$.
714.1 2	714.01	6.1 9	E2+M1	1.0 +6-4	0.018 4	Mult.: $\alpha(K)\text{exp}=0.015\ 3$.
^x 718.7 2		2.1 3	E2+M1	1.1 +7-4	0.017 4	Mult.: $\alpha(K)\text{exp}=0.014\ 3$.
724.9 2	1977.95	8.5 13	M1+E2	0.8 +5-4	0.019 4	Mult.: $\alpha(K)\text{exp}=0.016\ 3$.
727.9 2	1180.87	1.40 21				
731.6 2	731.58	28 4	E2+M1	1.0 +7-4	0.017 4	Mult.: $\alpha(K)\text{exp}=0.014\ 3$.
^x 747.3 2		1.4 2				
748.9 ^d 2	748.76	0.36 5	[E1]		0.00336	
^x 753.1 2		1.4 2				
^x 754.2 2		0.79 12				
^x 757.8 2		0.73 11				
^x 759.9 2		1.3 2				

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^{183}Ir ϵ Decay 1988Ro13 (continued) $\gamma(^{183}\text{Os})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger c}$	Mult. [§]	$\delta^{\#}$	α	Comments
766.1 ^d 2	1039.19	1.8 3	b			Mult.: $\alpha(K)\text{exp}=0.111$ 23.
^x 769.0 2		0.73 11				
773.8 ^d 2	944.31	1.60 24				
781.3 2	1054.34	13.0 20	E2 (+M1)	≥ 1.7	0.0099 17	Mult.: $\alpha(K)\text{exp}=0.0077$ 16.
785.6 2	1180.87	2.0 3	E2		0.00814	Mult.: $\alpha(K)\text{exp}=0.0050$ 11.
^x 790.8 2		1.1 2				
792.6 ^d 2	792.93	2.8 4				
794.2 2	964.83	1.5 14				
800.3 2	800.56	27 4	E2		0.00783	Mult.: $\alpha(K)\text{exp}=0.0048$ 10.
^x 806.3 2		3.7 6	E2 (+M1)	2.0 +47-7	0.0100 21	Mult.: $\alpha(K)\text{exp}=0.0081$ 17.
^x 818.4 2		1.5 2	M1 (+E2)	0.6 6	0.016 4	Mult.: $\alpha(K)\text{exp}=0.013$ 3.
^x 835.0 2		1.7 3				
^x 837.0 2		1.1 2				
^x 838.8 2		2.4 4				
^x 853.8 2		3.1 5	E2 (+M1)	≥ 1.6	0.0082 14	Mult.: $\alpha(K)\text{exp}=0.0065$ 14.
^x 868.9 2		3.5 5	M1+E2+E0 ^b		0.011 5	Mult.: $\alpha(K)\text{exp}=0.029$ 6.
^x 889.1 2		1.6 2				
^x 892.0 2		2.8 4	M1		0.01499	Mult.: $\alpha(K)\text{exp}=0.014$ 3.
896.8 2	896.76	15.0 23	M1+E2	1.5 +14-5	0.0088 18	Mult.: $\alpha(K)\text{exp}=0.0073$ 15.
^x 899.5 2		1.2 2				
^x 901.8 2		1.1 2				
^x 906.7 2		1.9 3				
^x 911.9 2		1.1 2				
^x 917.1 2		1.7 3				
931.9 2	1977.95	6.0 9	M1+E2	1.5 +15-5	0.0081 16	Mult.: $\alpha(K)\text{exp}=0.0067$ 14.
^x 936.6 2		1.0 2				
^x 940.9 2		0.96 14				
^x 942.0 2		2.3 3				
^x 948.5 2		2.3 3				
^x 950.1 2		1.7 3				
^x 955.7 2		3.4 5	E2+M1	1.8 +28-6	0.0071 14	Mult.: $\alpha(K)\text{exp}=0.0059$ 12.
^x 961.2 2		1.9 3				
^x 971.0 2		1.2 2				
^x 978.3 2		1.4 2				
^x 1008.2 3		2.6 4				
^x 1024.1 3		3.9 6				
^x 1029.5 3		2.3 3				
^x 1032.9 3		3.7 6				
^x 1037.2 3		1.8 3	M1		0.01026	Mult.: $\alpha(K)\text{exp}=0.0111$ 23.
^x 1039.7 3		1.4 2				
1045.9 3	1045.95	10.0 15	(E2)		0.00454	Mult.: $\alpha(K)\text{exp}=0.0020$ 4.
^x 1057.8 3		1.2 2				
1059.7 3	1332.58	2.7 4				
1063.2 3	2300.03	9.5 14	E1		1.74×10^{-3}	Mult.: $\alpha(K)\text{exp}<0.0021$ 4.
1074.1 3	1332.58	5.1 8	M1+E2	0.9 +7-5	0.0071 16	Mult.: $\alpha(K)\text{exp}=0.0059$ 12.
^x 1093.7 3		1.2 2				
^x 1096.0 3		3.3 5				
^x 1112.7 3		1.7 3				
^x 1129.3 3		2.1 3	(M1)&		0.00829	Mult.: $\alpha(K)\text{exp}(1129.3+1131.5)=0.0098$ 20.
^x 1131.5 3		2.0 3	(M1)&		0.00825	Mult.: $\alpha(K)\text{exp}(1129.3+1131.5)=0.0098$ 20.
1140.2 3	1236.76	1.7 16				
^x 1177.4 3		2.5 4				
^x 1254.2 3		3.0 5				
^x 1260.7 3		3.1 5				
^x 1291.1 3		1.6 2				
^x 1308.4 3		2.0 3				
^x 1310.9 3		2.4 4				
^x 1354.1 3		2.0 3				
1377.0 3	2273.79	1.00 15				
1399.1 3	1911.52	4.6 7				
1403.4 3	2300.03	2.0 3				
1404.4 3	2254.58	1.50 23				
^x 1419.7 3		2.0 3				

Continued on next page (footnotes at end of table)

^{183}Ir α Decay 1988Ro13 (continued) $\gamma(^{183}\text{Os})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\ddagger c}$	Mult. [§]	α	Comments
^x 1422.5 3		1.6 2			
1424.1 3	1911.52	1.30 20			
1441.7 3	2273.79	3.0 5			
1455.0 3	2219.11	1.00 15			
1458.8 3	1911.52	1.75 11			
1468.0 3	1921.03	5.4 8			
1473.7 3	2273.79	1.70 26			
^x 1478.8 3		3.8 6			
1494.3 3	2258.31	1.60 24			
1498.8 3	2300.03	2.1 3			
^x 1500.8 3		2.1 3			
1509.8 3	2273.79	4.5 7			
1517.5 3	2249.34	1.60 24			
1519.0 3	1911.52	1.70 26			
^x 1523.7 3		1.6 2			
1525.8 3	1921.03	0.85 13			
^x 1532.1 3		1.8 3			
1542.4 3	2273.79	1.40 21			
1544.4 3	2258.31	2.3 3			
1559.5 3	2273.79	11.0 17			
1568.5 3	2300.03	4.8 7			
^x 1598.7 3		2.3 3			
1604.5 3	2273.79	2.4 4			
1618.9 3	2273.79	2.9 4			
1630.8 ^e 3	2083.43	$\approx 3.0 @ e$	b		Mult.: $\alpha(K)\text{exp}(\text{doublet})=0.0025$ 5 for doublet which primarily deexcites the 2300 level.
	2300.03	$\approx 17 @ e$	(E2)	0.00206	Mult.: $\alpha(K)\text{exp}=0.0025$ 5 for doublet for which this is dominant placement.
1638.0 3	2258.31	1.40 21			
1644.8 3	2300.03	2.0 3			
1652.8 3	2273.79	15.0 23	E2	0.00202	Mult.: $\alpha(K)\text{exp}=0.0013$ 3.
^x 1673.4 3		2.9 4			
^x 1678.2 3		2.6 4			
1687.8 3	2083.43	2.4 4			
^x 1691.9 3		2.1 3			
1700.0 3	2258.31	5.7 9			
1705.3 3	1977.95	4.7 7			
1709.5 3	2219.11	1.30 20			
1717.8 3	2300.03	4.2 6			
1728.6 3	2310.49	2.5 4			
^x 1730.5 3		3.8 6			
^x 1745.2 3		3.4 5			
1747.9 3	2258.31	1.30 20			
1755.3 3	2300.03	11.0 17			
1760.3 3	2273.79	8.9 13			
1763.6 3	2273.79	2.3 3			
1787.0 3	2300.03	10.0 15			
1797.1 3	2511.21	2.2 3			
1801.3 3	2254.58	2.6 4			
1806.9 3	1977.95	1.5 14			
1812.8 3	2300.03	3.4 5			
^x 1815.4 3		2.2 3			
1820.9 3	2273.79	2.7 4			
1848.0 3	2300.03	2.5 4			$E\gamma$: reported as 1848 keV. Missing precision assumed by the evaluator.
1857.1 ^e 3	2249.34	3.5 ^{@e} 5			
	2310.49	3.0 ^{@e} 5			
1862.3 3	2254.58	4.5 7			
1866.1 3	2258.31	2.6 4			
^x 1875.4 3		2.5 4			
1881.8 3	2273.79	1.50 23			
1890.5 3	2511.21	2.5 4			
1904.7 3	2300.03	3.5 5			

Continued on next page (footnotes at end of table)

^{183}Ir ϵ Decay 1988Ro13 (continued) $\gamma(^{183}\text{Os})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^{\ddagger c}$	$E\gamma^\dagger$	E(level)	$I\gamma^{\ddagger c}$	$E\gamma^\dagger$	E(level)	$I\gamma^{\ddagger c}$
1907.7 3	2300.03	11.0 17	2000.6 3	2273.79	18 3	^x 2223.5 3		3.7 6
^x 1959.6 3		3.3 5	^x 2015.6 3		8.7 13	2249.8 ^d 3	2249.34	0.82 12
^x 1976.7 3		7.9 12	^x 2035.7 3		2.2 3	2258.7 ^d 3	2258.31	3.8 6
^x 1985.4 3		2.4 4	^x 2041.9 3		5.2 8	2273.6 ^d 3	2273.79	3.1 5
^x 1994.0 3		1.9 3	^x 2192.0 3		2.7 4			

[†] From 1988Ro13; uncertainty is 0.1 keV for $E\gamma < 500$ and $I\gamma > 100$, 0.3 keV for $E\gamma > 1000$ and 0.2 keV otherwise.

[‡] 15% uncertainty estimated by authors, except where noted.

[§] From I(ce) and $I\gamma$, normalized by authors assuming E2 theory value for 102.2 γ consistent with experimental L1:L2:L3 subshell ratios. The authors estimate approximately 15% uncertainty in I(ce), resulting in $\approx 21\%$ uncertainty in the calculated conversion coefficients.

From measured ce data, except as noted.

@ From authors' coincidence analysis; assumed by the evaluator to be approximate.

& $\alpha(K)_{\text{exp}}$ for doublet requires both components to have the admixture indicated.

^a Possible E1 assignment ruled out by level parities.

^b Conversion coefficient too large for E1,E2 or M1; possible E0 admixture.

^c For absolute intensity per 100 decays, multiply by 0.098 11.

^d Placement of transition in the level scheme is uncertain.

^e Multiply placed; intensity suitably divided.

^x γ ray not placed in level scheme.

^{183}Ir ϵ Decay 1988Ro13 (continued)

Decay Scheme

Intensities: I(γ +ce) per 100 parent decays
@ Multiply placed; intensity suitably divided

5/2- 0.0 58 min
 $^{183}_{77}\text{Ir}_{106}$
% ϵ +% β^+ =100
 $Q^+=3460^{50}$

^{183}Ir ϵ Decay 1988Ro13 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$^{183}_{77}\text{Ir}_{106}$
 $5/2^- \xrightarrow{0.0} 0.0$ 58 min
 $\% \epsilon + \% \beta^+ = 100$
 $Q^+ = 3460^{50}$

 $^{183}_{76}\text{Os}_{107}$

^{183}Ir ϵ Decay 1988Ro13 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$^{183}_{77}\text{Ir}_{106}$ 58 min
 $5/2^- \rightarrow 0.0$
 $\% \epsilon + \% \beta^+ = 100$
 $Q^+ = 3460^{50}$

 $^{183}_{76}\text{Os}_{107}$

^{183}Ir ϵ Decay 1988Ro13 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$^{183}_{77}\text{Ir}_{106}$ 58 min
 $5/2^- \rightarrow 0.0$
 $Q^+ = 3460^{50}$
 $\% \epsilon + \% \beta^+ = 100$

 $^{183}_{76}\text{Os}_{107}$

^{183}Ir ϵ Decay 1988Ro13 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$^{183}_{77}\text{Ir}_{106}$ 58 min
 $5/2^- \quad 0.0$
 $\% \epsilon + \% \beta^+ = 100$
 $Q^+ = 3460^{50}$

$^{170}\text{Er}(^{18}\text{O},5n\gamma)$ 2001Sh41,1998Sh07

E=85 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, $\gamma\gamma(\theta)(\text{DCO})$ using an array of nine Compton-suppressed HPGe detectors and one LEP detector. A second experiment was carried out with an array of 12 Compton-suppressed HPGe detectors.

All data are from 2001Sh41. Selected levels only were discussed by the authors in 1998Sh07.

$E\gamma, I\gamma$ from 2001Sh41.

 ^{183}Os Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}^{\S}$	Comments
0.0 [#]	9/2+		
96.42 [@] 7	11/2+		
170.8 ^c 3	1/2-		
219.20 [#] 7	13/2+		
258.3 ^c 3	3/2-		
273.07 ^c 24	5/2-		
375.48 [@] 8	15/2+		
392.49 ^a 7	7/2-	<3 ns	
487.0 ^c 3	7/2-		
509.88 ^c 22	9/2-		
512.50 ^b 7	7/2-	<3 ns	
541.52 [#] 8	17/2+		
558.29 ^{&} 8	9/2-		
646.33 ^b 8	(9/2-)		
748.94 ^a 7	11/2-		
763.97 [@] 9	19/2+		
812.47 ^b 8	(11/2-)		
848.2 ^c 4	(11/2-)		
879.58 ^c 20	(13/2-)		
951.33 [#] 9	21/2+		
958.15 ^{&} 8	13/2-		
1010.95 ^b 9	(13/2-)		
1179.73 ^a 8	15/2-		
1236.85 ^b 9	(15/2-)		
1255.74 [@] 9	23/2+		
1324.0 ^c 4	(15/2-)		
1369.88 ^c 17	(17/2-)		
1420.88 ^{&} 9	17/2-		
1442.75 [#] 10	25/2+		
1483.07 ^e 9	19/2+		
1560.25 ^f 9	15/2-	<3 ns	
1583.52 ^f 10	17/2-		
1661.91 ^a 9	19/2-		
1665.03 ^f 10	19/2-		
1690.52 ^d 10	21/2+		
1779.15 ^f 9	21/2-		
1815.07 10	21/2+		
1844.23 [@] 10	27/2+		
1922.08 ^{&} 14	21/2-		
1925.55 ^e 10	23/2+		
1925.64 ^f 9	23/2-		
2017.48 [#] 11	29/2+		
2101.34 ^f 11	25/2-		
2150.53 ^a 19	23/2-		
2175.57 ^d 10	25/2+		
2209.62 ^g 10	23/2+	<3 ns	
2305.13 ^f 11	27/2-		
2338.35 10	25/2+		
2402.38 ^{&} 17	25/2-		
2459.46 ^e 10	27/2+		
2470.54 ^g 13	25/2+		
2521.67 [@] 12	31/2+		
2536.37 ^f 12	29/2-		
2599.43 ^a 20	27/2-		
2674.26 [#] 13	33/2+		
2746.64 ^d 11	29/2+		
2754.10 ^g 13	27/2+		
2792.67 ^f 13	31/2-		

Continued on next page (footnotes at end of table)

$^{170}\text{Er}(^{18}\text{O},5n\gamma)$ 2001Sh41,1998Sh07 (continued) **^{183}Os Levels (continued)**

$E(\text{level})^\dagger$	$J\pi^\ddagger$	$T_{1/2}^\S$	Comments
2870.8& 4	29/2-		
3029.03 ^a 19	31/2-		
3045.88& 14	29/2+		
3067.15 12	(29/2+)		$J\pi$: D+Q 1223 γ to 27/2+ 1844; 546 γ to 31/2+ 2522.
3074.93 ^f 13	33/2-		
3077.32 ^e 12	31/2+		
3094.25 14			
3278.44 [@] 14	35/2+		
3340.3& 5	33/2-		
3363.30 ^d 12	33/2+		
3377.45 ^f 14	35/2-		
3383.37 ^j 16	(31/2-)		
3404.36 [#] 17	37/2+		
3419.53 14	(29/2+, 31/2)		$J\pi$: (29/2+, 31/2+) in table 1 and (29/2+, 31/2-) in fig. 2 of 2001Sh41.
3430.57 13	(29/2, 31/2+)		$J\pi$: (29/2+, 31/2+) in table 1 and (29/2-, 31/2+) in fig. 2 of 2001Sh41.
3505.42 ^a 18	35/2-		
3707.40 ^f 15	37/2-		
3764.62 15			
3765.88 ^e 15	(35/2+)		
3785.50 ^h 12	33/2+	<3 ns	
3876.3& 5	37/2-		
3884.29 ^h 13	35/2+		
3986.55 ^j 15	35/2(-)		
4031.14 ^f 16	39/2-		
4075.54 ^a 16	39/2-		
4088.43 [@] 15	39/2+		
4116.61 ^h 13	37/2+		
4181.66 [#] 19	41/2+		
4398.37 ^h 14	39/2+		
4422.50 ^f 18	41/2-		
4496.4& 5	41/2-		
4674.95 ^a 17	43/2-		
4678.97 ^j 15	39/2(-)		
4716.12 ^h 14	41/2+		
4813.95 ^f 17	43/2-		
4931.74 [@] 18	(43/2+)		
4934.65 15	41/2(+)		
4936.76 [#] 22	45/2+		
5063.45 ^h 15	43/2+		
5067.54 15	(43/2-)	27 ns 3	$J\pi$: 43/2(-) in Figure 2 of 2001Sh41.
5167.43 15	(43/2+)	24 ns 2	$J\pi$: 43/2+ in Figure 2 of 2001Sh41.
5192.4 ^f 5	45/2-		
5192.60& 21	45/2-		
5385.96 ^a 20	(47/2-)		
5406.17 ^j 25	(43/2-)		
5437.44 ^h 18	45/2+		
5477.77 ⁱ 17	(45/2, 47/2-)		
5541.90 17			
5594.10 17			
5617.86 ^f 20	(47/2-)		
5697.97 [#] 24	49/2+		
5873.91 ⁱ 18	(47/2, 49/2-)		
5904.76 17			
5977.6 ^f 11	(49/2-)		
6173.46 ^a 22	(51/2-)		
6280.78 ⁱ 18	(49/2, 51/2-)		
6412.06 20			
6460.9 ^f 4	(51/2-)		
6594.56 18			
6697.35 ⁱ 19	(51/2, 53/2-)		

[†] From least-squares fit to $E\gamma$.[‡] From Table 1 of 2001Sh41. Some of these assignments are given without parentheses in Figures 1 and 2 of 2001Sh41.

¹⁷⁰Er(¹⁸O,5n γ) 2001Sh41,1998Sh07 (continued)

¹⁸³Os Levels (continued)

§ From 2001Sh41.

(A): v 9/2[624] band, $\alpha=+1/2$.

@ (B): v 9/2[624] band, $\alpha=-1/2$.

& (C): v 7/2[503] band, $\alpha=+1/2$.

a (D): v 7/2[503] band, $\alpha=-1/2$.

b (E): v 7/2[514] band.

c (F): v 1/2[521] band.

d (G): Band based on 21/2+, $\alpha=+1/2$. $\nu_{13/2}$ coupled to γ -vibrational band.

e (H): Band based on 19/2+, $\alpha=-1/2$. $\nu_{13/2}$ coupled to γ -vibrational band.

f (I): Band based on 15/2- 1560. Possible configuration= $\nu 9/2[624]\pi(1/2[541]+5/2[402])$.

g (J): Band based on 23/2+.

h (K): Band based on 33/2+.

i (L): Band based on (45/2,47/2-).

j (M): γ cascade based on (31/2-).

 $\gamma(^{183}\text{Os})$

E γ	E(level)	I γ	Mult. [†]	α	Comments
(20.9)	3785.50				E γ : from level-energy difference. E γ =21 in table 1 of 2001Sh41.
(23.3)	1583.52				E γ : from level-energy difference; 23 in table 1 of 2001sh41..
87.5 1	258.3				
96.3 1	96.42	94 10	D+Q		Mult.: DCO(1)=0.36 3; DCO(2)=0.48 7.
98.6 1	3884.29	7 1	(M1)	5.86	$\alpha(\text{exp})=6.0$ 7. $\alpha(\text{exp})$: from intensity balance.
102.3 1	273.07				
114.2 1	1779.15	12 1	D+Q		Mult.: DCO(1)=0.23 10; DCO(2)=0.26 11.
117.3 1	1779.15	19 1	D+Q		Mult.: DCO(1)=0.24 10; DCO(2)=0.29 11.
119.9 1	512.50	5 1			
122.7 1	219.20	391 17	D+Q		Mult.: DCO(1)=0.38 3; DCO(2)=0.43 6.
133.0 1	5067.54	4 1	(E1)	0.188	Mult.: $I(\gamma+\text{ce})(133\gamma)/I(\gamma+\text{ce})(256\gamma)=1$ only if mult is E2 for 256 γ and E1 for 133 γ .
133.9 1	646.33	6 1			
146.3 1	1925.64	45 2	D		Mult.: DCO(1)=0.55 7; DCO(2)=0.55 8.
156.1 1	375.48	424 18	D+Q		Mult.: DCO(1)=0.37 3; DCO(2)=0.31 4.
165.7 1	558.29	197 9	D+Q		Mult.: DCO(1)=0.36 3; DCO(2)=0.34 5.
166.1 1	541.52	341 15	D+Q		Mult.: DCO(1)=0.39 3; DCO(2)=0.30 4.
166.2 1	812.47	11 2			
173.2 1	2017.48	7 1			
175.6 1	2101.34	42 2	D		Mult.: DCO(1)=0.77 11; DCO(2)=0.70 10.
186.8 1	1442.75	50 2	(D+Q)		Mult.: DCO(1)=0.44 4; DCO(2)=0.24 3. Presumably for a doublet; see comment on 187 γ from 951 level.
187.3 1	951.33	164 7	(D+Q)		Mult.: DCO(1)=0.44 4; DCO(2)=0.24 3. Presumably for a doublet since identical DCO(1) and DCO(2) values are reported for the 187.3 γ and the 186.8 γ .
190.5 1	748.94	163 7	D+Q		Mult.: DCO(1)=0.36 3; DCO(2)=0.36 5.
195.5 1	1779.15	63 3	Q		Mult.: DCO(1)=1.1 1; DCO(2)=0.97 14.
198.5 1	1010.95	9 2			
203.7 1	2305.13	37 2			Mult.: DCO(1)=1.1 2; DCO(2)=0.87 12. Interpreted by authors as $\Delta J=1$ transition.
209.2 1	958.15	65 3	D+Q		Mult.: DCO(1)=0.42 4; DCO(2)=0.26 14.
219.2 1	219.20	192 9	Q		Mult.: DCO(1)=0.96 8; DCO(2)=1.0 1.
221.5 1	1179.73	61 3	D+Q		Mult.: DCO(1)=0.31 3; DCO(2)=0.21 3.
222.4 1	763.97	256 11	D+Q		Mult.: DCO(1)=0.34 3; DCO(2)=0.28 4.
226.0 1	1236.85	9 1			
228.7 1	487.0	51 4			
231.1 2	2536.37	30 1			
232.4 1	4116.61	59 3	D		Mult.: DCO(1)=0.99 14; interpreted by authors as $\Delta J=1$ transition.
236.8 1	509.88	100 5			Mult.: DCO(1)=0.48 7; DCO(2)=0.42 6.
240.9 1	1661.91	13 1	D		Mult.: DCO(1)=0.38 4.
241.0 1	1420.88	11 1	D+Q		Mult.: DCO(1)=0.38 4.
244.2 1	1665.03	11 1	D		Mult.: DCO(1)=0.55 5.
253.9 1	646.33	15 1			
254.2 1	812.47	55 3			
255.8 1	4934.65	15 1	[E1]	0.0360	

Continued on next page (footnotes at end of table)

$^{170}\text{Er}(^{18}\text{O},5n\gamma)$ $^{2001}\text{Sh}41,1998\text{Sh}07$ (continued) $\gamma(^{183}\text{Os})$ (continued)

E_γ	E(level)	I_γ	Mult. [†]	Comments
256.3 1	2792.67	22 1		
260.6 1	1925.64	112 5	Q	Mult.: DCO(1)=0.96 8; DCO(2)=1.0 1.
260.9 1	2470.54	31 1		
262.0 1	1010.95	20 1		
263.8 1	1925.64	135 6	Q	Mult.: DCO(1)=1.2 1; DCO(2)=1.1 2.
278.7 1	1236.85	23 1		
279.0 1	375.48	498 21	Q	Mult.: DCO(1)=1.0 1; DCO(2)=0.98 14.
281.8 1	4398.37	58 3	D	Mult.: DCO(1)=0.46 7; DCO(2)=0.38 5.
282.3 1	3074.93	20 1		Mult.: DCO(1)=0.92 13; interpreted by authors as $\Delta J=1$ transition.
283.7 1	2754.10	18 1		
291.9 1	3045.88	7 1		
296.3 1	1779.15	35 2		
300.0 1	812.47	43 2		
302.5 1	3377.45	16 1		
304.4 1	1255.74	111 5	D+Q	Mult.: DCO(1)=0.31 4.
310.7 1	5904.76	34 2		
314.0 1	6594.56	14 1		
317.6 1	4716.12	78 3	D	Mult.: DCO(1)=0.44 6; DCO(2)=0.41 6.
322.3 1	2101.34	302 13	Q	Mult.: DCO(1)=0.98 8; DCO(2)=0.97 14.
322.4 1	541.52	727 31	Q	Mult.: DCO(1)=1.0 1; DCO(2)=1.1 2.
330.2 5	3707.40	9 1		
340.2 1	3094.25	8 1		
347.4 1	5063.45	16 1		
351.3 1	5067.54	76 3	D	Mult.: DCO(1)=0.68 10; DCO(2)=0.75 11.
354.8 1	3785.50	14 2		
356.5 1	748.94	112 5	Q	Mult.: DCO(1)=1.0 1; DCO(2)=1.1 2.
361.2 1	848.2	27 1		
364.7 1	1010.95	28 1		
365.6 2	3785.50	11 2		
367.2 1	1179.73	74 3		
369.7 1	879.58	89 4		
374.0 1	5437.44	3 1		
379.6 1	2305.13	290 12	Q	Mult.: DCO(1)=0.92 8; DCO(2)=0.92 13.
388.7 1	763.97	755 32	Q	Mult.: DCO(1)=1.0 1; DCO(2)=1.0 1.
392.4 1	392.49	94 10	D	Mult.: DCO(1)=0.65 5; DCO(2)=0.69 10.
396.2 1	5873.91	58 3		
399.9 1	958.15	120 5	Q	Mult.: DCO(1)=1.1 1; DCO(2)=1.1 2.
401.3 1	1844.23	46 2		
407.1 1	6280.78	28 2		
409.9 1	951.33	1000	Q	Mult.: DCO(1)=0.97 8; DCO(2)=1.0 1.
410.4 1	5477.77	65 5		
416.7 1	6697.35	12 1		
424.5 1	1236.85	30 1		
425.3 1	1661.91	29 1		
426.7 1	5594.10	87 4		
429.7 3	3029.03	58 3	Q	Mult.: DCO(1)=0.99 8; DCO(2)=1.0 1.
430.8 1	1179.73	293 13	Q	Mult.: DCO(1)=0.99 8; DCO(2)=1.0 1.
435.1 1	2536.37	273 12	Q	Mult.: DCO(1)=1.0 1; DCO(2)=1.0 1.
441.9 1	1925.55	7 1		E_γ : poor fit. Level-energy difference=442.5.
448.9 1	2599.43	81 4	Q	Mult.: DCO(1)=0.93 8; DCO(2)=1.1 2.
451.3 1	5167.43	42 2	D+Q	Mult.: DCO(1)=0.47 7; DCO(2)=0.34 10.
461.9 1	558.29	81 4		
462.8 1	1420.88	95 4	Q	Mult.: DCO(1)=0.93 13; DCO(2)=1.1 2.
468.4 3	2870.8	51 2	Q	Mult.: DCO(1)=1.1 2; DCO(2)=1.0 2.
469.5 3	3340.3	39 2	Q	Mult.: DCO(1)=1.1 2; DCO(2)=1.0 2.
474.2 1	5541.90	15 1		
475.8 1	1324.0	12 1		
476.4 1	3505.42	38 2	Q	Mult.: DCO(1)=1.0 1; DCO(2)=1.1 2.
480.3 1	2402.38	77 3	Q	Mult.: DCO(1)=1.2 2; DCO(2)=1.1 2.
482.2 1	1661.91	237 10	Q	Mult.: DCO(1)=0.96 8; DCO(2)=0.96 14.
485.2 1	2175.57	23 1		
485.3 5	2150.53	40 2	Q	Mult.: DCO(1)=0.98 8; DCO(2)=0.93 13.
485.4 5	1665.03	236 10	Q	Mult.: DCO(1)=0.97 7; DCO(2)=1.1 2.

Continued on next page (footnotes at end of table)

$^{170}\text{Er}(^{18}\text{O},5n\gamma)$ $^{2001}\text{Sh41},^{1998}\text{Sh07}$ (continued) $\gamma(^{183}\text{Os})$ (continued)

E_γ	E(level)	I_γ	Mult. [†]	Comments
487.6 1	2792.67	252 11	Q	Mult.: DCO(1)=1.0 1; DCO(2)=0.99 14.
488.7 2	2150.53	52 2	Q	Mult.: DCO(1)=1.0 1; DCO(2)=0.94 13.
490.3 1	1369.88	64 3		
491.4 1	1442.75	824 35	Q	Mult.: DCO(1)=0.97 8; DCO(2)=0.96 14.
491.9 1	1255.74	578 25	Q	Mult.: DCO(1)=0.99 8; DCO(2)=1.0 1.
501.2 1	1922.08	75 3	Q	Mult.: DCO(1)=1.0 1; DCO(2)=0.96 14.
507.3 1	6412.06	21 1		
512.7 1	512.50	17 3		
513.8 1	4398.37	12 1		
523.3 1	1779.15	35 2		
	2338.35	13 1		
526.0 3	4031.14	11 1	Q	Mult.: DCO(1)=1.1 2; DCO(2)=0.95 14.
529.8 1	748.94	35 2		
533.7 1	2459.46	23 1		
536.0 1	3876.3	28 1	Q	Mult.: DCO(1)=0.96 8; DCO(2)=0.83 11.
538.6 1	3074.93	196 8	Q	Mult.: DCO(1)=0.97 8; DCO(2)=0.98 14.
544.5 1	2754.10	7 1		
545.8 1	3067.15	2 1		E_γ : Level-energy difference=545.5.
552.2 1	1922.08	20 1		
570.1 1	4075.54	15 1	Q	Mult.: DCO(1)=1.1 2; DCO(2)=0.91 13.
571.2 1	2746.64	35 2		
574.7 1	2017.48	504 22	Q	Mult.: DCO(1)=0.98 8; DCO(2)=0.97 14.
575.2 1	3045.88	10 1		
584.8 1	3377.45	155 7	(Q)	Mult.: DCO(1)=0.98 14; DCO(2)=0.83 12.
588.5 1	1844.23	334 14	Q	Mult.: DCO(1)=0.98 8; DCO(2)=1.1 2.
599.3 1	4674.95	14 2		
599.6 1	4716.12	62 3		
602.1 1	1560.25	15 3		
603.2 3	3986.55	22 1		
615.3 5	2459.46	=7		
616.8 1	3363.30	25 1		
617.8 1	3077.32	31 1		
620.1 1	4496.4	20 1	Q	Mult.: DCO(1)=0.89 13; DCO(2)=1.1 2.
623.7 1	3094.25	9 1		
632.5 1	3707.40	131 6	Q	Mult.: DCO(1)=0.91 8; DCO(2)=0.91 13.
643.9 1	4674.95	33 2	Q	Mult.: DCO(1)=0.93 14.
653.7 1	4031.14	63 3	Q	Mult.: DCO(1)=1.1 1; DCO(2)=0.93 13.
656.8 1	2674.26	285 12	Q	Mult.: DCO(1)=0.98 8; DCO(2)=1.1 2.
665.0 1	5063.45	10 1		
669.5 5	1925.55	8 1		
669.9 1	1925.64	21 1		
670.4 1	3764.62	15 1		
677.6 1	2521.67	206 9	Q	Mult.: DCO(1)=1.0 1; DCO(2)=1.1 2.
689.0 5	3363.30	4 1		
689.0 3	3765.88	12 1		
692.5 1	4678.97	7 1		
696.0 1	5192.4	5 1	Q	Mult.: DCO(1)=0.96 14.
698.1 1	4075.54	19 3	Q	Mult.: DCO(1)=1.0 1; DCO(2)=0.92 13.
711.0 1	5385.96	17 1		
715.1 1	4422.50	55 2	Q	Mult.: DCO(1)=0.94 13; DCO(2)=0.95 13.
718.7 1	3764.62	15 1		
718.8 1	3785.50	6 2		E_γ : Poor fit. Level-energy difference=718.35.
718.9 5	1483.07	11 1		
720.6 1	6594.56	16 1		
721.3 3	5437.44	5 1		
727.2 2	5406.17	=2		
728.9 5	2746.64	3 1		
730.1 1	3404.36	141 6	Q	Mult.: DCO(1)=0.98 14; DCO(2)=0.95 13.
732.2 5	2175.57	21 1		
737.3 1	5904.76	11 1		
738.5 1	4813.95	22 1	Q	Mult.: DCO(1)=0.91 13.
738.7 5	1690.52	13 1		
755.1 1	4936.76	30 1	Q	Mult.: DCO(1)=0.96 14; DCO(2)=1.1 2.

Continued on next page (footnotes at end of table)

$^{170}\text{Er}(^{18}\text{O},5n\gamma)$ $^{2001}\text{Sh41},^{1998}\text{Sh07}$ (continued) $\gamma(^{183}\text{Os})$ (continued)

E_γ	E(level)	I_γ	Mult. [†]	Comments
756.8 1	3278.44	121 5	Q	Mult.: DCO(1)=1.0 1; DCO(2)=0.99 14.
761.2 1	5697.97	11 1	Q	Mult.: DCO(1)=1.1 2.
770.1 1	5192.60	8 1	(Q)	Mult.: DCO(1)=0.89 13.
777.3 1	4181.66	61 3	Q	Mult.: DCO(1)=0.90 13; DCO(2)=0.95 14.
782.7 1	4813.95	11 1		
785 1	5977.6	11 1		
787.5 1	6173.46	5 1		
803.1 1	6280.78	8 1		
803.9 1	5617.86	13 1		
810.0 1	4088.43	46 2	Q	Mult.: DCO(1)=0.99 8.
819.6 2	1583.52	11 1		
823.3 1	6697.35	5 1		
827.8 1	1779.15	48 2		Mult.: DCO(1)=0.96 8; interpreted by authors as $\Delta J=0$ transition.
841.4 1	3363.30	18 1		
843.0 3	6460.9	13 1		
843.3 1	4931.74	15 1		
847.0 1	3383.37	32 1		
863.7 1	1815.07	10 1		
895.6 1	2338.35	44 2		
898.1 3	1661.91	15 1		
902.4 1	2746.64	6 1		
911.7 1	3986.55	12 1	D	Mult.: DCO(1)=0.50 7.
920.0 1	2175.57	25 1	D+Q	Mult.: DCO(1)=0.23 1.
926.7 1	1690.52	24 1	D+Q	Mult.: DCO(1)=0.34 2.
941.3 1	1483.07	37 2	D+Q	Mult.: DCO(1)=0.47 2; DCO(2)=0.56 8.
954.1 1	2209.62	17 1		Mult.: DCO(1)=1.1 1; interpreted by authors as $\Delta J=0$ transition.
971.6 1	4678.97	16 1	D	Mult.: DCO(1)=0.47 7.
974.6 1	1925.55	37 2	D+Q	E γ : Level-energy difference=974.3. Mult.: DCO(1)=0.44 12; DCO(2)=0.33 10.
1015.0 1	1779.15	22 1	D	Mult.: DCO(1)=0.63 5.
1016.7 1	2459.46	25 1		
1042.3 1	1583.52	48 2		E γ : Level-energy difference=1042.0. Mult.: DCO(1)=0.8; interpreted by authors as $\Delta J=0$ transition..
1049.9 1	3067.15	8 1		
1051.1 1	1815.07	31 2		
1052.5 1	6594.56	11 1		
1059.9 1	3077.32	16 1	D+Q	Mult.: DCO(1)=0.39 2.
1079.0 1	5167.43	8 1		Mult.: DCO(1)=0.89 13.
1082.6 1	2338.35	16 1	D+Q	Mult.: DCO(1)=0.45 3.
1091.6 1	3765.88	4		I γ : uncertainty of 0 in 2001Sh41 seems to be a misprint; it should presumably be 1 as for other transitions of comparable intensity.
1107.5 1	1483.07	27 1	Q	Mult.: DCO(1)=0.92 6.
1111	3785.50	≈ 2		
1120.4 5	4398.37	≈ 2	Q	Mult.: DCO(1)=1.0 2.
1149.0 1	1690.52	24 1	Q	Mult.: DCO(1)=0.99 5.
1161.8 1	1925.55	17 1	Q	Mult.: DCO(1)=0.91 5.
1184.8 1	1560.25	17 1	(D)	Mult.: DCO(1)=1.0 2; interpreted as D, $\Delta J=0$ transition.
1203.8 1	2459.46	12 1		Mult.: DCO(1)=0.85 5.
1207.6 1	1583.52	13 1		E γ : Poor fit. Level-energy difference=1209.5.
1222.8 1	3067.15	7 1	D+Q	Mult.: DCO(1)=0.27 3.
1224.1 1	2175.57	42 2	Q	Mult.: DCO(1)=0.94 3.
1233.2 2	3077.32	4 1		
1243.8 4	3765.88	≈ 1		
1258.2 1	2209.62	15 1	D+Q	Mult.: DCO(1)=0.38 2.
1263.9 1	3785.50	6 1		
1273.6 1	1815.07	12 1		
1303.9 1	2746.64	20 1	Q	Mult.: DCO(1)=0.93 4.
1341.0 1	1560.25	≈ 1		
1345.9 1	3363.30	21 1		
1387.0 1	2338.35	17 1	Q	Mult.: DCO(1)=1.4 4.
1442.4 1	4116.61	4 1		
1445.5 1	2209.62	26 1	(Q)	Mult.: DCO(1)=1.2 3.
1575.2 1	3419.53	≈ 2		

Continued on next page (footnotes at end of table)

$^{170}\text{Er}(^{18}\text{O},5n\gamma)$ $^{2001}\text{Sh41},^{1998}\text{Sh07}$ (continued) **$\gamma(^{183}\text{Os})$ (continued)**

$E\gamma$	E(level)	$I\gamma$	Mult. [†]	Comments
1586.2 1	3430.57	3 1		
1767.5 1	3785.50	6 1	Q	$E\gamma$: Poor fit. Level-energy difference=1768.0. Mult.: DCO(1)=0.98 15.

[†] Based on measurements of DCO ratios, where $\theta=37^\circ$ (or 143°) and 79° (or 101°) for DCO(1) (TSUKUBA data) and $\theta=32^\circ$ (or 148°) and 90° for DCO(2) (from JAERI data). Expected ratios are ≈ 1 for Q, $\Delta J=2$ (or D, $\Delta J=0$) transitions and ≈ 0.6 for D, $\Delta J=1$ transitions; the gating transitions were Q, $\Delta J=2$.

 $^{186}\text{W}(\alpha,7n\gamma), ^{185}\text{Re}(p,3n\gamma), ^{182}\text{W}(\alpha,3n\gamma)$ $^{1975}\text{Ja12},^{1974}\text{DoZG},^{1973}\text{Li21}$

Other references: $^{1973}\text{Li21}$, $^{1976}\text{Ne03}$.

$^{1975}\text{Ja12}$: $E(\alpha)=90$ MeV; 98.1% enriched ^{186}W target; Ge(Li) spectrometers (FWHM=1.95 and 2.6 keV at 1332 keV) and planar Ge(Li) with Pb shielding; measured $E\gamma$, $I\gamma$, $\gamma(\theta)$.

$^{1974}\text{DoZG}$: $E(\alpha)=38$ MeV, $E(p)=28$ MeV; measured $E\gamma$.

$^{1973}\text{Li21}$: $^{182}\text{W}(\alpha,3n\gamma)$, $E\alpha=31-43$ MeV; planar and coaxial Ge(Li) detectors; measured $E\gamma$, $I\gamma$ ($\theta=125^\circ$, $E\alpha=43$ MeV), $\gamma(\theta)$, $\gamma\gamma$ coin.

 ^{183}Os Levels

E(level) [†]	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0 §	9/2+		
96.40 § 15	11/2+		
170.71 @ 5	1/2-	9.9 h 3	$\%E+\%\beta^+=85$ 2; $\%IT=15$ 2. $T_{1/2}, \%IT$: from Adopted Levels.
219.23 § 16	13/2+		
258.36 @ 20	3/2-		
375.46 § 19	15/2+		
392.49 # 17	(7/2)-		
487.3 @ 3	7/2-		
541.54 § 20	17/2+		
558.24 # 18	(9/2)-		
748.90 # 21	(11/2)-		
764.06 § 22	19/2+		
848.7 @ 4	11/2-		
951.32 § 24	21/2+		
958.20 # 22	(13/2)-		
1179.85 # 24	(15/2)-		
1255.8 § 3	23/2+		
1324.1 @ 4	15/2-		
1420.5 # 3	(17/2)-		
1442.7 § 3	25/2+		
1663.7 # 3	(19/2)-		
1844.0 § 4	27/2+		
2017.2 § 4	29/2+		
2521.3 § 4	31/2+		
2673.9 § 4	33/2+		
3277.9 § 5	35/2+		
3403.6 § 5	37/2+		
4180.2 § 5	41/2+		

[†] From least-squares fit to $E\gamma$.

[‡] From Adopted Levels.

§ (A): 9/2[624] g.s. band.

(B): 7/2[503] band.

@ (C): 1/2[521] band.

$^{186}\text{W}(\alpha, 7n\gamma), ^{185}\text{Re}(p, 3n\gamma), ^{182}\text{W}(\alpha, 3n\gamma)$ 1975Ja12, 1974DoZG, 1973Li21 (continued)

$\gamma(^{183}\text{Os})$					
$E\gamma^\dagger$	E(level)	$I\gamma^\ddagger$	Mult. [§]	$\delta^\#$	Comments
87.65 20	258.36				
96.3 2	96.40	1.9 3	D+Q	-0.65 22	Mult.: $A_2=-0.55$ 3, $A_4=-0.01$ 4 (1975Ja12); $A_2=-0.48$ 6, $A_4=+0.21$ 7 (1973Li21).
122.7 2	219.23	=2.3@	D+Q	-0.42 14	Mult.: $A_2=-0.47$ 2, $A_4=-0.01$ 3 (1975Ja12). $A_2=-0.47$ 2, $A_4=+0.24$ 3 (1973Li21). Measured $I\gamma=4.0$ 4 includes impurity. $I\gamma$ recommended here is calculated assuming intensity balance through the 96 level.
156.2 2	375.46	3.4 4	D+Q	-0.42 14	Mult.: $A_2=-0.57$ 2, $A_4=+0.02$ 3 (1975Ja12). $A_2=-0.49$ 3, $A_4=+0.26$ 3 (1973Li21).
165.81 20	558.24				
166.0 2	541.54	3.0 4	D+Q	-0.33 8	Mult.: $A_2=-0.60$ 2, $A_4=+0.02$ 3 (1975Ja12). $A_2=-0.49$ 3, $A_4=+0.23$ 3 (1973Li21).
187.4& 2	951.32	1.3& 3	(D+Q)		The evaluator shows this transition as a doublet because the known intraband 187γ from the $J=25/2$ band member should have been seen in this experiment but would not have been resolved from this transition. Mult., δ : $A_2=-0.56$ 4, $A_4=0.00$ 6, $\delta=-0.27$ 6 (1975Ja12) for presumed doublet; $A_2=-0.49$ 7, $A_4=+0.12$ 8 (1973Li21) for doublet. See comment on 187γ from 951 level.
	1442.7	1.3& 3			
190.7 2	748.90				
209.47 20	958.20				
219.3 2	219.23	1.4 3	Q		Mult.: $A_2=+0.26$ 4, $A_4=-0.08$ 6 (1975Ja12) for contaminated line. $A_2=+0.28$ 4, $A_4=-0.09$ 6 (1973Li21).
221.89 20	1179.85				
222.4 2	764.06	1.3 3	D+Q	-0.23 5	Mult.: $A_2=-0.55$ 4, $A_4=-0.05$ 6 (1975Ja12). $A_2=-0.68$ 6, $A_4=+0.18$ 7 (1973Li21).
228.9 2	487.3				
240.63 20	1420.5				
243.03 20	1663.7				
279.1 2	375.46	3.8@ 4	Q		Mult.: $A_2=+0.24$ 2, $A_4=-0.06$ 3 (1975Ja12). $A_2=+0.22$ 3, $A_4=-0.12$ 3 (1973Li21).
304.5 2	1255.8	1.0@ 3	D+Q	-0.18 6	Mult.: $A_2=-0.35$ 4, $A_4=0.00$ 6 (1975Ja12) for contaminated line. $A_2=-0.45$ 7, $A_4=+0.26$ 7 (1973Li21).
322.3 2	541.54	6.1 5	Q		Mult.: $A_2=+0.30$ 2, $A_4=-0.07$ 3 (1975Ja12). $A_2=+0.26$ 4, $A_4=-0.12$ 6 (1973Li21).
356.37 20	748.90				
361.43 20	848.7				
388.7 2	764.06	4.5 5	Q		Mult.: $A_2=+0.32$ 2, $A_4=-0.06$ 3 (1975Ja12). $A_2=+0.35$ 3, $A_4=-0.02$ 4 (1973Li21).
392.52 20	392.49				
399.96 20	958.20				
409.8 2	951.32	5.4 5	Q		Mult.: $A_2=+0.32$ 2, $A_4=-0.08$ 3 (1975Ja12). $A_2=+0.28$ 3, $A_4=-0.09$ 4 (1973Li21).
430.79 20	1179.85				
461.8 2	558.24				
462.25 20	1420.5				
475.39 20	1324.1				
483.96 20	1663.7				
491.4 2	1442.7	7.7 7	(Q)		$I\gamma$: for $491.4\gamma+491.6\gamma$ doublet. Mult.: $A_2=+0.31$ 2, $A_4=-0.08$ 3 (1975Ja12) for doublet; $A_2=+0.33$ 8, $A_4=+0.01$ 9 (1973Li21) for doublet.
491.6 2	1255.8	7.7 7	(Q)		$I\gamma$: for $491.4\gamma+491.6\gamma$ doublet. Mult.: $A_2=+0.31$ 2, $A_4=-0.08$ 3 (1975Ja12) for doublet; $A_2=+0.33$ 8, $A_4=+0.01$ 9 (1973Li21) for doublet.
574.5 2	2017.2	2.8 4	Q		Mult.: $A_2=+0.29$ 3, $A_4=-0.12$ 5 (1975Ja12).
588.2 2	1844.0	2.1 4	Q		Mult.: $A_2=+0.28$ 4, $A_4=-0.12$ 6 (1975Ja12).
656.7 2	2673.9	1.7 3	Q		Mult.: $A_2=+0.32$ 4, $A_4=-0.14$ 6 (1975Ja12).
677.3 2	2521.3	1.3 7	Q		Mult.: $A_2=+0.33$ 5, $A_4=-0.05$ 7 (1975Ja12).
729.7 2	3403.6	1.8@ 3	(Q)		Mult.: $A_2=+0.24$ 6, $A_4=-0.07$ 9 (1975Ja12) for contaminated line.
756.6 2	3277.9	0.6 3	Q		Mult.: $A_2=+0.29$ 9, $A_4=-0.17$ 13 (1975Ja12).
776.6 2	4180.2	0.5 3	Q		Mult.: $A_2=+0.36$ 12, $A_4=+0.06$ 17 (1975Ja12).

[†] Data for 9/2[624] band are from 1975Ja12, those for other bands are from 1974DoZG.

$^{186}\text{W}(\alpha, 7n\gamma), ^{185}\text{Re}(p, 3n\gamma), ^{182}\text{W}(\alpha, 3n\gamma)$ 1975Ja12, 1974DoZG, 1973Li21 (continued)

$\gamma(^{183}\text{Os})$ (continued)

‡ From 1975Ja12. Intensity data are not provided by 1974DoZG.

§ From $\gamma(0)$. Stretched Q transitions were assumed by the authors to be E2 and the interlocking intraband D transitions would then be M1(+E2).

Deduced by 1975Ja12 using width of Gaussian substate population derived from stretched Q transition deexciting same state.

@ Includes contribution from impurity.

& Multiply placed; undivided intensity given.

Adopted Levels, Gammas

Q(β⁻)=-4430 30; S(n)=9220 30; S(p)=2880 30; Q(α)=3960 30 2012Wa38.

For discussion of effects of deformation on decay patterns, see 2015Bo01.

¹⁸³Ir Levels

Cross Reference (XREF) Flags

- A ¹⁸³Pt ε Decay (43 s)
- B ¹⁸⁷Au α Decay
- C ¹⁶⁸Er(¹⁹F,4nγ)
- D ¹⁸⁵Re(α,6nγ)

E(level) [†]	Jπ [‡]	XREF	T _{1/2}	Comments
0.0 #	5/2-@	A CD	58 min 6	%ε+%β ⁺ =100. %ε+%β ⁺ : %α<0.1 from systematics of lighter Ir isotopes. μ=2.36 8 (1992Bo39). μ: from static nuclear orientation with γ detection. Other: 1992Ro21. <r ² > ^{1/2} (charge)=5.39 fm 11 (2004An14). T _{1/2} : unweighted average of 55 min 7 (1961Di04) and 60 min 6 (1961La05). Jπ: log ft=6.1 to 2274 level in ¹⁸³ Os which must have Jπ≥7/2-, log ft=7.2 to 453 level in ¹⁸³ Os which must have Jπ≤3/2-.
15.8 # 3	9/2-@	A CD		
119.0 9		C		
184.4 # 11	13/2-@	CD		
307.0 § 9	5/2+	C		
328.96 24	7/2-	A		
412.0 § 12	(7/2+)	C		
492.8 # 15	17/2-@	CD		
542.0 § 12	(9/2+)	C		
645.34 & 24	9/2-	A		Jπ: log ft≤4.7 from 7/2- typical of unhindered allowed decay in this mass region between ν 7/2[514] and π 9/2[514] states.
695.0 § 13	(11/2+)	C		
869.0 § 14	(13/2+)	C		
917.3 # 18	21/2-@	CD		
1059.0 § 14	(15/2+)	C		
1262.0 § 15	(17/2+)	C		
1425.4 # 21	25/2-@	CD		
1475.0 § 16	(19/2+)	C		
1691.0 § 16	(21/2+)	C		
1916.0 § 17	(23/2+)	C		
1976.2 # 23	29/2-@	CD		
2142.0 § 18	(25/2+)	C		
2388.0 § 18	(27/2+)	C		
2538.1 # 25	33/2-@	CD		
2635.0 § 19	(29/2+)	C		
2909.0 § 19	(31/2+)	C		
3118 # 3	37/2-@	CD		
3181.0 § 20	(33/2+)	C		
3481.0 § 20	(35/2+)	C		
3743 # 3	41/2-@	CD		
3774.0 § 21	(37/2+)	C		
4095.0 § 21	(39/2+)	C		
4401.0 ? § 22	(41/2+)	C		
4438 # 3	45/2-@	C		
4752.0 § 24	(43/2+)	C		
5052.0 ? § 24	(45/2+)	C		
5212 # 4	49/2-@	C		
5434 ? § 3	(47/2+)	C		
6062 # 4	53/2-@	C		
6985 ? # 4	57/2-@	C		

[†] From least-squares fit to adopted E_γ, assigning 1 keV uncertainty to E_γ data for which the authors failed to state an uncertainty.

[‡] From band assignments, except as noted.

§ (A): 5/2[402] band. Band parameters: E₀=267, A=15.3, B=-30 (J=5/2,7/2,9/2,11/2).

(B): 1/2[541] band. Band parameters: E₀=255, A=18.3, a=+7.5 (J=1/2 through 7/2).

Adopted Levels, Gammas (continued) ^{183}Ir Levels (continued)

@ Definite $J\pi$ assigned to members of 1/2[541] band based on smooth progression of level energies and independently-established $J\pi(\text{g.s.})=5/2^-$ and multipolarity=E2 for intraband 9/2 to 5/2 16.0 γ .

& (C): 9/2[514] band.

 $\gamma(^{183}\text{Ir})$

E(level)	$E\gamma^\dagger$	$I\gamma^\ddagger$	Mult.§	α	Comments
15.8	16.0	100	E2	29800	$E\gamma$: from ε decay; uncertainty unstated by authors.
119.0	119	100			Mult.: from sub-shell ratios (2000Ro41).
184.4	168.6 [#]	100	(E2)	0.625	Possibly the unplaced 118.5-keV E2(+M1) γ from ε decay.
307.0	188				
	307				
328.96	313.2 ^{@ 3}	78.6	[M1, E2]	0.179	
	329.0 ^{@ 3}	100.7			
412.0	105	100			
492.8	308.4 [#]	100	(E2)	0.0874	
542.0	130				
	235				
645.34	316.4 ^{@ 3}	53.4	[M1, E2]	0.169	
	629.6 ^{@ 3}	100.7	[M1, E2]	0.02713	
	645.3 ^{@ 3}	23.016	[E2]	0.01307	
695.0	153				
	283				
869.0	174				
	327				
917.3	424.5 [#]	100	(E2)	0.0359	
1059.0	190				
	364				
1262.0	203				
	393				
1425.4	508.1 [#]	100	(E2)	0.0228	
1475.0	213				
	416				
1691.0	216				
	429				
1916.0	225				
	441				
1976.2	550.8 [#]	100	(E2)	0.0188	
2142.0	226				
	451				
2388.0	246				
	472				
2538.1	561.9 [#]	100	(E2)	0.0179	
2635.0	247				
	493				
2909.0	274				
	521				
3118	579.5 [#]	100	(E2)	0.01670	
3181.0	272				
	546				
3481.0	300				
	572				
3743	625.9 [#]	100	(E2)	0.01400	
3774.0	293				
	593				

E(level)	$E\gamma^\dagger$	$I\gamma^\ddagger$
4095.0	321	
	614	
4401.0?	306&	
	627	
4438	695	100
4752.0	657	100
5052.0?	651&	100
5212	774	100
5434?	682&	100
6062	850	100
6985?	923&	100

[†] From ($^{19}\text{F}, 4n\gamma$), except as noted; uncertainty unstated by authors.

[‡] From ε decay (43 s), except as noted.

[§] From unenumerated $\gamma(\theta)$ in ($\alpha, 6n\gamma$), assigning $\Delta\pi=(\text{no})$ for intraband transitions.

[#] From ($\alpha, 6n\gamma$); uncertainty unstated by authors.

[@] From ε decay (43 s).

& Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)

¹⁸³Pt ε Decay (43 s) 1979Vi02,2000Ro41

Parent ¹⁸³Pt: E=34.74 7; J_π=7/2-; T_{1/2}=43 s 5; Q(g.s.)=4430 30; %ε+%β⁺ decay=96.9 8.

1979Vi02: ¹⁸³Pt from decay of ¹⁸³Au or ¹⁸³Hg produced in 190-MeV ¹⁴N bombardment of ¹⁸⁰W (enriched to 92%); He gas-jet recoil transport, mass separation; Ge(Li) detector; measured E_γ, I_γ, γγ coin.

Total energy release for this decay scheme is 3.18E3 16 cf. QxBR=4326 46.

The level scheme is supported by coincidence measurements; however, the data are too sparse to reliably calculate β feeding to the g.s., 16-keV or 329-keV levels, all of which are allowed transitions.

¹⁸³Ir Levels

E(level) [†]	J _π [‡]	Comments
0.0	5/2-	
15.8 3	9/2-	
328.97 24	7/2-	
645.35 24	9/2-	J _π : low log ft (≤4.6) typical of unhindered allowed decay in this mass region (between ν 7/2[514] and π 9/2[514] states).

[†] From least-squares fit to E_γ, allowing 1 keV uncertainty in E_γ data for which authors did not state an uncertainty.

[‡] From Adopted Levels.

β⁺,ε Data

E _ε	E(level)	Iβ ^{††}	I _ε [†]	Log ft	I(ε+β ⁺) [†]	Comments
(3820 30)	645.35	≥14	≥36	≤4.6	≥50	I _ε : estimated by 1979Vi02 from γ spectra of A=183 mass separated activities measured in the range E _γ =20-1750 keV.

[†] For intensity per 100 decays, multiply by 1.000 9.

γ(¹⁸³Ir)

I_γ normalization: if Σ(I(γ+ce) from 645 level)≥50%.

E _γ	E(level)	I _γ [†]	Mult.	δ	α	I(γ+ce) [†]	Comments
16.0	15.8		E2		29800	≥127	E _γ : 2000Ro41; uncertainty unstated by authors. I(γ+ce): based on Σ(I(γ+ce) to 16 level)=135 8. Mult.: from L2:L3:M1:M2:M3:(N1+N2+N3)=3900 60: 5000 60:<77:990 200: 1200 230:510 100 (2000Ro41).
*92.7			M1 (+E2)	≤0.44	7.51 15		Mult.: from α(L1)exp=1.2 4 (2000Ro41).
*118.5			E2 (+M1)	≥2.6	2.43 10		Mult.: from α(K)exp=0.7 2 (2000Ro41). Possibly the known 119 to g.s. transition.
313.2 3	328.97	28.0 20	[M1, E2]		0.17 9		I _γ : after removal by authors of contribution from 312γ(¹⁸³ Au) contaminant.
316.4 3	645.35	53 4	[M1, E2]		0.16 9		
329.0 3	328.97	36.0 25	[M1+E2]		0.15 8		
629.6 3	645.35	100 7	[M1, E2]		0.027 13		
645.3 3	645.35	23.0 16	[E2]		0.01307		

[†] For absolute intensity per 100 decays, multiply by ≥0.2587 22.

* γ ray not placed in level scheme.

¹⁸³Pt ε Decay (43 s) 1979Vi02,2000Ro41 (continued)

¹⁸⁷Au α Decay 1968Si01

Parent ¹⁸⁷Au: E=0.0; Jπ=1/2⁺; T_{1/2}=8.4 min 3; Q(g.s.)=4751 29; %α decay=0.00300 syst.
 1968Si01: ¹⁸⁷Au from ¹⁷⁴Yb(¹⁹F,6n); He-jet recoil transport; measured excit, α spectrum (using ion chamber). One weak group tentatively assigned to ¹⁸⁷Au decay on the basis of energy and excitation function systematics.
 For this decay scheme, QxBR=0.143 1.

¹⁸³Ir Levels

E(level)	Jπ	Comments
0.0	5/2-	Jπ: from Adopted Levels.
0.0+x?		Level not adopted.

α radiations

Eα	E(level)	Iα [‡]
4690 § 20	0.0+x?	100

[‡] For α intensity per 100 decays, multiply by 0.000030 SY.

§ Existence of this branch is questionable.

¹⁶⁸Er(¹⁹F,4nγ) 1988Ja10

1988Ja10: E(¹⁹F)=85 MeV; measured E_γ, γγ coin, γ(θ).

¹⁸³Ir Levels

E(level) [†]	Jπ [‡]	E(level) [†]	Jπ [‡]	E(level) [†]	Jπ [‡]
0.0 #	5/2-	1059.0 § 14	15/2+	2909.0 § 19	31/2+
16.0 # 10	9/2-	1262.0 § 15	17/2+	3120 # 3	37/2-
119.0 9		1427.0 # 23	25/2-	3181.0 § 20	33/2+
185.0 # 15	13/2-	1475.0 § 16	19/2+	3481.0 § 20	35/2+
307.0 § 9	5/2+	1691.0 § 16	21/2+	3746.3 #	41/2-
412.0 § 12	7/2+	1916.0 § 17	23/2+	3774.0 § 21	37/2+
494.0 # 18	17/2-	1978.0 # 25	29/2-	4095.0 § 21	39/2+
542.0 § 12	9/2+	2142.0 § 18	25/2+	4401.0 § 23	(41/2+)
695.0 § 13	11/2+	2388.0 § 18	27/2+	4441 # 4	45/2-
869.0 § 14	13/2+	2540 # 3	33/2-	4752.0 § 24	(43/2+)
919.0 # 20	21/2-	2635.0 § 19	29/2+	5052.0 ? § 24	(45/2+)

Continued on next page (footnotes at end of table)

$^{168}\text{Er}(^{19}\text{F},4n\gamma)$ 1988Ja10 (continued) **^{183}Ir Levels (continued)**

$E(\text{level})^\dagger$	$J\pi^\ddagger$
5215# 4	49/2-
5434.0?§ 25	(47/2+)
6065# 4	(53/2-)
6988?# 4	(57/2-)

† From least-squares fit to E_γ , assigning 1-keV uncertainty to all E_γ data.

‡ Authors' suggested values based on deduced band structure.

§ (A): 5/2[402] band.

(B): 1/2[541] band.

 $\gamma(^{183}\text{Ir})$

$E_\gamma^\dagger$	$E(\text{level})$	$E_\gamma^\dagger$	$E(\text{level})$	$E_\gamma^\dagger$	$E(\text{level})$
(16)	16.0	274	2909.0	508	1427.0
105	412.0	283	695.0	521	2909.0
119	119.0	293	3774.0	546	3181.0
130	542.0	300	3481.0	551	1978.0
153	695.0	306§	4401.0	562	2540
169	185.0	307	307.0	572	3481.0
174	869.0	309	494.0	580	3120
188	307.0	321	4095.0	593	3774.0
190	1059.0	327	869.0	614	4095.0
203	1262.0	364	1059.0	626	3746.3
213	1475.0	393	1262.0	627	4401.0
216	1691.0	416	1475.0	651§	5052.0?
225	1916.0	425	919.0	657	4752.0
226	2142.0	429	1691.0	682§	5434.0?
235	542.0	441	1916.0	695	4441
246	2388.0	451	2142.0	774	5215
247	2635.0	472	2388.0	850	6065
272	3181.0	493	2635.0	923§	6988?

† Uncertainties unstated by authors.

§ Placement of transition in the level scheme is uncertain.

 $^{185}\text{Re}(\alpha,6n\gamma)$ 1977An02

$E(\alpha)=72$ MeV; measured E_γ , I_γ , $\gamma(\theta)$, $\gamma\gamma$ coin.

 ^{183}Ir Levels

$E(\text{level})^\dagger$	$J\pi^\ddagger$	Comments
0.0	5/2-	
15.8§ 3	9/2-	E(level): from Adopted Levels.
184.9§ 12	13/2-	
493.3§ 16	17/2-	
917.8§ 19	21/2-	
1425.9§ 21	25/2-	
1976.7§ 24	29/2-	
2539§ 3	33/2-	
3118§ 3	37/2-	
3744§ 3	41/2-	

† From E_γ , assigning 1 keV uncertainty to all data. Values are given assuming the adopted energy (15.8 keV) for the J=9/2 level; the authors assumed the 9/2 level was the g.s..

‡ Authors' values, based on deduced band structure, adjusted by evaluator assuming the lowest-energy level observed was the J=9/2 band member, not the J=5/2 g.s..

§ (A): π 1/2[541] band.

 $^{185}\text{Re}(\alpha, 6n\gamma)$ **1977An02 (continued)**

$\gamma(^{183}\text{Ir})$

<u>$E\gamma$</u>	<u>E(level)</u>	<u>$I\gamma$</u>	<u>Mult.[†]</u>
168.6	184.9	164	Q
308.4	493.3	127	Q
424.5	917.8	96	Q
508.1	1425.9	71	Q
550.8	1976.7	48	Q
561.9	2539	30	Q
579.5	3118	19	Q
625.9	3744	13	Q

[†] Assigned by the authors on the basis of unspecified $\gamma(\theta)$ data.

Adopted Levels, Gammas

$Q(\beta^-) = -5583$ 18; $S(n) = 7675$ 20; $S(p) = 4010$ 26; $Q(\alpha) = 4822$ 9 2012Wa38.

$Q(\epsilon p) = 1548$ 27 (2012Wa38).

For hfs and isotope shift measurements, see 1992Hi07, 1999Le52, 1999Ro28, 1999Sa40.

For discussion of level-energy systematics for $N=105$ isotones, see 2013Sa43.

 ^{183}Pt Levels**Cross Reference (XREF) Flags**

A ^{183}Pt IT Decay
 B ^{183}Au ϵ Decay
 C ^{187}Hg α Decay (2.4 min)
 D ^{187}Hg α Decay (1.9 min)
 E (HI,xn γ)

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
0.0 ^d	1/2 ^{-e}	AB E	6.5 min 10	<p>$\% \epsilon + \% \beta^+ = 100$; $\% \alpha = 0.0096$ 5 (1995Bi01). $\mu = +0.502$ 5 (1999Le52, 1999Ro28, 1999Sa40, 2000SaZZ). μ: from LASER resonance ionization mass spectroscopy; ^{195}Pt reference standard. Others: $+0.51$ 3 (1990Hi08), $+0.52$ 3 (1992Hi07). $\langle r^2 \rangle^{1/2}(\text{charge}) = 5.403$ fm 4 (2004An14). $\Delta \langle r^2 \rangle(^{194}\text{Pt}, ^{183}\text{Pt}) = -0.216$ 8 (1999Le52, 1999Ro28, 1999Sa40). Other: -0.17 5 (1992Hi07). $\% \alpha$: from 1995Bi01; based on comparison of I_α with intensity of ^{183}Pt $\epsilon + \beta^+$ decay, taking into account the 43 s component of that decay. Other $\% \alpha$: 0.0013 (1963Gr08); expected to be correct within a factor of three, but authors may not have corrected for possible contribution to $\epsilon + \beta^+$ intensity from 43 s isomer (1995Bi01). μ: from LASER spectroscopy (1999Le52, 1999Ro28, 1999Sa40), relative to $\mu(^{195}\text{Pt})$. Other: $+0.521$ 27 from resonance ionization mass spectroscopy and pulsed-LASER induced desorption (1992Hi07). $J\pi$: $J=1/2$ from hfs spectrum (1992Hi07); μ consistent with that calculated for 1/2- 1/2[521] level (1999Le52, 1999Ro28, 1999Sa40). Bandhead for band with decoupling parameter $a = +0.85$, typical of v 1/2[521] configuration in this mass region.</p>
34.74 [@] 7	7/2-	AB E	43 s 5	<p>$T_{1/2}$: from 1963Gr08. Other value: 7.0 min 25 (1966Si08). $\% \epsilon + \% \beta^+ = 96.9$ 8; $\% \alpha < 3 \times 10^{-4}$; $\% \text{IT} = 3.1$ 8 (1998Ro32). $\mu = 0.782$ 14 (1999Le52, 1999Ro28, 1999Sa40, 2000SaZZ). $Q = 3.4$ 3 (1999Le52, 1999Ro28, 1999Sa40). μ, Q: from LASER resonance ionization mass spectroscopy. Sternheimer correction applied to Q. μ: ^{195}Pt reference standard. Others: 0.96 8 (1992Ro21), 1.03 8 (1992St16); from static nuclear orientation with γ detection. Other Q: $+3.7$ 3 (2000SaZZ). $\Delta \langle r^2 \rangle(^{194}\text{Pt}, ^{183}\text{Pt}) = -0.106$ 8 (1999Le52, 1999Ro28, 1999Sa40). $\% \alpha$: α decay not observed. An α branch to the 7/2- 7/2[514] ^{179}Os level at 145.4 keV would have $\text{HF} < 1$, unless $\% \alpha < 3 \times 10^{-4}$. μ, Q: from LASER spectroscopy (1999Le52, 1999Ro28, 1999Sa40); μ relative to $\mu(^{195}\text{Pt})$, sternheimer correction applied.</p>
84.73 ^d 7	3/2 ^{-e}	B		<p>$J\pi$: M3 35γ to 1/2- g.s..</p>
96.15 ^d 7	5/2 ^{-e}	B E		<p>$J\pi$: E2 85γ to 1/2- g.s.; g.s. band member.</p>
149.91 [@] 10	(9/2)-	B E		<p>$J\pi$: E2 96γ to 1/2- g.s.; g.s. band member.</p>
195.90 [#] 10	(9/2)+	B E	>150 ns	<p>$J\pi$: M1+E2 115γ to 7/2- 35; band assignment. $J\pi$: E1 from (5/2, 7/2)-. $T_{1/2}$: from (HI,xnγ).</p>
243.58 [#] 14	(11/2)+	B E		<p>$J\pi$: M1(+E2) 48γ to (9/2)+ 196.</p>
289.74 [@] 11	(11/2)-	B E		<p>$J\pi$: D+Q intraband 140γ to (9/2)- 150; intraband 255γ to 7/2- 35.</p>
298.87 ^d 8	7/2 ^{-e}	B		<p>$J\pi$: E2 214γ to 3/2- 85; g.s. band member.</p>
314.23 ^d 10	9/2 ^{-e}	B E		<p>$J\pi$: stretched E2 218γ to 5/2- 96; g.s. band member.</p>
316.9 [#] 7	(13/2+)	E		<p>$J\pi$: unhindered α-decay from 13/2(+) 57 level in ^{187}Hg; gammas to (11/2)+ and to (9/2)+.</p>
347.72 ^a 8	(5/2)-	B		<p>$J\pi$: M1+E2 313γ to 7/2- 35.</p>

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{183}Pt Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	XREF	Comments
373.23 ^{&} 9	(7/2) ⁻	B	J π : E2+M1 339 γ to 7/2 ⁻ 35.
375.44 ^{&} 12	(7/2) ⁺	B	J π : M1 180 γ to (9/2) ⁺ 196.
449.4 [@] 7	(13/2) ⁻	E	J π : E2+M1 160 γ to (11/2) ⁻ 290.
471.66 ^a 10	(7/2) ⁻	B	J π : E2+M1 437 γ to 7/2 ⁻ 35.
477.7 [#] 8	(15/2) ⁺	E	J π : E2+M1 160 γ to (13/2) ⁺ 317; stretched E2 235 γ to (11/2) ⁺ 243.
531.60 ^{&} 12	(9/2) ⁺	B	J π : E1 from (5/2,7/2) ⁻ .
535.91 ^{&} 11	(9/2) ⁻	B	
556.61 ^b 13	3/2 ⁻	B	J π : M1+E2 557 γ to 1/2 ⁻ g.s..
568.79 ^c 12	(1/2) ⁻	B	J π : M1+E2 484 γ to 3/2 ⁻ 85.
590.1 [#] 9	(17/2) ⁺	E	
611.47 22		B	
613.16 21	(3/2,5/2) ⁻	B	J π : M1+E2 517 γ to 5/2 ⁻ 96, possible (E2) 613 γ to 1/2 ⁻ g.s..
617.67 ^b 16	(5/2) ⁻	B	J π : E2+(M1) 533 γ to 3/2 ⁻ 85; possible M1+E2 583 γ to 7/2 ⁻ 35; possible 303 γ to 9/2 ⁻ 314.
627.2 ^d 10	13/2 ^{-e}	E	XREF: E(627.0).
629.2 [@] 8	(15/2) ⁻	E	J π : 313 γ to 9/2 ⁻ 314; member of g.s. band.
636.37 17	(7/2 ⁺ , 9/2, 11/2) ⁻	B	J π : intraband Q 339 γ to (11/2) ⁻ 289; intraband 180 γ to (13/2) ⁻ 449.
650.23 ^c 11	(3/2) ⁻	B	J π : 165 γ to (7/2) ⁻ 472; 393 γ to (11/2) ⁺ 244; weak branch from (5/2) ⁻ in ϵ decay (log $ft=7.2$) makes J>7/2 unlikely.
678.45 16	(3/2,5/2) ⁻	B	J π : E2+M1 566 γ to 3/2 ⁻ 85; log $ft=6.6$ from (5/2) ⁻ in ϵ decay; band assignment.
692.99 13	(3/2,5/2) ⁻	B	J π : E2 594 γ to 5/2 ⁻ , uncertain γ to 1/2 ⁻ .
702.44 ^b 14	(7/2) ⁻	B	J π : E2+M1 597 γ to 5/2 ⁻ , uncertain 693 γ to 1/2 ⁻ g.s.; log $ft=6.2$ from (5/2) ⁻ in ϵ decay; 394 γ to 7/2 ⁻ 299.
730.92 18	($\geq 5/2$) ⁺	B	J π : E2+M1 607 γ to 5/2 ⁻ . Note that if the 702 γ were to deexcite this level, as suggested by 1989Ro21, this band assignment would be incorrect.
762.22 ^c 12	(5/2) ⁻	B	J π : E2 535 γ to (9/2) ⁺ 196.
801.90 13	(3/2,5/2,7/2) ⁻	B	J π : M1+E2 463 γ to 7/2 ⁻ 299; 678 γ to 3/2 ⁻ 85; 613 γ to (9/2) ⁻ 150; band assignment.
819.90 17	(7/2,9/2) ⁻	B	J π : E2 717 γ to 3/2 ⁻ 85; 429 γ to (7/2) ⁻ 373.
824.90 16	(5/2,7/2,9/2) ⁻	B	J π : M1+E2 506 γ to 7/2 ⁻ 299; M1+E2 521 γ to 9/2 ⁻ 314. log $ft=6.7$ from (5/2) ⁻ in ϵ decay for weak branch makes J=9/2 unlikely.
825.3 [@] 10	(17/2) ⁻	E	J π : M1+E2 526 γ to 7/2 ⁻ 299; 477 γ to (5/2) ⁻ 348. log $ft=6.8$ from (5/2) ⁻ in ϵ decay for weak branch makes J=9/2 unlikely.
834.2 [#] 10	(19/2) ⁺	E	J π : intraband gammas to (13/2) ⁻ and to (15/2) ⁻ .
835.31 16	(3/2,5/2) ⁻	B E	J π : intraband D+Q 244 γ to (17/2) ⁺ 590; intraband Q 356 γ to (15/2) ⁺ 478.
847.33 23	(7/2,9/2,11/2) ⁻	B	J π : M1+E2 739 γ to 5/2 ⁻ 96; possible 836 γ to 1/2 ⁻ g.s.; 536 γ to 7/2 ⁻ 299.
879.74 16	(7/2 ⁻ , 9/2) ⁻	B	J π : M1+E2 533 γ to 9/2 ⁻ 314.
919.02 22	(3/2,5/2,7/2) ⁻	B	J π : (E2+M1) 730 γ to (9/2) ⁻ 150; possible E2+(M1) 845 γ to 7/2 ⁻ 35.
930.64 16	-	B	J π : E2+M1 571 γ to (5/2) ⁻ 348.
931.88 17	(7/2,9/2) ⁻	B	J π : E2+M1 1010 γ from $\pi=$ 1941 level.
963.80 17	(7/2,9/2,11/2) ⁻	B E	J π : M1+E2 617 γ to 9/2 ⁻ 314; 571 γ to (7/2) ⁺ 375.
966.2 [#] 11	(21/2) ⁺	E	J π : M1+(E2) 650 γ to 9/2 ⁻ 314; 665 γ to 7/2 ⁻ 299.
978.62 22	(7/2) ⁻	B	J π : intraband D+Q 132 γ to (19/2) ⁺ 834; (E2) 376 γ to (17/2) ⁺ 590.
989.94 23	(⁺)	B	J π : M1+E2 829 γ to (9/2) ⁻ 150; 631 γ to (5/2) ⁻ 348; M1 944 γ to 7/2 ⁻ 35; log $ft=6.9$ for weak branch from (5/2) ⁻ in ϵ decay.
998.72 18	($\geq 7/2$)	B	J π : (E2) 615 γ to (7/2) ⁺ 375 allows J=(3/2 to 11/2); log $ft=7.2$ for weak branch from (5/2) ⁻ in ϵ decay favors J $\leq$ (7/2).
1011.9 ^d 15	17/2 ^{-e}	E	J π : 623 γ to (7/2) ⁺ 375; 755 γ to (11/2) ⁺ 244 suggests J π =(7/2 ⁺ , 9/2, 11/2 ⁺).
1024.53 22	(5/2,7/2,9/2) ⁻	B	log $ft=7.0$ for weak branch from (5/2) ⁻ in ϵ decay favors J=(7/2).
1035.11 16	(7/2,9/2) ⁻	B	J π : stretched Q 385 γ to 13/2 ⁻ 627; g.s. band member.
1038.2 [@] 13	(19/2) ⁻	E	J π : M1+(E2) 651 γ to (7/2) ⁻ 373.
1058.03 22		B	J π : M1+E2 736 γ to 7/2 ⁻ 299; 746 γ to (11/2) ⁻ 290.
1071.54 19	(5/2,7/2) ⁻	B	J π : intraband stretched Q 409 γ to (15/2) ⁻ 629 in (H1,xn γ).
1126.47 17		B	J π : 685 γ to (7/2) ⁻ 373 implies J=(3/2 to 11/2); log $ft=7.2$ from (5/2) ⁻ inconsistent with J=9/2, 11/2, but branching may be too weak to be reliable.
1263.0 [@] 14	(21/2) ⁻	E	J π : E2+(M1) 1037 γ to 7/2 ⁻ 35; 696 γ to (7/2) ⁺ 375; log $ft=6.5$ from (5/2) ⁻ in ϵ decay.
1280.1 [#] 12	(23/2) ⁺	E	J π : 753 γ to (7/2) ⁻ 373, 595 γ to (9/2) ⁺ 532 suggests J π =(5/2 ⁺ , 7/2,9/2,11/2 ⁻);
1421.3 [#] 13	(25/2) ⁺	E	log $ft=6.9$ from (5/2) ⁻ for weak branch in ϵ decay disfavors J=(9/2,11/2).
1444.0 ^d 18	21/2 ^{-e}	E	J π : intraband 438 γ to (17/2) ⁻ 825.
1501.3 [@] 16	(23/2) ⁻	E	
1748.4 [@] 17	(25/2) ⁻	E	

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Adopted Levels, Gammas (continued) ^{183}Pt Levels (continued)

E(level) [†]	J π [‡]	XREF	Comments
1790.9 [#] 14	(27/2+)	E	
1810.8 4		B	J π : 1512 γ to 7/2- 299.
1814.5 3	(3/2, 5/2, 7/2)-	B	J π : M1(+E2) 1467 γ to (5/2)- 348.
1844.4 3	-	B	J π : E2(+M1) 1497 γ to (5/2)- 348.
1847.8 4		B	J π : 1698 γ to (9/2)- 150, possible 1813 γ to 7/2- 35 imply J π =(5/2-, 7/2, 9/2, 11/2-). log ft =6.5 for weak branch from (5/2)- in decay renders J=9/2 or 11/2 very unlikely.
1884.3 3	(3/2, 5/2, 7/2)+	B	J π : E1 1537 γ to (5/2)- 348.
1892.4 3	($\leq$ 7/2)	B	J π : 1808 γ to 3/2- 85; log ft =6.5 from (5/2)- in ϵ decay, but branch is weak.
1900.6 ^d 20	25/2-e	E	J π : intraband stretched Q 457 γ to 21/2- 1444.
1907.6 4	(5/2, 7/2)-	B	J π : E1 1532 γ to (7/2)+ 375; log ft =5.6 from (5/2)- in ϵ decay.
1913.03 23	(5/2-, 7/2-)	B	J π : 1828 γ to 3/2- 85; 1763 γ to (9/2)- 150.
1914.74 19	(3/2, 5/2)-	B	J π : M1 1358 γ to (3/2)- 557; 1616 γ to 7/2- 299.
1936.3 [#] 15	(29/2+)	E	J π : intraband (E2) 515 γ to (25/2+) 1421.
1938.66 17	(7/2)-	B	J π : E1 1407 γ to (9/2)+ 532; log ft =5.8 from (5/2)-; 1843 γ to 5/2- 96..
1940.67 17	(3/2, 5/2)-	B	J π : E2 1593 γ to (5/2)- 348; log ft =5.7 from (5/2)-; 1372 γ to (1/2)- 569.
1948.65 23	(5/2-, 7/2)	B	J π : log ft =6.0 from (5/2)- in ϵ decay; 1634 γ to 9/2- 314.
1956.75 13	(7/2)-	B	J π : 1643 γ to 9/2- 314; log ft =5.3 from (5/2)-; E1 1760 γ to (9/2)+ 196; 1667 γ to (11/2)- 290.
1968.7 3	(3/2, 5/2, 7/2)-	B	J π : E2(+M1) 1873 γ to 5/2- 95; log ft <5.9 from (5/2)-.
1970.72 16	(7/2)-	B	J π : log ft <5.9 from (5/2)-; E2 1657 γ to 9/2- 314; 1439 γ to (9/2)+ 532.
1980.1 4		B	J π : 1681 γ to 7/2- 299 suggests J=(3/2 to 11/2). log ft =6.7 in ϵ decay for weak branch from (5/2)- favors J=(3/2, 5/2, 7/2).
2005.5 [@] 19	(27/2-)	E	J π : stretched Q 504 γ to (23/2-) 1501 in (HI,xn γ).
2268.5 [@] 20	(29/2-)	E	J π : intraband stretched Q 520 γ to (25/2-) 1748 in (HI,xn γ).
2340.8 [#] 15	(31/2+)	E	J π : intraband D+Q 404 γ to (29/2+) 1936 in (HI,xn γ).
2373.7 ^d 23	29/2-e	E	J π : intraband stretched Q 473 γ to 25/2- 1901; 1/2[521] band member..
2503.0 [#] 17	(33/2+)	E	J π : intraband stretched (Q) 567 γ to (29/2+) 1936.
2541.8 [@] 22	(31/2-)	E	J π : stretched Q 536 γ to (27/2-) 2005 in (HI,xn γ).
2818.5 [@] 22	(33/2-)	E	J π : (E2) 550 γ to (29/2-) 2269.
2872.1 ^d 25	33/2-e	E	J π : stretched Q 498 γ to 29/2- 2374; 1/2[521] band member.
2919.1 [#] 17	(35/2+)	E	J π : intraband 416 γ to (33/2+) 2503; intraband q78g to (31/2+) 2341.
3108.8 [@] 24	(35/2-)	E	J π : possible intraband 290 γ to (33/2-) 2819; intraband 567 γ to (31/2-) 2542.
3122.7 [#] 18	(37/2+)	E	J π : intraband stretched Q 620 γ to (33/2+) 2503.
3396.5 [@] 25	(37/2-)	E	J π : intraband 578 γ to (33/2-) 2819.
3423 ^d 3	37/2-e	E	J π : 1/2[521] band member.
3543.4 [#] 18	(39/2+)	E	J π : intraband 421 γ to (37/2+) 3123; intraband 624 γ to (35/2+) 2919.
3698 [@] 3	(39/2-)	E	J π : intraband 589 γ to (35/2-) 3109.
3793.7 [#] 21	(41/2+)	E	J π : intraband 671 γ to (37/2+) 3123.
4019 [@] 3	(41/2-)	E	XREF: E(4018.2). J π : 622 γ to 37/2- 3423; band assignment.
4025 ^d 3	41/2-e	E	XREF: E(4024.9). J π : 1/2[521] band member.
4290 [@] 3	(43/2-)	E	J π : intraband 592 γ to (39/2-) 3698.
4507.7 [#] 23	(45/2+)	E	J π : intraband 714 γ to (41/2+) 3794.
4950 [@] 3	(47/2-)	E	J π : intraband 660 γ to (43/2-) 4290.
5256.7 [?] 25	(49/2+)	E	J π : intraband 749 γ to (45/2+) 4508.

[†] From least-squares fit to E γ , assigning 1 keV uncertainty to E γ data for which authors did not state an uncertainty.

[‡] From band assignments and connecting-transition multipolarities as indicated. Above 1.8 mev, log ft arguments are reliable for only the strongly fed levels. Where missing feeding intensity is improbable, the parities of the levels associated with the 7/2[514], 9/2[624], and 7/2[633] bands are established by E1 transitions from the 1938 and 1954 levels into the 196 level and connecting transition multipolarities between these band members.

[§] (A): 7/2[633] band (1989Ro21). Band parameters: E₀=315, A=17.4 (J=7/2, 9/2).

[#] (B): 9/2[624] band (1990Ny02).

[@] (C): 7/2[514] band (1990Ny02). E₀=-166.3, A=12.8.

[&] (D): 7/2[503] band (1989Ro21). Band parameters: E₀=310, A=18.1 (J=7/2, 9/2).

^a (E): 5/2[512] band (1989Ro21). E₀=303.5, A=17.7.

^b (F): 3/2[512] band (1989Ro21). E₀=511.0, A=12.1.

^c (G): 1/2[510] band (1989Ro21). E₀=559, A=24.8, a=0.096 (J=1/2, 3/2, 5/2).

^d (H): 1/2[521] g.s. band (1990Ny02). E₀=5.3, A=15.3, a=+0.85 (J=1/2, 3/2, 5/2).

^e Definite J π assigned to g.s. band members based on progression of level energies (decoupling parameter consistent with that expected for 1/2[521] band) and independently-determined J(g.s.)=1/2 and E2 multipolarity for intraband 85 γ .

Adopted Levels, Gammas (continued)

$\gamma(^{183}\text{Pt})$						
E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	$\delta^{\dagger}$	α	Comments
34.74	35.0 1	100	M3		1.71×10^5 4	B(M3)(W.u.)=0.0042 12. E γ , Mult.: from ^{183}Pt IT decay.
84.73	84.6 1	100	E2		9.93	
96.15	11.4 2	≈ 0.0008	[E2]		4.3×10^4 4	
	96.0 1	100 16	E2		5.80	
149.91	115.2 1	100	M1+E2		3.6 9	Mult., δ : D(+Q), $\delta = -0.10 +22-10$ from (HI,xn γ), but $\alpha(\text{L})_{\text{exp}}$ and $\alpha(\text{K})_{\text{exp}}$ in ε decay imply M1+E2, $\delta = 3 +7-1$ and are considered adequate to establish $\Delta\pi = \text{no}$ for 115 γ .
195.90	46.1 2	0.75 12	[E1]		0.659 13	B(E1)(W.u.) $<1.5 \times 10^{-6}$.
	161.2 1	100 15	E1		0.1208	B(E1)(W.u.) $<1.6 \times 10^{-7}$. α : anomalous E1 transition. $\alpha(\text{E1})=0.1208$ from theory but $\alpha(\text{K})_{\text{exp}}=0.69$ 10 from ε decay.
243.58	48.0 2	100	M1(+E2)	0.27 8	19 6	
289.74	140 1	36 6	(M1+E2)		1.9 7	Other I γ : 17.3 17 from (HI,xn γ). Mult.: D+Q from $\gamma(\theta)$ in (HI,xn γ) for intraband γ . Mult.: Q intraband γ from (HI,xn γ).
	255.0 1	100 15	(E2)		0.1620	
298.87	202.6 1	13.0 20	[M1+E2]		0.6 3	
	214.1 1	100 15	E2		0.286	
314.23	218.1 1	100	E2		0.268	
316.9	73 $\S$					
	121 $\S$		[E2]		2.27	
347.72	251.4 1	25 4	[M1+E2]		0.33 17	
	262.8 1	19 3	[M1+E2]		0.29 15	
	313.1 1	100 15	M1+E2	0.5 3	0.23 4	
373.23	223 1	≈ 3.8	[M1+E2]		0.47 22	
	277.0 1	26 4	[M1+E2]	0.25 13	0.365 18	
	338.5 1	100 16	E2+M1	1.2 3	0.131 22	
375.44	179.5 1	100	M1		1.264	
449.4	160.0 $\S$	5.5 $\S$ 11	(E2+M1) $\frac{1}{2}$	-2.5 2	0.921 24	
	299.2 $\S$	100 $\S$ 4	(E2) $\frac{1}{2}$		0.0992	
471.66	98.5 2	5.5 8	[M1+E2]		6.1 9	
	123.9 1	100 15	M1(+E2)	<0.65	3.38 24	
	321.5 2	75 11				
	375.6 2	15 3				
	437.1 2	69 10	E2+M1	1.2 6	0.066 25	
477.7	160.0 $\S$	100 $\S$ 9	(E2+M1) $\frac{1}{2}$	-1.7 5	1.03 15	
	234.5 $\S$	70 $\S$ 3	(E2) $\frac{1}{2}$		0.212	
531.60	155.9 2	29 4	[M1+E2]		1.4 5	
	288.1 1	100 16	[M1+E2]		0.23 12	
	335.8 2	32 5				
535.91	162.6 1	100 15				
	221 1	≈ 9.2				
	246.2 2	10.8 17				
	386.3 2	6.3 9				
556.61	471.8 2	16.9 26	M1		0.0908	
	556.7 $\#$ 2	$\approx 100\#$	M1+E2	1.3 4	0.034 8	
568.79	484.1 1	100	M1+E2	0.8 3	0.062 11	
590.1	112.2 $\S$	2.7 $\S$ 5	(M1+E2) $\frac{1}{2}$	-0.6 +30-4	4.3 11	
	273.5 $\S$	100 $\S$ 5	(E2) $\frac{1}{2}$		0.1302	
611.47	297.1@ 2	15.7 23				
	312.6 2	100 15				
613.16	517.0 2	100 15	M1+E2	0.4 +3-4	0.065 10	
	613.2@ 2	89 14	(E2)		0.01532	
617.67	269.8 2	27 4	[M1+E2]		0.27 14	
	302.8@ 2	1.71 25				
	533.1 $\#$ 2	$\approx 39\#$	E2(+M1)		0.044 23	
	582.8 $\#$ @ 2	$\approx 100\#$	E2+M1	2 1	0.024 11	
627.2	313.0 $\S$	100				
629.2	179.6 $\S$					

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Pt})$ (continued)

E(level)	$E\gamma^{\dagger}$	$I\gamma^{\dagger}$	Mult. †	$\delta^{\dagger}$	α	Comments
629.2	339.4\$	100\$ 5	(E2) ‡		0.0688	
636.37	164.7 2	100 14				
	392.8 2	40 6				
	601.7@ 2	63 9				
650.23	553.7 2	24 4				
	565.6 1	100 18	E2+M1	1.3 +4-3	0.033 5	
678.45	379.5 2	$\approx$ 18				
	593.8 2	100 15	E2		0.01648	
	678.6@ 2	15.0 25				
692.99	394.0 2	9.2 13				
	596.9 2	100 17	E2+M1	3 +2-1	0.020 4	
	608.3 2	32 5				
	693.3@ 2	8.7 13				
702.44	329.3 2	$\approx$ 12.8				
	354.4 2	10.0 14				
	606.5 2	100 14	E2+M1	1.5 +5-3	0.025 4	
730.92	355.4 2	38 6				
	535.1 2	100 15	E2		0.0210	
762.22	388.5@ 2	24 3				
	463.1 2	47 7	M1+E2	0.9 3	0.066 12	
	612.5 2	57 9	(E2)		0.01536	
	666.1 2	24 3				
	677.5 2	89 13				
	727.5@ 2	100 15	M1(+E2)	<2	0.022 8	
801.90	428.8 2	54 9				
	705.8 2	100 15				
	717.0 2	69 10	E2		0.01085	
819.90	505.7 2	26 4	M1+E2	0.7 3	0.059 10	
	521.0 2	100 15	M1+E2	0.9 3	0.049 9	
824.90	477.1 2	31 4				
	526.1 2	100 15	M1+E2	$\approx$ 0.4	$\approx$ 0.0618	
825.3	196\$					
	376\$					E γ : for doubly-placed γ .
834.2	244.2\$	13.2\$ 22	(E2+M1) ‡	-1.1 +3-5	0.34 6	
	356.4\$	100\$ 5	(E2) ‡		0.0599	
835.31	536.2 2	24 3				
	739.4 2	100 15	M1+E2	0.7 +5-4	0.022 5	
	835.6@ 2	18.0 27				
847.33	533.1# 2	100#	M1+E2		0.044 23	
879.74	581.1 2	100 16				
	729.6 2	67 10	(E2+M1)		0.020 10	
	845.1@ 2	46 7	E2(+M1)	>2	0.0089 13	
919.02	571.3 2	63 9	E2+M1	1.5 +6-3	0.029 5	
	884.5@ 2	100 15	E2(+M1)	>2	0.0081 11	
930.64	362.0 2	23 3				
	582.8# 2	$\approx$ 100#				
931.88	556.7# 2	$\approx$ 100#	[E1]		0.00660	
	617.4 2	58 9	M1+E2	0.8 +4-3	0.033 6	
	897.6@ 2	11.0 17				
963.80	649.9 2	100 16	M1(+E2)	<1	0.033 7	
	664.6 2	38 5				
966.2	132.1\$	5.0\$ 5	(M1+E2) ‡		2.3 7	
	376\$	100\$ 5	(E2) ‡		0.0517	I γ : for doublet.
978.62	631 1	$\approx$ 24				
	828.7 2	100 15	M1+E2	1.0 +8-4	0.015 4	
	944.0@ 2	83 12	M1		0.01515	
989.94	614.5 2	100	(E2)		0.01525	
998.72	467.3 2	38 6				
	623.1 2	100 15				
	754.5@ 2	68 9				
1011.9	384.7\$	100\$	(E2) ‡		0.0486	
1024.53	651.3 2	100 15	M1(+E2)	<1	0.033 7	
	990.1@ 2	38 5				

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Pt})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. †	$\delta^{\dagger}$	α	Comments
1035.11	736.1 2 745.5 2 1000.6@ 3	100 14 28 4 91 14	M1+E2	0.7 +5-4	0.023 5	
1038.2	214\$@ 409.0\$\$	100\$ 7	(E2) ‡		0.0412	
1058.03	684.8 2	100				
1071.54	696.1 2	100 15				
	1036.8 3	100 15	E2(+M1)	>2	0.0058 7	
1126.47	595.1 2 753.0 2 1091.8@ 3	66 9 72 9 100 16				
1263.0	437.7\$	100				
1280.1	314\$ 445.9\$	100\$ 6	(E2) ‡		0.0330	
1421.3	141.2\$ 454.8\$	2.4\$ 7 100\$ 4	(M1+E2) ‡ (E2) ‡		1.9 7 0.0313	
1444.0	432.1\$	100\$	(E2) ‡		0.0357	
1501.3	239\$@ 463.2\$	100\$ 6	(E2) ‡		0.0299	
1748.4	485.4\$	100\$	(E2) ‡		0.0266	
1790.9	369.5\$ 511\$	100\$ 36	(E2+M1) ‡	-1.4 +5-10	0.09 3	
1810.8	1511.9 3	100				
1814.5	1466.8 3	100	M1(+E2)	<1.6	0.0042 9	
1844.4	1496.7 3	100	E2(+M1)	>1	0.0032 6	
1847.8	1697.9 3 1812.8@ 3	100 14 36 6				
1884.3	1536.6 3	100	E1		1.20×10^{-3}	
1892.4	1807.7 3	100				
1900.6	456.6\$	100\$	(E2) ‡		0.0310	
1907.6	1532.2 3	100	E1			
1913.03	1763.3 3 1828.1 3 1878.0@ 3	36 5 47 7 100 15				
1914.74	1358.2 3 1615.8 3 1830.0 3	72 12 22 3 100 16	M1		0.00610	
1936.3	147\$@ 515.0\$	100\$ 7	(E2) ‡		0.0230	
1938.66	1406.9 3 1639.9 3 1742.6 3 1842.7 3 1903.9@ 3	83 13 27 4 100 15 80 12 37 5	E1 E1		1.28×10^{-3} 1.16×10^{-3}	
1940.67	1010.1 3 1371.9 3 1384.0 3 1592.9 3 1940.1@ 3	27 4 24 4 60 9 100 16 12.4 20	E2+M1 E2(+M1) E2	1.1 +13-5 >0.6	0.0087 23 0.0040 11 0.00235	
1948.65	1634.3 3 1852.6 3 1914.2@ 3	48 7 100 15 16.9 25				
1956.75	1425.0 3 1484.9 3 1608.8 3 1642.5 3 1658.3 3 1666.7 3 1760.9 3 1861.0 3 1921.7@ 3	58 8 25 4 15.8 23 29 4 23 4 3.7 6 100 15 23 4 12.9 19	E1 E2(+M1) E2 E1	>1	1.26×10^{-3} 0.0032 6 0.00222 1.16×10^{-3}	
1968.7	1872.5 3 1934.0@ 3	100 15 23 3	E2(+M1)	>1	0.0022 3	

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Pt})$ (continued)

E(level)	$E\gamma^\dagger$	$I\gamma^\dagger$	Mult. [†]	α	Comments
1970.72	899.6@ 2	28 4			
	1438.8 3	72 11			
	1595.5 3	29 4			
	1656.7 3	100 15	E2	0.00222	
	1820.6 3	43 7			
	1874.6 3	83 13			
1980.1	1681.2 3	100 16			
	1945.2@ 3	38 7			
2005.5	259§@				
	504.2§	100§ 4	(E2) [‡]	0.0243	
2268.5	520.1§	100§	(E2) [‡]	0.0225	
2340.8	404.1§	28§ 3	(M1+E2) [‡]	0.09 5	
	550§	100§ 13	(E2) [‡]	0.0197	
2373.7	473.1§	100§	(E2) [‡]	0.0284	
2503.0	164§@				
	567§&	100§& 6	(E2) [‡]	0.0183	
2541.8	275§@				
	536.3§	100§ 3	(E2) [‡]	0.0209	
2818.5	550§	100§	(E2) [‡]	0.0197	
2872.1	498.4§	100§	(E2) [‡]	0.0250	
2919.1	416§				
	578				E γ : from (HI,xn γ) for doublet.
3108.8	290§@				
	567§&	100§& 6	(E2) [‡]	0.0183	
3122.7	205§@				
	620.0§	100§ 13	(E2) [‡]	0.01494	
3396.5	578§	100			E γ : for doublet.
3423	551§	100§	(E2) [‡]	0.0196	
3543.4	421§				
	624§				
3698	589§	100			
3793.7	671§	100			
4019	622§	100			
4025	602§	100			
4290	592§	100			
4507.7	714§	100			
4950	660§	100			
5256.7?	749§@	100			

[†] From ^{183}Au ϵ decay, except as noted.[‡] From $\gamma(0)$ in (HI,xn γ), assigning $\Delta\pi$ =(no) if transition is intraband.§ From (HI,xn γ).

Multiply placed; intensity suitably divided.

@ Placement of transition in the level scheme is uncertain.

& Multiply placed; undivided intensity given.

Adopted Levels, Gammas (continued)

Bands for ¹⁸³Pt

¹⁸³Pt₁₀₅

^{183}Pt IT Decay 1998Ro32,2000Ro41

Parent ^{183}Pt : E=34.74 7; $J\pi=7/2^-$; $T_{1/2}=43$ s 5; %IT decay=3.1 8.

Total energy release for this decay scheme is 0.18 3 cf. QxBR=1.1 3.

 ^{183}Pt Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0	1/2-		
35.0 1	7/2-	43 s 5	% ϵ +% β^+ =96.9 8; %IT=3.1 8 (1998Ro32); % α <4×10 ⁻⁴ . $T_{1/2}$: from Adopted Levels.

[†] From E γ .

[‡] From Adopted Levels.

 $\gamma(^{183}\text{Pt})$

E γ	E(level)	$I\gamma^{\dagger}$	Mult.	α	$I(\gamma+ce)^{\dagger}$	Comments
35.0 1	35.0	5.85×10 ⁻⁴ 14	M3	1.71×10 ⁵ 4	100	I γ : from I($\gamma+ce$)=100 and α (M3). Mult.: from L1:L2:L3=36 7: <36:179 38 (1998Ro32); I(L3) rounded to 180 40 in 2000Ro41.

[†] For absolute intensity per 100 decays, multiply by 0.031 8.

Decay Scheme

Intensity: I($\gamma+ce$) per
100 parent decays
%IT=3.1 8

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41

Parent ^{183}Au : E=0.0; $J\pi=(5/2)^-$; $T_{1/2}=42.8$ s 10; Q(g.s.)=5583 18; % ϵ +% β^+ decay=99.45 25.

The decay scheme was derived by 1989Ro21 on the basis of $\gamma\gamma$ -coincidence data and conversion electron data.

Significant unplaced transition intensity and the lack of level data above 2 MeV, suggest that the decay scheme may be incomplete.

Total energy release for this decay scheme is 6621 320 cf. QxBR=5552 23.

 ^{183}Pt Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0 ^d	1/2-	6.5 min 10	$T_{1/2}$: from Adopted Levels.
34.57@ 9	7/2-	43 s 5	% ϵ +% β^+ =96.9 8; % α <3×10 ⁻⁴ ; %IT=3.1 8 (1998Ro32). $T_{1/2}$: from Adopted Levels.
84.66 ^d 7	3/2-		
96.11 ^d 7	5/2-		
149.77@ 10	(9/2)-		
195.76# 11	(9/2)+	>50 ns	$T_{1/2}$: in $\gamma\gamma(t)$, the 161 γ is strongly attenuated (1984Ma41).
243.54# 14	(11/2)+		

Continued on next page (footnotes at end of table)

¹⁸³Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued)

¹⁸³Pt Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	E(level) [†]	J $\pi^{\ddagger}$	E(level) [†]	J $\pi^{\ddagger}$
289.60@ 12	(11/2)-	730.78 18	($\geq 5/2$)+	1126.38 16	
298.82d 8	7/2-	762.05c 11	(5/2)-	1810.7 3	
314.25d 10	9/2-	801.85 14	(3/2, 5/2, 7/2)-	1814.4 3	(3/2, 5/2, 7/2)-
347.62a 8	(5/2)-	819.89 16	(7/2, 9/2)-	1844.3 3	-
373.16& 9	(7/2)-	824.82 16	(5/2, 7/2, 9/2)-	1847.53 23	
375.30§ 12	(7/2)+	835.38 13	(3/2, 5/2)-	1884.2 3	(3/2, 5/2, 7/2)+
471.56a 10	(7/2)-	847.35 23	(7/2, 9/2, 11/2)-	1892.3 3	($\leq 7/2$)
531.50§ 13	(9/2)+	879.66 14	(7/2-, 9/2-)	1907.5 4	(5/2, 7/2)-
535.82& 12	(9/2-)	919.00 16	(3/2, 5/2, 7/2)-	1912.81 19	(5/2-, 7/2-)
556.55b 13	3/2-	930.53 15	-	1914.68 19	(3/2, 5/2)-
568.70c 11	(1/2)-	931.94 15	(7/2, 9/2)-	1938.56 16	(7/2)-
611.39 16		963.79 16	(7/2, 9/2, 11/2)-	1940.49 15	(3/2, 5/2)-
613.16 15	(3/2, 5/2)-	978.43 17	(7/2)-	1948.69 19	(5/2-, 7/2)
617.40b 12	(5/2)-	989.81 24	(+)	1956.63 13	(7/2)-
636.29 15	(7/2+, 9/2, 11/2-)	998.42 16	($\geq 7/2$)	1968.60 23	(3/2, 5/2, 7/2)-
650.17c 11	(3/2)-	1024.57 17	(5/2, 7/2, 9/2)-	1970.71 15	(7/2)-
678.46 13	(3/2, 5/2)-	1035.04 15	(7/2, 9/2)-	1979.90 23	
693.02 11	(3/2, 5/2)-	1057.97 22			
702.37b 14	(7/2)-	1071.28 17	(5/2, 7/2)-		

[†] From least-squares fit to E γ , including uncertainly-placed transitions (note that their exclusion would change E(level) by at most 0.2 keV).

[‡] From Adopted Levels.

§ (A): 7/2[633] band.

(B): 9/2[624] band.

@ (C): 7/2[514] band.

& (D): 7/2[503] band.

a (E): 5/2[512] band.

b (F): 3/2[512] band.

c (G): 1/2[510] band.

d (H): 1/2[521] g.s. band.

 β^+, ϵ Data

E ϵ	E(level)	I $\beta^{+\ddagger}$	I $\epsilon^{\ddagger}$	Log ft	I($\epsilon+\beta^+$) ^{†‡}
(3603 18)	1979.90	0.080 17	0.29 6	6.69 10	0.37 8
(3612 18)	1970.71	0.61 9	2.2 3	5.81 7	2.8 4
(3614 18)	1968.60	0.77 15	2.7 5	5.72 9	3.5 7
(3626 18)	1956.63	2.1 2	7.3 9	5.29 6	9.4 11
(3634 18)	1948.69	0.38 7	1.3 2	6.04 8	1.7 3
(3643 18)	1940.49	0.83 11	2.9 4	5.70 6	3.7 5
(3644 18)	1938.56	0.72 11	2.5 4	5.77 7	3.2 5
(3668 18)	1914.68	0.76 12	2.5 4	5.76 7	3.3 5
(3670 18)	1912.81	0.23 9	0.8 3	6.28 18	1.0 4
(3676 18)	1907.5	1.1 2	3.8 7	5.59 8	4.9 9
(3691 18)	1892.3	0.14 3	0.47 8	6.50 8	0.61 11
(3699 18)	1884.2	0.64 12	2.1 4	5.86 9	2.7 5
(3735 18)	1847.53	0.16 4	0.51 11	6.48 10	0.67 15
(3739 18)	1844.3	0.21 4	0.65 11	6.37 8	0.86 15
(3769 18)	1814.4	0.16 3	0.50 9	6.49 8	0.66 12
(3772 18)	1810.7	0.075 15	0.22 4	6.84 9	0.30 6
(4457 18)	1126.38	0.16 5	0.25 7	6.94 13	0.41 12
(4512 18)	1071.28	0.51 9	0.75 13	6.47 8	1.26 22
(4525 18)	1057.97	0.10 2	0.15 2	7.18 7	0.25 4
(4548 18)	1035.04	0.21	0.31 1	6.868 15	0.52 15
(4558 18)	1024.57	0.25 6	0.36 8	6.80 10	0.61 14
(4585 18)	998.42	0.17 2	0.23 6	6.99 11	0.40 10
(4593 18)	989.81	0.11 2	0.15 3	7.18 9	0.26 5
(4605 18)	978.43	0.20 6	0.27 8	6.93 13	0.47 14
(4619 18)	963.79	0.24 4	0.32 5	6.86 7	0.56 9
(4651 18)	931.94	0.49 6	0.65 7	6.56 5	1.14 13

Continued on next page (footnotes at end of table)

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued) β^+, ϵ Data (continued)

E_{ϵ}	E(level)	$I\beta^{\dagger\dagger}$	$I\epsilon^{\ddagger}$	Log ft	$I(\epsilon+\beta^+)^{\dagger\ddagger}$
(4652 18)	930.53	0.05 3	0.07 5	7.5 3	0.12 8
(4664 18)	919.00	0.23 10	0.29 13	6.91 20	0.52 23
(4703 18)	879.66	0.52 9	0.66 12	6.56 8	1.18 21
(4736 18)	847.35	0.16 2	0.20 2	7.09 5	0.36 4
(4748 18)	835.38	0.63 10	0.77 13	6.51 8	1.40 23
(4758 18)	824.82	0.32 5	0.38 6	6.81 7	0.70 11
(4763 18)	819.89	0.38 6	0.46 7	6.73 7	0.84 13
(4781 18)	801.85	0.50 6	0.59 8	6.63 6	1.09 14
(4821 18)	762.05	0.83 19	0.97 22	6.42 10	1.8 4
(4852 18)	730.78	0.61 9	0.69 10	6.57 7	1.30 19
(4881 18)	702.37	1.2 2	1.3 2	6.30 7	2.5 4
(4890 18)	693.02	1.5 4	1.6 4	6.21 12	3.1 8
(4905 18)	678.46	0.81 14	0.89 16	6.47 8	1.7 3
(4933 18)	650.17	0.73 15	0.77 16	6.54 9	1.5 3
(4947 18)	636.29	0.20 5	0.21 5	7.11 11	0.41 10
(4966 18)	617.40	1.0 4	1.0 5	6.42 20	2.0 9
(4970 18)	613.16	0.38 9	0.40 9	6.83 10	0.78 18
(4972 18)	611.39	0.19 3	0.20 4	7.14 8	0.39 7
(5014 18)	568.70	0.29 9	0.28 10	6.98 15	0.58 19
(5026 18)	556.55	0.50 15	0.50 15	6.74 13	1.0 3
(5047 18)	535.82	0.52 8	0.52 8	6.73 7	1.04 16
(5111 18)	471.56	2.0 4	1.8 3	6.19 8	3.8 7
(5208 18)	375.30	2.0 11	1.7 10	6.24 25	3.7 21
(5210 18)	373.16	1.4 4	1.3 4	6.37 13	2.7 8
(5269 18)	314.25	0.7 5	0.6 4	6.7 3	1.3 9
(5284 18)	298.82	2.5 8	2.1 7	6.17 15	4.6 15
(5293 18)	289.60	0.71 16	0.59 14	6.72 10	1.3 3
(5433 18)	149.77	2.6 13	2.0 9	6.21 21	4.6 22
(5487 18)	96.11	5 2	3 2	5.99 22	8 4
(5498 18)	84.66	5 4	4 3	5.9 4	9 7
(5548 18)	34.57	<5.9	<4.1	>5.9	<10

† Calculated from intensity balance, assigning $1/2I_{\gamma}\pm 1/2I_{\gamma}$ to transitions with uncertain placements. Significant unplaced intensity casts doubt on the weaker branchings and their derived log ft values.

‡ For intensity per 100 decays, multiply by 1.000 3.

 $\gamma(^{183}\text{Pt})$

I_{γ} normalization: calculated assuming $\Sigma(I(\gamma+\epsilon))$ to g.s.+34.5)=95% 5, based on expectation of negligible β feeding to g.s. ($\Delta J=2$, $\Delta\pi=\text{no}$) and <10% feeding to 34.5 level; the latter assumes comparable feeding to the 7/2-, 5/2- and 3/2- members of the 1/2[521] band in ^{183}Pt . $0.5I_{\gamma}\pm 0.5I_{\gamma}$ was assumed for tentatively-placed transitions feeding the g.s. and 35 level. Note that the unplaced intensity is consistent with no net feeding to the lower-lying levels.

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger@}$	Mult. ‡	$\delta^{\S}$	α	$I(\gamma+\epsilon)^@$	Comments
11.4 2	96.11	#	[E2]		4.3×10^4 4	=150	
35.0	34.57		M3		171300		E_{γ} : from 2000Ro41 conversion electron data. Mult.: from Adopted Gammas.
46.1 2	195.76	1.20 18	[E1]		0.659 13		
48.0 2	243.54	2.2 3	M1(+E2)	0.27 8	19 6		Mult., δ : from L1:L2:L3=240 50: 180 40:130 30 (2000Ro41). α : consistent with $\alpha=15$ from $I(\gamma+\epsilon)=35$ 5 assuming intensity balance through the 243 level (for which the $\Delta J=3$, $\Delta\pi=\text{yes}$ ϵ feeding is presumed to be negligible) and measured $I_{\gamma}=2.2$ 3.

Continued on next page (footnotes at end of table)

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger @}$	Mult. ‡	$\delta^{\S}$	α	Comments
84.6 1	84.66	51 8	E2		9.93	%I γ =3.5 4 assuming recommended normalization. Mult.: L12:L3=70:71, α (L3)exp=3.0 (1984Ma41); L1:L2:L3=100 30:1600 300:1500 300 so δ (M1,E2)>3 (2000Ro41).
$\times$ 87.2 2		1.50 23				
96.0 1	96.11	44 7	E2		5.80	%I γ =3.0 5 assuming recommended normalization. Mult.: α (L3)exp=2.3 (1984Ma41); K:L3=390 80:900 250 (2000Ro41). δ (E2,M1)>4.0 (2000Ro41).
98.5 2	471.56	0.61 9	[M1, E2]		6.1 9	
115.2 1	149.77	27 4	M1+E2		3.6 9	%I γ =1.9 3 assuming recommended normalization. Mult.: from Adopted Gammas. E2+M1, δ =3 +7-1 from α (L3)exp=0.63 (1984Ma41) and α (K)exp=0.9 3 (2000Ro41); δ is inconsistent with that from (HI,xn γ) but α (K)exp and α (L)exp do establish $\Delta\pi$ =no.
123.9 1	471.56	11.0 17	M1 (+E2)	<0.65	3.38 24	Mult.: α (K)exp=3.0 8 (2000Ro41).
140 1	289.60	3.8 6	(M1+E2)		1.9 7	Mult.: from Adopted Gammas.
155.9 2	531.50	7.3 11	[M1, E2]		1.4 5	
161.2 1	195.76	160 24	E1		0.1208	%I γ =11.0 17 assuming recommended normalization. Mult.: α (K)exp=0.69 (1984Ma41) for anomalous E1 transition, λ =58 9. α (theory)=0.1208.
162.6 1	535.82	12.0 18				
164.7 2	636.29	3.5 5				
179.5 1	375.30	79 12	M1		1.264	Mult.: α (K)exp=1.4 (1984Ma41).
$\times$ 191.1 2		0.86 13				
202.6 1	298.82	13.0 20	[M1, E2]		0.6 3	
214.1 1	298.82	100 15	E2		0.286	Mult.: α (K)exp=0.14 (1984Ma41).
218.1 1	314.25	58 9	E2		0.268	Mult.: α (K)exp=0.22 (1984Ma41).
221 1	535.82	$\approx$ 1.1 $^{\#}$				
223 1	373.16	$\approx$ 1.9 $^{\#}$	[M1, E2]		0.47 22	
246.2 2	535.82	1.30 20				
251.4 1	347.62	21 3	[M1, E2]		0.33 17	
255.0 1	289.60	10.5 16	(E2)		0.1620	Mult.: from Adopted Gammas.
262.8 1	347.62	16.0 24				
269.8 2	617.40	6.5 10				
$\times$ 273.0 2		1.7 3				
$\times$ 275.6 2		5.4 8				
277.0 1	373.16	13.0 20	[M1+E2]	0.25 13	0.365 18	
288.1 1	531.50	25 4	[M1, E2]		0.23 12	
$\times$ 289.7 2		2.3 3				
297.1 $\&$ 2	611.39	0.83 12				
$\times$ 299.2 2		1.8 3				
302.8 $\&$ 2	617.40	0.41 6				
312.6 2	611.39	5.3 8				
313.1 1	347.62	85 13	M1+E2	0.5 3	0.23 4	Mult.: I(ce(K))(312.6+313.1)=17.0 so α (K)exp=0.20 4 for doublet dominated by this transition.
321.5 2	471.56	8.2 12				
329.3 2	702.37	$\approx$ 3.7 $^{\#}$				
335.8 2	531.50	8.0 12				
338.5 1	373.16	50 8	E2+M1	1.2 3	0.131 22	%I γ =3.4 6 assuming recommended normalization. Mult.: I(ce(K))=5.3 so α (K)exp=0.106 22.
354.4 2	702.37	2.9 4				
355.4 2	730.78	5.1 8				
362.0 2	930.53	1.60 24				

Continued on next page (footnotes at end of table)

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger @}$	Mult. ‡	$\delta^{\S}$	α	Comments
$^{x}366.1\ 2$		1.10 17				
375.6 2	471.56	1.7 3				
379.5 2	678.46	$\approx 3.6^{\#}$				
$^{x}381.7\ 2$		1.00 15				
386.3 2	535.82	0.75 11				
$388.5^{\&}\ 2$	762.05	2.2 3				
$^{x}389.9\ 2$		0.65 10				
392.8 2	636.29	1.40 21				
394.0 2	693.02	2.2 3				
$^{x}401.9\ 2$		1.9 3				
$^{x}424.2\ 2$		1.60 24				
428.8 2	801.85	3.8 6				
$^{x}429.5\ 2$		2.7 4				
437.1 2	471.56	7.6 11	E2+M1	1.2 6	0.066 25	Mult.: I(ce(K))=0.4 so $\alpha(K)\text{exp}=0.053\ 11$.
463.1 2	762.05	4.3 6	M1+E2	0.9 3	0.066 12	Mult.: I(ce(K))=0.24 so $\alpha(K)\text{exp}=0.056\ 12$.
467.3 2	998.42	1.30 20				
471.8 2	556.55	6.6 10	M1		0.0908	Mult.: I(ce(K))=0.55 so $\alpha(K)\text{exp}=0.083\ 17$.
477.1 2	824.82	2.3 3				
484.1 1	568.70	15.0 23	M1+E2	0.8 3	0.062 11	Mult.: I(ce(K))=0.78 so $\alpha(K)\text{exp}=0.052\ 11$.
$^{x}486.0\ 2$		1.7 3				
505.7 2	819.89	2.4 4	M1+E2	0.7 3	0.059 10	Mult.: I(ce(K))=0.12 so $\alpha(K)\text{exp}=0.050\ 11$.
517.0 2	613.16	8.7 13	M1+E2	0.4 +3-4	0.065 10	Mult.: I(ce(K))=0.5 so $\alpha(K)\text{exp}=0.057\ 12$.
521.0 2	819.89	9.3 14	M1+E2	0.9 3	0.049 9	Mult.: I(ce(K))=0.37 so $\alpha(K)\text{exp}=0.040\ 8$.
$^{x}524.1\ 2$		1.8 3				
526.1 2	824.82	7.5 11	M1+E2	≈ 0.4	≈ 0.0618	Mult.: I(ce(K))=0.4 so $\alpha(K)\text{exp}=0.053\ 11$.
$^{x}528.5\ 2$		4.3 6				
$533.1^{\text{a}}\ 2$	617.40	$\approx 9.4^{\# \text{a}}$	E2 (+M1)		0.044 23	Mult.: I(ce(K))=0.34 so $\alpha(K)\text{exp}=0.036$, consistent with significant E2 admixture in both members of doubly placed line.
	847.35	$\approx 5.0^{\# \text{a}}$	E2+M1		0.044 23	Mult.: see comment on 533 γ from 617 level.
535.1 2	730.78	13.5 20	E2		0.0210	Mult.: I(ce(K))=0.2 so $\alpha(K)\text{exp}=0.015\ 3$.
536.2 2	835.38	3.6 5				
553.7 2	650.17	4.1 6				
$556.7^{\text{a}}\ 2$	556.55	$\approx 39^{\# \text{a}}$	M1+E2	1.3 4	0.034 8	Mult., δ : I(ce(K)) ≈ 1.6 so $\alpha(K)\text{exp}=0.041\ 9$ for doublet. δ calculated assuming other member of doublet is E1.
	931.94	$\approx 10^{\# \text{a}}$	[E1]		0.00660	
$^{x}558.4\ 2$		5.7 9				
$^{x}561.3\ 2$		1.10 17				
565.6 1	650.17	17 3	E2+M1	1.3 +4-3	0.033 5	Mult.: I(ce(K))=0.46 so $\alpha(K)\text{exp}=0.027\ 6$.
571.3 2	919.00	4.1 6	E2+M1	1.5 +6-3	0.029 5	Mult.: I(ce(K))=0.1 so $\alpha(K)\text{exp}=0.024\ 5$.
581.1 2	879.66	9.0 14				
$582.8^{\& \text{a}}\ 2$	617.40	$\approx 24^{\# \text{a}}$	E2+M1	2 1	0.024 11	Mult.: I(ce(K))=0.73 so $\alpha(K)\text{exp}=0.078\ 16$ (cf. $\alpha=0.024\ 11$) for doubly-placed line.
	930.53	$\approx 7.0^{\# \text{a}}$				
593.8 2	678.46	20 3	E2		0.01648	Mult.: I(ce(K))=0.24 so $\alpha(K)\text{exp}=0.0120\ 25$.
595.1 2	1126.38	2.1 3				
596.9 2	693.02	24 4	E2+M1	3 +2-1	0.020 4	Mult.: I(ce(K))=0.38 so $\alpha(K)\text{exp}=0.016\ 3$.
$601.7^{\&}\ 2$	636.29	2.2 3				
606.5 2	702.37	29 4	E2+M1	1.5 +5-3	0.025 4	Mult.: I(ce(K))=0.6 so $\alpha(K)\text{exp}=0.021\ 4$.
608.3 2	693.02	7.6 11				
612.5 2	762.05	5.2 8	(E2)		0.01536	Mult.: I(ce(K))(612.5+613.2+614.5)=0.15 so $\alpha(K)\text{exp(triplet)}=0.029\ 6$, consistent with all three triplet partners being E2.
$613.2^{\&}\ 2$	613.16	7.7 12	(E2)		0.01532	Mult.: see comment on 612.5 γ .
614.5 2	989.81	3.8 6	(E2)		0.01525	Mult.: see comment on 612.5 γ .
617.4 2	931.94	5.8 9	M1+E2	0.8 +4-3	0.033 6	Mult.: I(ce(K))=0.17 so $\alpha(K)\text{exp}=0.029\ 6$.
623.1 2	998.42	3.4 5				
631 1	978.43	≈ 1.0				

Continued on next page (footnotes at end of table)

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger @}$	Mult. ‡	$\delta^{\S}$	α	Comments
649.9 2	963.79	5.8 9	M1 (+E2)	<1	0.033 7	Mult.: I(ce(K))(649.9+651.3)=0.42 so $\alpha(K)\text{exp}=0.072$ 15; consistent with mostly M1 in both components of doublet.
651.3 2	1024.57	7.3 11	M1 (+E2)	<1	0.033 7	Mult.: see comment on 649.9 γ .
664.6 2	963.79	2.2 3				
666.1 2	762.05	2.2 3				
$\times$ 667.7 2		4.5 7				
677.5 2	762.05	8.1 12				
678.6& 2	678.46	3.0 5				
684.8 2	1057.97	3.6 5				
693.3& 2	693.02	2.1 3				
696.1 2	1071.28	10.0 15	D			Mult.: I(ce(K))=0.3, but includes an Ir contaminant line, so $\alpha(K)\text{exp}<0.03$, consistent with E1 or M1; level scheme requires E1.
$\times$ 700.1 2		3.2 5				
$\times$ 702.1& 2		7.0 11				E γ : placed by 1989Ro21 from the 702 level. However, that placement is inconsistent with the level's adopted assignment as the J=7/2 member of the 3/2[512] rotational band.
705.8 2	801.85	7.1 11				
717.0 2	801.85	4.9 7	E2		0.01085	Mult.: I(ce(K))=0.03 so $\alpha(K)\text{exp}=0.0061$ 13; a little low for E2, but an E1 assignment would be inconsistent with level scheme.
$\times$ 723.2 2		5.4 8				
727.5& 2	762.05	9.1 14	M1 (+E2)	<2	0.022 8	Mult.: I(ce(K))(727.5+729.6)=0.26 so $\alpha(K)\text{exp}=0.029$ 6 for doublet, consistent with M1 component in this, the more intense member of doublet.
729.6 2	879.66	6.0 9	(E2+M1)		0.020 10	Mult.: see comment on 727.5 γ .
736.1 2	1035.04	4.3 6	M1+E2	0.7 +5-4	0.023 5	Mult.: I(ce(K))=0.08 so $\alpha(K)\text{exp}=0.019$ 4.
739.4 2	835.38	15.0 23	M1+E2	0.7 +5-4	0.022 5	Mult.: I(ce(K))=0.28 so $\alpha(K)\text{exp}=0.019$ 4.
745.5 2	1035.04	1.20 18				
$\times$ 749.9 2		9.3 14	E2		0.00986	Mult.: I(ce(K))(749.9+751.0)=0.08, $\alpha(K)\text{exp}=0.0086$ 18 consistent with pure E2 and pure E1 for the respective transitions.
$\times$ 751.0 2		5.5 8	E1		0.00362	Mult.: see comment on 749.9 γ .
753.0 2	1126.38	2.3 3				
754.5& 2	998.42	2.3 3				
$\times$ 756.5 2		2.3 3				
$\times$ 784.6 2		4.3 6				
$\times$ 798.6 2		2.6 4				
$\times$ 802.8 2		4.3 6				
828.7 2	978.43	4.1 6	M1+E2	1.0 +8-4	0.015 4	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.012$ 3.
835.6& 2	835.38	2.7 4				
845.1& 2	879.66	4.1 6	E2 (+M1)	>2	0.0089 13	Mult.: I(ce(K))=0.03 so $\alpha(K)\text{exp}=0.0073$ 15.
$\times$ 852.4 2		2.7 4				
$\times$ 857.5 2		2.5 4				
$\times$ 876.4 2		2.8 4				
884.5& 2	919.00	6.5 10	E2 (+M1)	>2	0.0081 11	Mult.: I(ce(K))=0.04 so $\alpha(K)\text{exp}=0.0062$ 13.
897.6& 2	931.94	1.10 17				
899.6& 2	1970.71	3.4 5				
$\times$ 904.1 2		4.1 6	M1 (+E2)	<2	0.013 4	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.0120$ 25.
$\times$ 909.6 2		5.0 8	M1		0.01664	Mult.: I(ce(K))=0.1 so $\alpha(K)\text{exp}=0.020$ 4.
$\times$ 913.7 2		1.50 23				
$\times$ 915.6 2		4.2 6				
$\times$ 919.3 2		2.4 4				
$\times$ 928.9 2		6.3 9	E2+M1	1.5 +18-6	0.0092 24	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.0079$ 17.
$\times$ 933.7 2		4.7 7				

Continued on next page (footnotes at end of table)

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E\gamma^{\dagger}$	E(level)	$I\gamma^{\dagger @}$	Mult. ‡	$\delta^{\S}$	α	Comments
944.0& 2	978.43	3.4 5	M1		0.01515	Mult.: I(ce(K))=0.07 so $\alpha(K)\text{exp}=0.021$ 4.
^x 978.7 2		3.3 5				
^x 985.2 2		2.6 4	M1		0.01359	Mult.: I(ce(K))=0.04 so $\alpha(K)\text{exp}=0.015$ 3.
990.1& 2	1024.57	2.8 4				
^x 996.3 2		5.0 8				
1000.6& 3	1035.04	3.9 6				
^x 1008.0 3		3.4 5				
1010.1 3	1940.49	6.8 10	E2+M1	1.1 +13-5	0.0087 23	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.0074$ 15.
1036.8 3	1071.28	10.0 15	E2(+M1)	>2	0.0058 7	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.0050$ 11.
^x 1082.5 3		4.0 6				
1091.8& 3	1126.38	3.2 5				
^x 1093.0 3		3.0 5				
^x 1128.5 3		5.3 8	M1(+E2)	<1.2	0.0081 16	Mult.: I(ce(K))=0.04 so $\alpha(K)\text{exp}=0.0075$ 16.
^x 1138.0 3		3.5 5				
^x 1141.6 3		3.8 6				
^x 1156.0 3		7.1 11	E2		0.00413	Mult.: I(ce(K))=0.02 so $\alpha(K)\text{exp}=0.0028$ 6.
^x 1195.1 3		3.5 5				
^x 1221.2 3		3.5 5				
^x 1231.7 3		3.6 5				
^x 1236.6 3		3.2 5				
^x 1246.7 3		3.2 5				
^x 1251.7 3		3.1 5	M1(+E2)	<1	0.0065 10	Mult.: I(ce(K))=0.02 so $\alpha(K)\text{exp}=0.0065$ 14.
^x 1254.1 3		3.6 5	M1(+E2)	<2	0.0059 16	Mult.: I(ce(K))=0.02 so $\alpha(K)\text{exp}=0.0056$ 12.
^x 1262.4 3		3.6 5				
^x 1264.4 3		4.8 7				
^x 1266.5 3		3.8 6				
^x 1270.5 3		4.3 6				
^x 1275.9 3		5.9 9				
^x 1290.3 3		7.7 12	E2		0.00336	Mult.: I(ce(K))=0.02 so $\alpha(K)\text{exp}=0.0026$ 5.
^x 1297.4 3		5.8 9				
^x 1345.7 3		4.2 6				
1358.2 3	1914.68	18 3	M1		0.00610	Mult.: I(ce(K))=0.1 so $\alpha(K)\text{exp}=0.0056$ 12.
^x 1360.4 3		3.5 5				
1371.9 3	1940.49	5.9 9				
1384.0 3	1940.49	15.0 23	E2(+M1)	>0.6	0.0040 11	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.0033$ 7.
1406.9 3	1938.56	12.5 19	E1		1.28×10^{-3}	Mult.: I(ce(K))=0.015 so $\alpha(K)\text{exp}=0.00120$ 25.
^x 1412.3 3		5.3 8				
^x 1416.5 3		5.1 8				
^x 1420.4 3		4.5 7				
1425.0 3	1956.63	28 4	E1		1.26×10^{-3}	Mult.: I(ce(K))=0.04 so $\alpha(K)\text{exp}=0.0014$ 3.
1438.8 3	1970.71	8.7 13				
^x 1442.1 3		8.0 12				
1466.8 3	1814.4	9.6 14	M1(+E2)	<1.6	0.0042 9	Mult.: I(ce(K))=0.04 so $\alpha(K)\text{exp}=0.0042$ 9.
1484.9 3	1956.63	12.0 18	E2(+M1)	>1	0.0032 6	Mult.: I(ce(K))=0.03 so $\alpha(K)\text{exp}=0.0025$ 5.
1496.7 3	1844.3	12.5 19	E2(+M1)	>1	0.0032 6	Mult.: I(ce(K))=0.03 so $\alpha(K)\text{exp}=0.0024$ 5.
^x 1508.1 3		5.8 9				
1511.9 3	1810.7	4.4 7				
^x 1527.3 3		9.4 14				
1532.2 3	1907.5	71 11	E1		1.20×10^{-3}	Mult.: I(ce(K))(1532.2+1536.6)=0.08 so $\alpha(K)\text{exp}=0.00113$ 24; consistent with both transitions being E1.
1536.6 3	1884.2	39 6	E1		1.20×10^{-3}	Mult.: see comment on 1532 γ .
^x 1560.6 3		6.5 10				
^x 1563.3 3		4.2 6				
^x 1565.5 3		4.8 7				
1592.9 3	1940.49	25 4	E2		0.00235	Mult.: I(ce(K))=0.05 so $\alpha(K)\text{exp}=0.0020$ 4.
1595.5 3	1970.71	3.5 5				
^x 1606.2 3		10.0 15				
1608.8 3	1956.63	7.6 11				
1615.8 3	1914.68	5.6 8				
1634.3 3	1948.69	7.6 11				
1639.9 3	1938.56	4.1 6				

Continued on next page (footnotes at end of table)

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E_{\gamma}^{\dagger}$	E(level)	$I_{\gamma}^{\dagger @}$	Mult. [‡]	$\delta^{\S}$	α	Comments
1642.5 3	1956.63	14.0 21				
1656.7 3	1970.71	12.0 18	E2		0.00222	Mult.: $I(\text{ce(K)})(1656.7+1658.3)=0.04$ so $\alpha(\text{K})\text{exp}=0.0033$ 7, suggesting E2 multipolarity for both components of doublet.
1658.3 3	1956.63	11.0 17	E2		0.00222	Mult.: see comment on 1656.7 γ .
^x 1660.1 3		6.0 9				
1666.7 3	1956.63	1.8 3				
^x 1675.1 3		12.0 18				
1681.2 3	1979.90	4.5 7				
1697.9 3	1847.53	8.3 12				
1742.6 3	1938.56	15.0 23	E1		1.16×10^{-3}	Mult.: $I(\text{ce(K)})=0.01$ so $\alpha(\text{K})\text{exp}=0.00067$ 14.
1760.9 3	1956.63	48 7	E1		1.16×10^{-3}	Mult.: $I(\text{ce(K)})=0.02$ so $\alpha(\text{K})\text{exp}=0.00042$ 9.
1763.3 3	1912.81	4.0 6				
^x 1774.8 3		5.7 9				
^x 1778.4 3		5.5 8				
1807.7 3	1892.3	8.9 13				
1812.8& 3	1847.53	3.0 5				
1820.6 3	1970.71	5.2 8				
1828.1 3	1912.81	5.2 8				
1830.0 3	1914.68	25 4				
1842.7 3	1938.56	12.0 18				
1852.6 3	1948.69	16.0 24				
^x 1855.6 3		5.4 8				
1861.0 3	1956.63	11.0 17				
1872.5 3	1968.60	46 7	E2 (+M1)	>1	0.0022 3	Mult.: $I(\text{ce(K)})=0.08$ so $\alpha(\text{K})\text{exp}=0.0017$ 4.
1874.6 3	1970.71	10.0 15				
1878.0& 3	1912.81	11.0 17				
^x 1883.0 3		6.0 9				
1903.9& 3	1938.56	5.6 8				
1914.2& 3	1948.69	2.7 4				
1921.7& 3	1956.63	6.2 9				
1934.0& 3	1968.60	10.5 16				
1940.1& 3	1940.49	3.1 5				
1945.2& 3	1979.90	1.7 3				

[†] From 1989Ro21, relative to $I(214\gamma)=100$. Authors indicate uncertainties in E_{γ} that range from 0.1 to 0.3 keV; however, several E_{γ} values are quoted only to the nearest keV and, in those cases, the evaluator has assigned 1 keV uncertainty.

[‡] For $E_{\gamma}<220$: from 1984Ma41; otherwise from 1989Ro21. Normalized to 160γ in ^{183}Au . For transitions with $E>300$ keV the electron and γ intensities are on the same scale and $I(\text{ce})$ data have $\approx 15\%$ uncertainty.

[§] From ce data, except as noted.

[#] From coincidence data.

[@] For absolute intensity per 100 decays, multiply by 0.069 6.

[&] Placement of transition in the level scheme is uncertain.

^a Multiply placed; intensity suitably divided.

^x γ ray not placed in level scheme.

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued)

Decay Scheme

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$(5/2)^- \quad 0.0 \quad 42.8 \text{ s}$
 $^{183}_{79}\text{Au}_{104}$
 $\% \epsilon + \% \beta^+ = 99.45 \quad 25$
 $Q^+ = 5583^{18}$

 $^{183}_{78}\text{Pt}_{105}$

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$(5/2)^-$ 0.0 42.8 s
 $^{183}_{79}\text{Au}_{104}$
 $\% \epsilon + \% \beta^+ = 99.45 \pm 25$
 $Q^+ = 5583^{18}$

^{183}Au ϵ Decay 2000Ro41,1989Ro21,1984Ma41 (continued)

Decay Scheme (continued)

Intensities: I(γ +ce) per 100 parent decays
 @ Multiply placed; intensity suitably divided

$(5/2)^- \quad 0.0 \quad 42.8 \text{ s}$
 $^{183}_{79}\text{Au}_{104}$
 $\% \epsilon + \% \beta^+ = 99.45 \text{ }^{25}$
 $Q^+ = 5583^{18}$

^{187}Hg α Decay (1.9 min) $^{1970}\text{Ha18}$

Parent ^{187}Hg : $E=0.0$; $J\pi=3/2(-)$; $T_{1/2}=1.9$ min 3; $Q(\text{g.s.})=5230$ 14; $\% \alpha$ decay >0.0120 .

^{187}Hg - $\% \alpha$ decay: $\% \alpha=0.00017$ 5 from simultaneous counting of α 's and K x-rays (1970Ha18). Given as limit because x-ray intensity not corrected for internal conversion and not divided between isomer and ground state decays.

1970Ha18 report a 5035 α and a 4870 α with respective half-lives of 1.9 min 3 and 2.4 min 3, and

$I(5035\alpha)/I(4870\alpha)=2.1$ 3. Those α 's are presumed to arise from the decay of 3/2- and 13/2(+) levels of ^{187}Hg .

For this decay scheme, $Q_{\text{xBR}}=0.628$ 2.

 ^{183}Pt Levels

<u>E(level)</u>	<u>$J\pi^{\dagger}$</u>	† From Adopted Levels.
84.73 7	3/2-	

 α radiations

<u>$E\alpha$</u>	<u>E(level)</u>	<u>$I\alpha^{\ddagger}$</u>	<u>$HF^{\dagger}$</u>	<u>Comments</u>
5035 20	84.73	100	0.77 14	This $E\alpha$ implies $Q(\alpha)=5230$ 20 cf. 5230 14 from 2012Wa38.

† If $r_0=1.493$ 12 (unweighted average of $r_0(^{182}\text{Pt})=1.504$ 27 and $r_0(^{184}\text{Pt})=1.481$ 28 (1998Ak04)).

‡ For α intensity per 100 decays, multiply by >0.00012 .

 ^{187}Hg α Decay (2.4 min) $^{1970}\text{Ha18}$

Parent ^{187}Hg : $E=59$ 16; $J\pi=13/2(+)$; $T_{1/2}=2.4$ min 3; $Q(\text{g.s.})=5230$ 14; $\% \alpha$ decay >0.0250 .

^{187}Hg -E: from 2012Au07.

^{187}Hg - $\% \alpha$ decay: $\% \alpha=0.00035$ 10 from simultaneous counting of α 's and K x-rays (1970Ha18). Given as limit because x-ray intensity not corrected for internal conversion and not divided between isomer and ground state decays.

See the comment on ^{187}Hg α decay (1.9 min).

For this decay scheme, $Q_{\text{xBR}}=1.322$ 5.

 ^{183}Pt Levels

<u>E(level)</u>	<u>$J\pi^{\dagger}$</u>	† From Adopted Levels.
316.9 7	(13/2+)	

 α radiations

<u>$E\alpha$</u>	<u>E(level)</u>	<u>$I\alpha^{\ddagger}$</u>	<u>$HF^{\dagger}$</u>	<u>Comments</u>
4870 20	316.9	100	0.050 10	This $E\alpha$ implies $Q(\alpha)=5234$ 26 cf. 5230 14 from 2012Wa38.

† If $r_0=1.493$ 12 (unweighted average of $r_0(^{182}\text{Pt})=1.504$ 27 and $r_0(^{184}\text{Pt})=1.481$ 28 (1998Ak04)).

‡ For α intensity per 100 decays, multiply by >0.00025 .

(HI,xn γ) $^{1990}\text{Ny02}$

$^{154}\text{Sm}(^{34}\text{S},5n)$, $E=163$ MeV; measured $\gamma\gamma$ coin using 7 Ge detectors at various angles in ORNL spin spectrometer, 6 with NaI anti-Compton shields; remaining 64 NaI detectors selected 5n channel by gating on sum-energy and multiplicity.

$^{170}\text{Yb}(^{16}\text{O},3n)$, $E=82.84$ MeV; 85.4% ^{170}Yb target, Pb stopper; 4 Ge detectors (3 coaxial, 1 planar) from NORDBALL detector array with anti-Compton shields; measured $\gamma\gamma$ coin with 150 ns overlap coin time; searched for low-energy photons and x-rays and for isomeric states.

$^{170}\text{Yb}(^{16}\text{O},3n)$, $E=81$ MeV; 85% ^{170}Yb target; measured $\gamma\gamma(\theta)$, $\theta=0^\circ$ - 90° (5 angles) using a Ge detector and a 6-NaI detector multiplicity filter. Measured $\gamma(\theta)$ (5 angles, 0° to 90°).

(HI,xn γ) 1990Ny02 (continued) ^{183}Pt Levels

E(level) [†]	J $\pi^{\ddagger}$	T _{1/2}	Comments
0.0@	1/2-		
34.50 $\ddagger$ # 8	7/2-		
96@ 1	5/2-		
149.6# 8	(9/2)-		
195.5 $\S$ 10	(9/2)+	>150 ns	T _{1/2} : from γ -161 γ delayed coin.
243.5 $\S$ 11	(11/2)+		
289.0# 8	(11/2)-		
314.0@ 15	9/2-		
316.6 $\S$ 12	(13/2+)		
448.8# 10	(13/2)-		
477.9 $\S$ 13	(15/2+)		
590.1 $\S$ 14	(17/2+)		
627.0@ 18	13/2-		
628.5# 11	(15/2)-		
824.7# 12	(17/2)-		
834.2 $\S$ 14	(19/2+)		
966.2 $\S$ 15	(21/2+)		
1010.7@ 20	17/2-		
1037.5# 15	(19/2)-		
1262.4# 16	(21/2)-		
1280.1 $\S$ 16	(23/2+)		
1421.2 $\S$ 16	(25/2+)		
1443.8@ 23	21/2-		
1500.7# 18	(23/2)-		
1747.8# 19	(25/2)-		
1790.9 $\S$ 17	(27/2+)		
1900.4@ 25	25/2-		
1936.3 $\S$ 18	(29/2+)		
2004.9# 21	(27/2)-		
2267.9# 21	(29/2)-		
2340.8 $\S$ 18	(31/2+)		
2374@ 3	29/2-		
2503.0 $\S$ 20	(33/2+)		
2541.2# 23	(31/2)-		
2817.9# 24	(33/2)-		
2872@ 3	33/2-		
2919.1 $\S$ 20	(35/2+)		
3108.2# 25	(35/2)-		
3122.7 $\S$ 21	(37/2+)		
3396# 3	(37/2)-		
3423@ 3	37/2-		
3543.4 $\S$ 21	(39/2+)		
3697# 3	(39/2)-		
3793.7 $\S$ 23	(41/2+)		
4018# 3	(41/2)-		
4025@ 4	41/2-		
4289# 3	(43/2)-		
4507.7 $\S$ 25	(45/2+)		
4949# 3	(47/2)-		
5257? $\S$ 3	(49/2+)		

[†] From least-squares fit to E γ , assuming 1 keV uncertainty in E γ and fixing E(35 level) to the adopted value.[‡] From Adopted Levels. $\S$ (A): 9/2[624] band.

(B): 7/2[514] band.

@ (C): 1/2[521] g.s. band.

 $\gamma(^{183}\text{Pt})$

Continued on next page (footnotes at end of table)

(HI,xny) 1990Ny02 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E\gamma^{\ddagger}$	E(level)	$I\gamma^{\dagger}$	Mult. [§]	$\delta^{\#}$	Comments
48.0 ^a 2	243.5				
73	316.6				
96	96				
112.2	590.1	2.7 5	D+Q	-0.6 +30-4	Mult.: $A_2=-0.61$ 5, $A_4=+0.03$ 6.
115.0	149.6	6.3 9	D(+Q)	-0.10 +22-10	Mult., δ : from $A_2=-0.34$ 7, $A_4=-0.02$ 8. Note, however, that conversion electron data in ϵ decay indicates significantly larger δ and rules out $\Delta\pi=\text{yes}$.
121	316.6				
132.1	966.2	5.0 5	D+Q		Mult.: $A_2=-0.14$ 4, $A_4=-0.14$ 5.
139.3	289.0	5.2 5	D+Q		Mult.: $A_2=-0.27$ 5, $A_4=+0.20$ 7.
141.2	1421.2	1.6 5	D+Q		Mult.: $A_2=-0.3$ 1, $A_4=+0.1$ 2.
147 ^c	1936.3				
160.0	448.8	2.6 5	D+Q	-2.5 2	Mult.: $A_2=-0.65$ 7, $A_4=+0.25$ 8.
161	195.5				
161.2	477.9	32 3	D+Q	-1.7 5	Mult.: $A_2=-0.47$ 3, $A_4=+0.05$ 3.
164 ^c	2503.0				
179.6	628.5				
196	824.7				
$\times 198\&$					
$\times 204\&$					
205 ^c	3122.7				
214 ^c	1037.5				
$\times 217\&$					
218.0	314.0	25.2 9	Q		Mult.: $A_2=+0.29$ 3, $A_4=-0.13$ 4.
$\times 232\&$					
234.5	477.9	22.5 9	Q		Mult.: $A_2=+0.35$ 4, $A_4=-0.08$ 5.
239 ^c	1500.7				
$\times 244\&$					
244.2	834.2	5.4 9	D+Q	-1.1 +3-5	Mult.: $A_2=-0.82$ 4, $A_4=+0.12$ 4.
254.6	289.0	30 2	Q		Mult.: $A_2=+0.23$ 4, $A_4=-0.05$ 5.
259 ^c	2004.9				
273.5	590.1	100 [@] 5	Q		Mult.: $A_2=+0.20$ 3, $A_4=-0.03$ 4.
275 ^c	2541.2				
290 ^c	3108.2				
299.2	448.8	47 [@] 2	Q		Mult.: $A_2=+0.28$ 3, $A_4=-0.07$ 4.
313.0	627.0				
314	1280.1				
339.4	628.5	38 2	Q		Mult.: $A_2=+0.21$ 3, $A_4=+0.03$ 4.
356.4	834.2	41 2	Q		Mult.: $A_2=+0.32$ 3, $A_4=-0.07$ 5.
369.5	1790.9	1.4 5	D+Q	-1.4 +5-10	Mult.: $A_2=-0.94$ 7, $A_4=+0.20$ 7.
376 ^b	824.7	101 ^b 5			$E\gamma$: for doublet; 376.1 shown in level scheme in 1990Ny02 for this placement and 376.5 for alternative placement.
	966.2	101 ^b 5	(Q)		Mult.: $A_2=+0.33$ 3, $A_4=-0.08$ 4 for doublet. Mult.: $A_2=+0.33$ 3, $A_4=-0.08$ 4 for doublet. $E\gamma$: see comment on 376 γ from 825 level.
384.7	1010.7	37 2	Q		Mult.: $A_2=+0.30$ 3, $A_4=-0.04$ 5.
404.1	2340.8	6.8 7	D+Q		Mult.: $A_2=-0.36$ 4, $A_4=+0.08$ 6.
409.0	1037.5	45 3	Q		Mult.: $A_2=+0.25$ 3, $A_4=-0.07$ 5.
416	2919.1				
421	3543.4				
432.1	1443.8	39 [@] 3	Q		Mult.: $A_2=+0.38$ 6, $A_4=-0.06$ 7.
437.7	1262.4	32 [@] 3			Mult.: $A_2=+0.04$ 5, $A_4=+0.15$ 8.
445.9	1280.1	34 2	Q		Mult.: $A_2=+0.18$ 4, $A_4=+0.03$ 5.
454.8	1421.2	68 3	Q		Mult.: $A_2=+0.33$ 3, $A_4=-0.02$ 4.
456.6	1900.4	32 2	Q		Mult.: $A_2=+0.39$ 4, $A_4=-0.09$ 5.
463.2	1500.7	34 2	Q		Mult.: $A_2=+0.33$ 4, $A_4=-0.02$ 6.
473.1	2374	16.2 9	Q		Mult.: $A_2=+0.32$ 4, $A_4=-0.08$ 5.
485.4	1747.8	25 2	Q		Mult.: $A_2=+0.22$ 4, $A_4=+0.01$ 5.
498.4	2872	11.7 9	Q		Mult.: $A_2=+0.3$ 1, $A_4=0.0$ 1.
504.2	2004.9	21.6 9	Q		Mult.: $A_2=+0.28$ 4, $A_4=-0.04$ 5.
511	1790.9				
515.0	1936.3	60 4	(Q)		Mult.: $A_2=+0.20$ 4, $A_4=+0.06$ 5.
520.1	2267.9	19.8 9	Q		Mult.: $A_2=+0.30$ 4, $A_4=-0.08$ 5.

Continued on next page (footnotes at end of table)

(HI,xn γ) 1990Ny02 (continued) $\gamma(^{183}\text{Pt})$ (continued)

$E\gamma^{\ddagger}$	E(level)	$I\gamma^{\dagger}$	Mult. [§]	Comments
536.3	2541.2	26.1 9	Q	Mult.: $A_2=+0.33$ 4, $A_4=+0.07$ 5.
550 ^b	2340.8	24@b 3	(Q)	Mult.: $A_2=+0.46$ 8, $A_4=-0.2$ 1 for doubly placed γ .
	2817.9	24@b 3	(Q)	Mult.: $A_2=+0.46$ 8, $A_4=-0.2$ 1 for doublet.
551	3423	22 3	(Q)	Mult.: $A_2=+0.2$ 1, $A_4=0.0$ 1.
567 ^b	2503.0	49 ^b 3	(Q)	Mult.: $A_2=+0.29$ 3, $A_4=-0.03$ 5 for doubly placed γ .
	3108.2	49 ^b 3	(Q)	Mult.: $A_2=+0.29$ 3, $A_4=-0.03$ 5 for doublet.
578 ^d	2919.1			
	3396			
589	3697			
592	4289			
602	4025			
620.0	3122.7	16 2	Q	Mult.: $A_2=+0.25$ 5, $A_4=-0.16$ 7.
622	4018			
624	3543.4			
660	4949			
671	3793.7			
714	4507.7			
749 ^c	5257?			

[†] From $^{170}\text{Yb}(^{16}\text{O},3n\gamma)$.[‡] Uncertainty not stated by authors.[§] From $\gamma\gamma(\theta)$. The large negative mixing ratios are consistent with M1+E2 but not E1+M2, because the transitions are prompt.[#] From authors' analysis of $\gamma(\theta)$.[@] Includes contaminant.[&] These transitions were observed in coincidence with each other and with Pt x-rays. They are assigned to ^{183}Pt because they were seen in both reactions used to populate ^{183}Pt .^a Transition inferred but not observed in this reaction. $E\gamma$ is from Adopted Gammas.^b Multiply placed; undivided intensity given.^c Placement of transition in the level scheme is uncertain.^d Multiply placed.^x γ ray not placed in level scheme.

Adopted Levels, Gammas

Q(β⁻)=-6385 12; S(n)=9960 22; S(p)=1310 16; Q(α)=5465.3 29 2012Wa38.

Q(εp)=1574 23 (2012Wa38).

Other Reactions:

Isotope shift and hfs data: 1988Kr18, 1990Hi08.

For discussion of effects of deformation on decay patterns to Pt, Hg, see 2015Bo01.

¹⁸³Au Levels

For calculation of bands, Jπ, configurations, shape coexistence features (particle triaxial rotor model), see 2005Ch36.

For calculation of properties of low-lying levels, see 2001Ro23.

Cross Reference (XREF) Flags

A ¹⁸³Hg ε Decay
B ¹⁸⁷Tl α Decay
C ¹⁵²Sm(³⁵Cl,4nγ)
D ¹⁵⁹Tb(²⁹Si,5nγ)...

E(level) [†]	Jπ [‡]	XREF	T _{1/2}	Comments
0.0 #	(5/2)-	A CD	42.8 s 10	%ε+%β ⁺ =99.45 25; %α=0.55 25. μ=+1.972 23 (1988Kr18). μ: From resonance ionization mass spectroscopy. <r ² > ^{1/2} (charge)=5.388 fm 6 (2004An14). %α: Unweighted average of 0.8 3 (1995Bi01), 0.30 5 (1970Ha18). Δ<r ² >(183,197)=-0.130 9 fm ² (1988Kr18; see also 1990Hi08). T _{1/2} : weighted average of 44.6 s 19 (1995Bi01), 42 s 4 (1970Ha18), 42.0 s 12 (1970Ma24), 45 s 4 (1968Si01). Other: 50 s 2 (1968De01). Jπ: parity from log ft=5.4 to (7/2)- ¹⁸³ Pt(1957) level; J=5/2 expected based on energy systematics of 5/2- levels in neighboring odd-A Au isotopes.
12.4 # 4	(9/2)-	ABCD		Jπ: low energy 9/2- level expected based on energy systematics for 9/2- levels in neighboring odd-A Au isotopes; Δπ=no 284γ from π=- 297 level.
12.78 16	(3/2)-	A C		Jπ: Δπ=no 160γ from π=- 173 level; low energy 3/2- level expected, by analogy with ¹⁸⁵ Au.
69.1 @ 5	(7/2-)	CD		Jπ: band assignment.
73.3 4	(1/2)+	A	>1 μs	Jπ: E1 61γ to (3/2)- 12.8; 1/2+ level energy systematics for neighboring odd-A Au isotopes; absence of γ to (5/2)- g.s.. Possibly an oblate nuclear state (1984Ma41). T _{1/2} : based on absence of 60.5γ in coincidence spectra in ε decay (1984Ma41).
91.26 25	(5/2-, 7/2-)	A		Jπ: gammas to (9/2)- and (3/2)-.
172.67 16	(3/2, 5/2)-	A		Jπ: D+Q 160γ to J=(3/2) 12.8; M1 173γ to (5/2)- g.s..
179.14 24	(1/2, 3/2, 5/2)-	A		Jπ: M1+E2 166γ to (3/2)- 12.8 level.
230.6 § 6	(11/2)-§	A	<1 μs	Jπ: M1 218γ to (9/2)- 12.4; hindrance of M1 deexcitation consistent with observations for h _{11/2} state in neighboring Au isotopes. T _{1/2} : 5 ns≤T _{1/2} ≤1 μs proposed by 1984Ma41 on the basis of delayed coincidence intensity in ε decay.
231.2 § # 4	(13/2-)§	CD		Jπ: Q 219γ to (9/2)-; band structure; 13/2- level energy systematics in neighboring odd-A Au isotopes.
263.53 22	(5/2, 7/2)-	A		Jπ: M1+E2 91γ to (3/2,5/2)- 173; 251γ to (9/2)- 12.4.
273.5 @ 4	(11/2-)	CD		Jπ: stretched Q 204γ to (7/2-) 69; D 261γ to J=(9/2)- 12.4.
289.43 18	(3/2, 5/2, 7/2)-	A		Jπ: M1 290γ to (5/2)- g.s..
296.8 4	(7/2)-	A		Jπ: (D) 284γ to J=(9/2)- 12.4; D, Δπ=no 297γ to (5/2)- g.s..
317.94 17	(1/2, 3/2, 5/2)-	A		Jπ: M1 305γ to (3/2)- 12.8.
517.1 8	(7/2-)	A		Jπ: γ to (11/2)- 231; analogy with ¹⁸⁵ Au (1984Ma41).
562.52 25	(≤7/2)	A		Jπ: γ to (3/2)- 12.8.
565.3 # 4	(17/2-)	CD		
599.6 @ 4	(15/2-)	CD		
701.8 & 4	(13/2+)	CD		
779.86 16	(≤7/2)	A		Jπ: 767γ to (3/2)- 12.8.
811.14 24	(≤7/2)	A		Jπ: 798γ to (3/2)- 12.8.
817.67 20	(≤7/2)	A		Jπ: 805γ to (3/2)- 12.8.
865.4 & 4	(17/2+)	CD		
885.57 21	(≤7/2)	A		Jπ: 873γ to (3/2)- 12.8.
989.1 # 5	(21/2-)	CD		

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Adopted Levels, Gammas (continued) ^{183}Au Levels (continued)

E(level) [†]	J π [‡]	XREF	Comments
1022.8@ 5	(19/2-)	CD	
1025.1 3		A	
1054.5 ^b 5	(19/2-)	C	
1100.2 10		A	
1148.5& 5	(21/2+)	CD	
1487.5 ^b 5	(23/2-)	CD	
1492.0# 5	(25/2-)	CD	
1527.7& 5	(25/2+)	CD	
1544.5@ 5	(23/2-)	CD	
1605.5 3	($\leq 7/2$)	A	J π : 1593 γ to (3/2-) 12.8.
1671.2 4		A	
1680.9 3		A	
1681.96 17	($\leq 7/2$)	A	J π : 1669 γ to (3/2)- 12.8.
1736.9 ^a 10	(23/2+)	D	
1800.55 18	($\leq 7/2$)	A	J π : 1788 γ to (3/2)- 12.8.
1981.1& 6	(29/2+)	CD	
1986.4 ^b 5	(27/2-)	CD	
2063.5# 6	(29/2-)	CD	
2117.9@ 12	(27/2-)	D	
2175.7 ^a 10	(27/2+)	D	
2490.9& 6	(33/2+)	C	
2541.5 ^b 6	(31/2-)	CD	
2681.6 ^a 12	(31/2+)	D	
2691.1# 6	(33/2-)	CD	
2742.4@ 16	(31/2-)	D	
3048.7& 6	(37/2+)	CD	
3149.4 ^b 6	(35/2-)	CD	
3240.4 ^a 12	(35/2+)	D	
3360.0# 6	(37/2-)	CD	
3388.8@ 19	(35/2-)	D	
3656.7& 7	(41/2+)	CD	
3798.9 ^b 6	(39/2-)	CD	
3838.7 ^a 12	(39/2+)	D	
4053.1# 7	(41/2-)	CD	
4309.6& 7	(45/2+)	CD	
4461.1 ^b 7	(43/2-)	CD	
4765.6# 7	(45/2-)	CD	
4989.2& 7	(49/2+)	CD	
5129.1? ^b 8	(47/2-)	C	
5500.6# 9	(49/2-)	CD	
5681.3& 8	(53/2+)	CD	
6276.6? [#] 10	(53/2-)	C	
6381.5& 8	(57/2+)	C	
7110.5& 9	(61/2+)	C	
7879.5? ^{&} 11	(65/2+)	C	

[†] From least-squares fit to adopted E γ , assigning 1 keV uncertainty to E γ data for which the authors did not state the uncertainty.

[‡] From ($^{35}\text{Cl}, 4n\gamma$), based on established band structure and measured DCO ratios and/or $\gamma(0)$, assuming J π =(5/2)- and (9/2)-, respectively, for the g.s. and the 12.4 level, except as noted.

[§] An almost degenerate pair of levels with J π =11/2- and 13/2- is adopted (analogous to the 220 keV doublet in ^{185}Au) to accommodate both the M1 E γ =218.2 5 transition in ϵ decay and the Q E γ =218.8 2 transition from ($^{35}\text{Cl}, 4n\gamma$). Level energy systematics for odd-A Au isotopes support the existence of such a doublet in ^{183}Au .

(A): (π h $_{9/2}$), α =+1/2 band.

@ (B): (π f $_{7/2}$)?, α =-1/2 band (2005So01). Prolate orbital; energetically favored signature.

& (C): 1/2[660], α =+1/2 band. E $_0$ =966, A=13.5, a=+10.5 (J=13/2 through 25/2). For discussion of the systematics of the 1/2[660] i $_{13/2}$ band in odd-A Au, see 2004So20.

^a (D): π =+, α =-1/2 band. Probably the unfavored α =-1/2 branch of (π i $_{13/2}$) band. E $_0$ =490, A=8.8, B $_0$ =-1.0 (J=23/2 through 35/2).

^b (E): Possible (π h $_{9/2}$), α =-1/2 band. Prolate orbital; unfavored signature.

Adopted Levels, Gammas (continued)

$\gamma(^{183}\text{Au})$						
E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	$\delta^{\dagger}$	α	Comments
12.4	(12.4 4)	100	[E2]			E_{γ} : from level energy difference.
12.78	(12.78 16)	100	[M1]			E_{γ} : from level energy difference.
73.3	60.5 3	100	E1		0.323 7	B(E1)(W.u.) $<6.6\times 10^{-7}$. Mult.: anomalous E1 transition (1984Ma41); $\alpha(\text{exp})=0.45$ from ϵ decay.
91.26	78.3 5					
	79.0 5					
	91.1 5	100 20				
172.67	159.9 3	100 20	M1+E2	0.7	1.551 24	
	172.7 3	81 16	M1		1.533	
179.14	166.3 3	100 20	M1+E2	0.65	1.412 22	
	179.5 5	5.9 12				
230.6	218.2 5	100	M1		0.797 13	B(M1)(W.u.) $>1.2\times 10^{-6}$.
231.2	218.8& 2	100&	(E2) ‡		0.277	Presumed to differ from the 218.2 5 γ in ϵ decay. Other E_{γ} : 220.0 in ($^{29}\text{Si},5n\gamma$).
263.53	90.7 3	100 23	M1+E2	0.5	9.24 16	
	250.9 5	=46				
273.5	204.4& 2	100.0& 25	(E2) ‡		0.348	Other E_{γ} : 205.6 from ($^{29}\text{Si},5n\gamma$).
	261.1& 2	43.5& 14	D+Q §			Other E_{γ} (I_{γ}): 261.8 (74 6) from ($^{29}\text{Si},5n\gamma$).
289.43	198.1 3	44 9	M1		1.044	
	276.7 3	53 12				
	289.5 3	100 21	M1		0.366	
296.8	284.4 3	100 20	(M1)		0.384	Mult.: anomalous M1 or M1+E0+E2 from $\alpha(\text{K})\text{exp}$ in ϵ decay; level scheme.
	296.7 5	=35	(M1)		0.342	Mult.: anomalous M1 or M1+E0+E2 from $\alpha(\text{K})\text{exp}$ in ϵ decay; level scheme.
317.94	305.1 3	100 20	M1		0.317	
	318.1 3	18 4				
517.1	286.5 5	100				
562.52	244.6 5	=7.1				
	273.0 5	36 7				
	549.6 3	100 21				
565.3	334.1& 2	100&	(E2) ‡		0.0748	
599.6	326.1& 2	100.0& 17	(E2) ‡		0.0802	
	368.0& 5	18.6& 12	D ‡			Other I_{γ} : 23.1 28 from ($^{29}\text{Si},5n\gamma$).
701.8	428.3& 2	100& 4	D+Q ‡			
	470.2@	37@ 4	(D)			Interpreted in ($^{29}\text{Si},5n\gamma$) as D, $\Delta J=0$ transition.
779.86	462.2 3	96 20				
	490.4 5	20 4				
	516.3 3	=100				
	607.7 3	=52				
	767.1 3	96 20				
	779.5 3	84 16				
811.14	632.1 5	=45				
	798.3 3	100 19				
817.67	254.7 5	=50				
	499.9 5	43 9				
	644.9 3	100 21				
	805.0 5	=71				
	817.9 5	=14				
865.4	163.6 2	63 7	(E2) ‡		0.761	E_{γ} : from ($^{35}\text{Cl},4n\gamma$). Other: 164.9 from ($^{29}\text{Si},5n\gamma$). I_{γ} : unweighted average of 56 4 from ($^{29}\text{Si},5n\gamma$) and 69 6 from ($^{35}\text{Cl},4n\gamma$).
	265.8 2	100 4	D ‡			E_{γ} : from ($^{35}\text{Cl},4n\gamma$). Other: 266.5 from ($^{29}\text{Si},5n\gamma$).
	300.0 5	6.0 8				I_{γ} : from ($^{29}\text{Si},5n\gamma$). Other I_{γ} : 100 10 from ($^{35}\text{Cl},4n\gamma$). E_{γ} : from ($^{35}\text{Cl},4n\gamma$). I_{γ} : from ($^{29}\text{Si},5n\gamma$). Other I_{γ} : 23 6 from ($^{35}\text{Cl},4n\gamma$).
885.57	712.7 3	100 20				
	872.8 3	65 15				
	885.9 5	40 8				
989.1	423.9& 2	100&	(E2) ‡		0.0391	
1022.8	423.2 2	100 7	(E2) ‡		0.0393	E_{γ} : from ($^{35}\text{Cl},4n\gamma$). I_{γ} : from ($^{29}\text{Si},5n\gamma$).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Au})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [†]	α	Comments
1022.8	457.4@	18.1@ 23			
1025.1	707.0 5	75 15			
	852.5 3	100 20			
1054.5	455.0& 5	100&			
1100.2	583.1 5	100			
1148.5	283.1& 2	100&	(E2)	0.1218	Other E_{γ} : 283.7 from ($^{29}\text{Si}, 5n\gamma$). Mult.: from $^{159}\text{Tb}(^{29}\text{Si}, 5n\gamma)$.
1487.5	433.0& 2	52& 5	(Q) $\frac{1}{2}$		
	464.0& 5	95& 14	(Q) $\frac{1}{2}$		Other I_{γ} : 104 6 from ($^{29}\text{Si}, 5n\gamma$). Other E_{γ} : 497.8 from ($^{29}\text{Si}, 5n\gamma$). Mult.: from ($^{29}\text{Si}, 5n\gamma$).
	498.5& 2	100& 21			
1492.0	502.8& 2	100&	(E2)	0.0255	
1527.7	379.2& 2	100&	(E2) $\frac{1}{2}$	0.0526	
1544.5	522.0& 5	100& 27			Other E_{γ} : 520.3 from ($^{29}\text{Si}, 5n\gamma$).
	555.0& 5	12.0& 20			
1605.5	1426.4 3	100 21			
	1592.7 3	23 4			
1671.2	1381.8 3	100			
1680.9	1362.9 3	54 12			
	1391.6 3	100 19			
1681.96	864.2 3	58 11			
	870.8 3	69 14			
	902.2 3	83 17			
	1509.2 3	100 19			
	1669.4 3	31 6			
	1681.8 3	42 8			
1736.9	588.4@	100@	D+Q		Mult.: from $^{159}\text{Tb}(^{29}\text{Si}, 5n\gamma)$.
1800.55	914.9 3	38 8			
	1021.0 3	18 4			
	1482.5 3	45 10			
	1536.8 3	19 4			
	1627.9 3	23 4			
	1787.8 3	100 21			
1981.1	453.4& 2	100&	(E2) $\frac{1}{2}$	0.0329	
1986.4	441.0&a 5	66& 19			Should have been seen in ($^{29}\text{Si}, 5n\gamma$) also, but was not; the evaluator, therefore, shows placement as uncertain.
	494.2@	15.9@ 25			
	498.9& 2	100& 4	(E2)	0.0260	Other E_{γ} : 498.1 from ($^{29}\text{Si}, 5n\gamma$). Mult.: from $^{159}\text{Tb}(^{29}\text{Si}, 5n\gamma)$.
2063.5	571.5& 2	100&	(E2)	0.0188	Other E_{γ} : 570.3 from ($^{29}\text{Si}, 5n\gamma$). Mult.: from ($^{29}\text{Si}, 5n\gamma$).
2117.9	573.4#@	100@			
2175.7	438.8@	38@ 12			
	648.0@	100@ 23	D		Mult.: from $^{159}\text{Tb}(^{29}\text{Si}, 5n\gamma)$.
2490.9	509.8& 2	100&	(E2) $\frac{1}{2}$	0.0246	Other E_{γ} : 508.9 from ($^{29}\text{Si}, 5n\gamma$).
2541.5	555.1& 2	100&	(E2) $\frac{1}{2}$	0.0201	Other E_{γ} : 553.4 from ($^{29}\text{Si}, 5n\gamma$).
2681.6	505.4@a				
	700.5@	100@ 22			
2691.1	627.6& 2	100&	(E2) $\frac{1}{2}$	0.01520	
2742.4	624.5#@	100@			
3048.7	557.8& 2	100&	(E2)	0.0199	Mult.: from $^{159}\text{Tb}(^{29}\text{Si}, 5n\gamma)$. Other E_{γ} : 556.5 from ($^{29}\text{Si}, 5n\gamma$). Other E_{γ} : 606.9 from ($^{29}\text{Si}, 5n\gamma$).
3149.4	607.9& 2	100&	(E2) $\frac{1}{2}$	0.01633	
3240.4	557.9@a				
	749.5@	100@ 17			
3360.0	668.9& 2	100&	(E2) $\frac{1}{2}$	0.01320	Other E_{γ} : 667.5 from ($^{29}\text{Si}, 5n\gamma$).
3388.8	646.4#@	100@			
3656.7	608.0& 2	100&			Other E_{γ} : 606.0 from ($^{29}\text{Si}, 5n\gamma$).
3798.9	649.5& 2	100&			Other E_{γ} : 647.5 from ($^{29}\text{Si}, 5n\gamma$).
3838.7	597.0@a				
	790.0@	100@ 18			
4053.1	693.1& 2	100&			Other E_{γ} : 691.4 from ($^{29}\text{Si}, 5n\gamma$).
4309.6	652.9& 2	100&			Other E_{γ} : 651.3 from ($^{29}\text{Si}, 5n\gamma$).
4461.1	662.2& 2	100&			Other E_{γ} : 660.5 from ($^{29}\text{Si}, 5n\gamma$).

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Au})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	α	Comments
4765.6	712.5& 2	100&			Other E_{γ} : 714.7 from ($^{29}\text{Si},5n\gamma$).
4989.2	679.6& 2	100&	(E2) [‡]	0.01275	Other E_{γ} : 678.3 from ($^{29}\text{Si},5n\gamma$).
5129.1?	668.0&a 5	100&			
5500.6	735.0& 5	100&			
5681.3	692.1& 2	100&	(E2) [‡]	0.01226	Other E_{γ} : 691.0 from ($^{29}\text{Si},5n\gamma$).
6276.6?	776.0&a 5	100&			
6381.5	700.2& 2	100&			
7110.5	729.0& 5	100&			
7879.5?	769.0&a 5	100&			

[†] From ε decay, except as noted.[‡] From $^{152}\text{Sm}(^{35}\text{Cl},4n\gamma)$, assigning $\Delta\pi=(\text{no})$ for intraband transitions.[§] From DCO in $^{159}\text{Tb}(^{29}\text{Si},5n\gamma)$, assigning $\Delta\pi=(\text{no})$ for intraband transitions.[#] Placement adopted from ($^{29}\text{Si},5n\gamma$) where it is firmly established from coin spectra double-gated on transitions lower in the same band.[@] From $^{159}\text{Tb}(^{29}\text{Si},5n\gamma)$. Uncertainty in E_{γ} unstated by authors but, typically, E_{γ} from this source ranges from 2.2 keV higher to 4.7 keV lower than the data from ($^{35}\text{Cl},4n\gamma$).& From $^{152}\text{Sm}(^{35}\text{Cl},4n\gamma)$.^a Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)

Bands for ^{183}Au

^{183}Hg ϵ Decay 1984Ma41

Parent ^{183}Hg : $E=0.0$; $J\pi=1/2^-$; $T_{1/2}=9.4$ s 7; $Q(\text{g.s.})=6385$ 12; $\%\epsilon+\%\beta^+$ decay=88.3 20.

$^{183}\text{Hg}-T_{1/2}$: From α decay. Other data: $T_{1/2}=12$ s 2 (1984Ma41); authors report no evidence for an isomeric state in ^{183}Hg with $E>35$ and $T_{1/2}>1$ s.

Sources produced by 200-MeV p on Au, Pt and 270-MeV ^3He on Pt. Hyperpure Ge detectors, magnetic spectrograph, mass separation. Measured $E\gamma$, $I\gamma$, Ice, $x-\gamma(t)$, $\gamma\gamma(t)$, $\gamma(t)$.

The decay scheme presented here was constructed by the authors on the basis of coincidence measurements and internal conversion data. Substantial transition intensity remains unplaced, so no attempt is made to calculate normalizations and β feedings. The intense 60.5-keV γ deexcites a long-lived level and appears to be an anomalous E1 transition. Based on $I(60.5\gamma)$ and on level systematics in neighboring Au and Ir isotopes, 1984Ma41 place this γ feeding the level at 12.8 keV; however g.s. feeding cannot be ruled out.

For this decay scheme, $Q_{\text{xBR}}=5638$ 128.

 ^{183}Au Levels

$E(\text{level})^\dagger$	$J\pi^\ddagger$	$T_{1/2}$	Comments
0.0	(5/2)-	42.8 s 10	$T_{1/2}$: from Adopted Levels.
12.4 4	(9/2)-		
12.78 15	(3/2)-		
73.3 4	(1/2)+	>1 μs	$T_{1/2}$: based on absence of 60.5 γ in coincidence spectra (1984Ma41).
91.26 25	(5/2-, 7/2-)		
172.67 16	(3/2, 5/2)-		
179.14 24	(1/2, 3/2, 5/2)-		
230.6 6	(11/2)-	<1 μs	$T_{1/2}$: 5 ns $\leq T_{1/2}\leq 1$ μs (1984Ma41) based on delayed coincidence intensity.
263.53 22	(5/2, 7/2)-		
289.43 18	(3/2, 5/2, 7/2)-		
296.8? 4	(7/2)-		
317.94 17	(1/2, 3/2, 5/2)-		
517.1 8	(7/2-)		
562.52 25	($\leq 7/2$)		
779.86 16	($\leq 7/2$)		
811.14 24	($\leq 7/2$)		
817.67 20	($\leq 7/2$)		
885.57 21	($\leq 7/2$)		
1025.1 3			
1100.2 10			
1605.5 3	($\leq 7/2$)		
1671.2 4			
1680.9 3			
1681.96 17	($\leq 7/2$)		
1800.55 18	($\leq 7/2$)		

† From least-squares fit to $E\gamma$.

‡ From Adopted Levels.

 $\gamma(^{183}\text{Au})$

$E\gamma$	$E(\text{level})$	$I\gamma$	Mult. †	$\delta^\ddagger$	α	Comments
(12.4)	12.4		[E2]			$E\gamma$: from level energy difference.
(12.78)	12.78		[M1]			$E\gamma$: from level energy difference.
60.5 3	73.3	480 96	E1		0.323 7	Mult.: interpreted by 1984Ma41 as an anomalous E1 transition. α : 0.45 based on experimental conversion coefficients.
78.3# 5	91.26					
79.0# 5	91.26					
90.7 3	263.53	13 3	M1+E2	0.5	9.24 16	Mult.: $\alpha(\text{L1})\text{exp}+\alpha(\text{L2})\text{exp}=1.7$.
91.1 5	91.26	2.0 4				
$\times 150.0^\ddagger 5$		<4				
159.9 3	172.67	100 20	M1+E2	0.7	1.551 24	Mult.: $\alpha(\text{K})\text{exp}=1.2$.
$\times 161^\ddagger 1$		<5				
166.3 $^\ddagger 3$	179.14	51 10	M1+E2	0.65	1.412 22	Mult.: $\alpha(\text{K})\text{exp}=1.1$.
172.7 3	172.67	81 16	M1		1.533	Mult.: $\alpha(\text{K})\text{exp}=1.3$.
$\times 173.3 5$		4.0 8				
$\times 173.8 3$		41 8	(M1)		1.506	Mult.: $\alpha(\text{K})\text{exp}=1.37$.
179.5 $^\ddagger 5$	179.14	3.0 6				

Continued on next page (footnotes at end of table)

^{183}Hg ϵ Decay 1984Ma41 (continued) $\gamma(^{183}\text{Au})$ (continued)

$E\gamma$	$E(\text{level})$	$I\gamma$	Mult. [†]	α	Comments
$^{x188.1\ 5}$		19 4	M1	1.206 20	Mult.: $\alpha(\text{K})_{\text{exp}}=1.0$.
198.1 3	289.43	15 3	M1	1.044	Mult.: $0.7 \leq \alpha(\text{K})_{\text{exp}} \leq 1.7$.
$^{x206.2\ 5}$		2.0 4			
$^{x207.6\ 5}$		6.0 12			
$^{x215.3\ 5}$		5.6 11			
$^{x217.3\ 5}$		9.0 18	(M1)	0.806 13	Mult.: $\alpha(\text{K})_{\text{exp}}=0.6$.
$^{218.2\frac{1}{2}\ 5}$	230.6	≈ 8	M1	0.797 13	Mult.: $\alpha(\text{K})_{\text{exp}}=0.9$.
$^{x226.5\ 3}$		28 6			
$^{x241.5\ 5}$		≈ 2.5			
244.6 5	562.52	≈ 2			
250.9 5	263.53	≈ 6			
$^{x252.5\ 3}$		13 3	M1	0.532	Mult.: $\alpha(\text{K})_{\text{exp}}=0.45$.
$^{254.7\frac{1}{2}\ 5}$	817.67	≈ 7			
$^{273.0\frac{1}{2}\ 5}$	562.52	10 2			
$^{276.7\ 3}$	289.43	18 4			
284.4 3	296.8?	20 4	(M1)@	0.384	$\alpha(\text{K})_{\text{exp}}=1.6$.
$^{286.5\ 5}$	517.1	9.0 18			
$^{289.5\frac{1}{2}\ 3}$	289.43	34 7	M1	0.366	Mult.: $\alpha(\text{K})_{\text{exp}}=0.35$.
$^{296.7\frac{1}{2}\ 5}$	296.8?	≈ 7	(M1)@	0.342	$\alpha(\text{K})_{\text{exp}}=3.9$.
305.1 3	317.94	76 15	M1	0.317	Mult.: $\alpha(\text{K})_{\text{exp}}=0.29$.
$^{x311.5\ 5}$		9.0 18			
318.1 3	317.94	14 3			
$^{x343.0\frac{1}{2}\ 5}$		<10			
$^{x349.6\ 5}$		6.0 12			
$^{x355.8\ 5}$		5.0 10			
$^{x366.4\ 3}$		11.0 22			
$^{x381.8\ 5}$		7.0 14			
$^{x384.5\ 5}$		7.0 14			
$^{x387.2\ 5}$		6.0 12			
$^{x389.3\ 3}$		15 3			
$^{x402.2\frac{1}{2}\ 5}$		≈ 5			
$^{x407.7\ 3}$		10 2			
$^{x410.7\ 5}$		4.0 8			
$^{x415.6\frac{1}{2}\ 5}$		8.0 16			
$^{x418.7\ 5}$		≈ 4			
462.2 3	779.86	24 5			
$^{x466.5\ 5}$		2.0 4			
$^{x468.3\ 3}$		10 2			
$^{x484.0\frac{1}{2}\ 5}$		≈ 3			
490.4 5	779.86	5.0 10			
499.9 5	817.67	6.0 12			
$^{x501.8\ 3}$		12.0 24			
$^{516.3\frac{1}{2}\ 3}$	779.86	≈ 25			
$^{x524.0\ 5}$		≈ 3			
$^{x535.5\frac{1}{2}\ 5}$		≈ 5			
549.6 3	562.52	28 6			
$^{x555.4\ 3}$		15 3			
$^{x562.0\ 3}$		13 3			
$^{x565.0\frac{1}{2}\ 5}$		≈ 3			
$^{x569.4\ 5}$		7.0 14			
$^{x572.4\ 5}$		4.0 8			
$^{x577.7\ 5}$		7.0 14			
$^{x579.4\ 3}$		13 3			
$^{x581.7\ 5}$		9.0 18			
$^{583.1\frac{1}{2}\ 5}$	1100.2	9.0 18			
$^{x586.0\ 3}$		11.0 22			
$^{607.7\frac{1}{2}\ 3}$	779.86	≈ 13			
$^{x614.4\frac{1}{2}\ 5}$		≈ 6			
$^{x623.0\ 5}$		7.0 14			
632.1 5	811.14	≈ 19			$I\gamma$: for 632.1 γ +634.8 γ doublet.
$^{x634.8\ 5}$		≈ 19			$I\gamma$: for 632.1+634.8 doublet.
$^{x636.8\frac{1}{2}\ 5}$		5.0 10			
$^{644.9\frac{1}{2}\ 3}$	817.67	14 3			

Continued on next page (footnotes at end of table)

^{183}Hg ϵ Decay 1984Ma41 (continued) $\gamma(^{183}\text{Au})$ (continued)

E_γ	E(level)	I_γ	E_γ	E(level)	I_γ	E_γ	E(level)	I_γ
$^x655.2\ 5$		$3.0\ 6$	$^x881.8\ 5$		$9.0\ 18$	$^x1498.5\ 5$		$7.0\ 14$
$^x662.7\ 5$		$4.0\ 8$	$885.9\ 5$	885.57	$8.0\ 16$	$^x1503.9\ 3$		$21\ 4$
$^x670.1\ 5$		$5.0\ 10$	$^x889.9\ 5$		$9.0\ 18$	$1509.2\ 3$	1681.96	$36\ 7$
$^x676.6\ 3$		$15\ 3$	$902.2\ 3$	1681.96	$30\ 6$	$^x1532.4\ 3$		$26\ 5$
$^x684.3\ 3$		$11.0\ 22$	$^x906.2\ 3$		$10.0\ 20$	$1536.8\ 3$	1800.55	$14\ 3$
$^x691.0\ 3$		$16\ 3$	$914.9\ 3$	1800.55	$28\ 6$	$^x1559.9\ 3$		$14\ 3$
$^x703.9\ 3$		$16\ 3$	$^x950.2\ 3$		$19\ 4$	$^x1564.9\ 3$		$26\ 5$
$707.0\ 5$	1025.1	$9.0\ 18$	$^x952.7\ 5$		$8.0\ 16$	$^x1581.8\ 3$		$24\ 5$
$712.7\ 3$	885.57	$20\ 4$	$^x984.0\ 5$		$8.0\ 16$	$1592.7\ 3$	1605.5	$17\ 3$
$^x714.1\ 3$		$10.0\ 20$	$^x995.4\ 5$		$4.0\ 8$	$^x1617.2\ 3$		$14\ 3$
$^x730.5\ 5$		$9.0\ 18$	$^x1003.7\ 5$		$3.0\ 6$	$1627.9\ 3$	1800.55	$17\ 3$
$^x765.0\ 3$		$15\ 3$	$1021.0\ 3$	1800.55	$13\ 3$	$^x1657.9\ 3$		$13\ 3$
$767.1\ 3$	779.86	$24\ 5$	$^x1033.3\ 3$		$10.0\ 20$	$^x1665.4\ 3$		$12.0\ 24$
$^x773.0\ 5$		$6.0\ 12$	$^x1041.3\ 3$		$11.0\ 22$	$1669.4\ 3$	1681.96	$11.0\ 22$
$^x775.2\ 3$		$14\ 3$	$^x1051.6\ 5$		$3.0\ 6$	$^x1672.2\ 3$		$12.0\ 24$
$^x777.2\ 3$		$11.0\ 22$	$^x1216.2\ 3$		$19\ 4$	$1681.8\ 3$	1681.96	$15\ 3$
$779.5\ 3$	779.86	$21\ 4$	$^x1242.1\ 3$		$18\ 4$	$^x1691.0\ 3$		$21\ 4$
$^x781.7\ 3$		$13\ 3$	$^x1274\ 1$		$12.0\ 24$	$^x1693.0\ 3$		$14\ 3$
$^x783.7\ 5$		$7.0\ 14$	$^x1289.6\ 3$		$11.0\ 22$	$^x1738.1\ 3$		$14\ 3$
$^x790.0\ 5$		$6.0\ 12$	$^x1297.9\ 3$		$15\ 3$	$^x1740.7\ 3$		$12.0\ 24$
$798.3\ 3$	811.14	$42\ 8$	$^x1329.0\ 3$		$17\ 3$	$^x1750.5\ 3$		$23\ 5$
$^x799.8\ 3$		$14\ 3$	$1362.9\ 3$	1680.9	$14\ 3$	$^x1760.7\ 3$		$14\ 3$
$805.0\ 5$	817.67	≈ 10	$^x1375.0\ 5$		$8.0\ 16$	$^x1764.8\ 3$		$31\ 6$
$^x806.1\ 5$		$5.0\ 10$	$^x1379.7\ 3$		$23\ 5$	$1787.8\ 3$	1800.55	$73\ 15$
$^x811.8\ 5$		$7.0\ 14$	$1381.8\ 3$	1671.2	$10.0\ 22$	$^x1790.7\ 3$		$29\ 6$
$817.9\ 5$	817.67	≈ 2	$1391.6\ 3$	1680.9	$26\ 5$	$^x1808.7\ 3$		$17\ 3$
$^x850.8\ 5$		$6.0\ 12$	$^x1398\ 1$		$5.0\ 10$	$^x1821.9\ 3$		$40\ 8$
$852.5\ 3$	1025.1	$12.0\ 24$	$1426.4\ 3$	1605.5	$73\ 15$	$^x1825.6\ 3$		$11.0\ 22$
$^x861.0\ 5$		$5.0\ 10$	$^x1427.6\ 3$		$31\ 6$	$^x1828.2\ 3$		$22\ 4$
$864.2\ 3$	1681.96	$21\ 4$	$^x1454.9\ 3$		$29\ 6$	$^x1841.7\ 3$		$12.0\ 24$
$870.8\ 3$	1681.96	$25\ 5$	$^x1459.8\ 3$		$10.0\ 20$	$^x2206.0\ 3$		$17\ 3$
$872.8\ 3$	885.57	$13\ 3$	$1482.5\ 3$	1800.55	$33\ 7$	$^x2242.0\ 3$		$21\ 4$

† From conversion coefficient data (1984Ma41).

‡ Energy also belongs to another transition in ^{183}Hg decay chain.

§ Contaminated by background.

Observed only in the conversion electron spectrum.

@ $\alpha(K)\text{exp}$ greatly exceeds value expected from M1 theory; authors attribute this to either an E0 admixture or an anomalous M1 K conversion coefficient. x γ ray not placed in level scheme.

Decay Scheme

Intensities: relative I_γ

¹⁸³Hg₈₀ 1/2- 0.0 9.4 s
%ε+%β⁺=88.3 20
Q⁺=6385¹²

¹⁸³Hg e Decay ¹⁹⁸⁴Ma41 (continued)

¹⁸⁷Tl α Decay 1976To06,1980Sc09,1991Wa21

Parent ¹⁸⁷Tl: E=335 6; J π =(9/2-); T_{1/2}=15.60 s 12; Q(g.s.)=5321 7; % α decay=0.15 5.

¹⁸⁷Tl-% α decay: From 1991Wa21.

Others: 1985Co06.

1991Wa21: mass separated sources of ¹⁸⁷Tl following 240 MeV ⁴⁰Ar bombardment of enriched ¹⁵⁵Gd targets; measured time-defined α singles, $\alpha\gamma(t)$, $\alpha X(t)$, α -ce(t); searched for fine structure in α decay from 9/2- isomer of ¹⁸⁷Tl.

1980Sc09: ¹⁸⁷Tl sources from 5.10 MeV/nucleon ⁴⁸Ti bombardment of ¹⁴²Nd; measured E α .

1976To06: 168 MeV ¹⁴N bombardment of ¹⁸⁰W and ¹⁸²W targets; mass separation; measured E α , T_{1/2}(¹⁸⁷Tl).

For this decay scheme, QxBR=8.5 28.

¹⁸³Au Levels

E(level) [†]	J π [†]
0.0	(5/2)-
12.4 4	(9/2)-

[†] From Adopted Levels.

α radiations

E α	E(level)	I α ^{†§}	HF [‡]	Comments
5524 9	12.4	>91	<1.1	E α : weighted average of 5528 10 (1980Sc09), 5510 20 (1976To06).
5536# CA	0.0	<9	>7	Not observed. 1991Wa21 estimate that its intensity is <10% of I(5524 α).

[†] Intensity per 100 α decays; from 1991Wa21.

[‡] If r₀=1.498 7 (unweighted average of r₀(¹⁸²Pt)=1.504 27 and r₀(¹⁸⁴Hg)=1.491 14 (1998Ak04), T_{1/2}(¹⁸⁷Tl)=15.60 s 12, Q(α)=5321 7 (2012Wa38).

[§] For α intensity per 100 decays, multiply by 0.0015 5.

Existence of this branch is questionable.

γ (¹⁸³Au)

E γ	E(level)	Mult.	Comments
12.4 CA	12.4	[E2]	E γ : 5524 α is coincident with electrons with E<20 keV (1991Wa21).

Decay Scheme

$^{152}\text{Sm}(^{35}\text{Cl},4n\gamma)$ 1999Mu05

Others: 1986CaZW, 1987CaZR (E=170 MeV).

1999Mu05: E=170 MeV; 98% ^{152}Sm target; HHIRF spin spectrometer array (11 HPGe detectors, 61 NaI(Tl) detectors); $\theta=24.7^\circ$, 63.4° , 92.7° , 116.6° , 155.3° ; measured $E\gamma$, $I\gamma$, $\gamma(\theta)$, DCO ratios, $\gamma\gamma$ coin, γ -K x ray coin. ^{183}Au Levels

E(level) [†]	$J\pi^{\ddagger}$	Comments
0.0#	5/2-	E(level): from Adopted Levels.
12.4#	9/2-	
69.1@ 3	7/2-	
231.22# 18	13/2-	
273.49@ 18	11/2-	
565.27# 24	17/2-	
599.58@ 22	15/2-	
701.78 ^a 24	13/2+	
865.37 ^a 24	17/2+	
989.1# 3	21/2-	
1022.9@ 3	19/2-	
1054.5& 4	19/2-	
1148.5 ^a 4	21/2+	
1487.5& 3	23/2-	
1491.9# 4	25/2-	
1527.7 ^a 4	25/2+	
1544.7@ 4	23/2-	
1981.1 ^a 5	29/2+	
1986.3& 4	27/2-	
2063.4# 4	29/2-	
2096.7§@ 4	27/2-	
2490.9 ^a 5	33/2+	
2541.4& 4	31/2-	
2685.7§@ 6	31/2-	
2691.0# 5	33/2-	
3048.7 ^a 5	37/2+	
3149.3& 5	35/2-	
3310.7?§@ 8	(35/2-)	
3359.9# 5	37/2-	
3656.7 ^a 6	41/2+	
3798.8& 5	(39/2-)	
4053.0# 6	41/2-	
4309.6 ^a 6	45/2+	
4461.0& 6	(43/2-)	
4765.5# 6	45/2-	
4989.2 ^a 7	49/2+	
5129.0?& 8	(47/2-)	
5500.5# 8	(49/2-)	
5681.3 ^a 7	53/2+	
6276.5?# 9	(53/2-)	
6381.5 ^a 7	57/2+	
7110.5 ^a 9	(61/2+)	
7879.5? ^a 10	(65/2+)	

[†] From least-squares fit to $E\gamma$.[‡] Authors' values, based on measured DCO ratios and/or $\gamma(\theta)$, assuming $J\pi=5/2-$ and $9/2-$, respectively, for the g.s. and 12.4 level.[§] Level omitted from Adopted Levels because deexciting γ was absent in a subsequent ($^{29}\text{Si},5n\gamma$) study (2005So01) in which double-gated spectra clearly showed a different γ in cascade with 327 γ and 423 γ in same band.# (A): ($\pi h_{9/2}$), $\alpha=+1/2$ band.@ (B): Possible ($\pi f_{7/2}$), $\alpha=-1/2$ band. Prolate orbital; energetically favored signature.& (C): Possible ($\pi h_{9/2}$), $\alpha=-1/2$ band. Prolate orbital; unfavored signature.^a (D): $1/2[660]$, $\alpha=+1/2$ band. $\gamma(^{183}\text{Au})$

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$^{152}\text{Sm}(^{35}\text{Cl},4n\gamma)$ 1999Mu05 (continued) $\gamma(^{183}\text{Au})$ (continued)

$E\gamma^\dagger$	E(level)	$I\gamma^\dagger$	Mult. [‡]	Comments
(12.4)	12.4			
163.6 2	865.37	33 3	Q	Mult.: DCO=1.12 14; $A_2=+0.21$ 27, $A_4=+0.1$ 4.
204.4 2	273.49	80.6 20	Q	Mult.: DCO=1.0 3; $A_2=+0.35$ 7, $A_4=-0.27$ 14.
218.8 2	231.22	103.0 25	Q	Mult.: DCO=1.00 7; $A_2=+0.39$ 7, $A_4=-0.150$ 9.
261.1 2	273.49	35.1 11	D	Mult.: DCO=0.74 22; $A_2=-0.08$ 7, $A_4=-0.05$ 11.
265.8 2	865.37	48 5	D	Mult.: DCO=0.58 9; $A_2=-0.32$ 17, $A_4=+0.23$ 26.
283.1 2	1148.5	100	(Q)	Mult.: DCO=1.02 11; $A_2=+0.32$ 17, $A_4=-0.38$ 9.
300.0 5	865.37	11 3		
326.1 2	599.58	58.6 10	Q	Mult.: DCO=1.02 14; $A_2=+0.38$ 6, $A_4=+0.12$ 9.
334.1 2	565.27	59.6 7	Q	Mult.: DCO=1.07 13.
368.0 5	599.58	10.9 7	D	Mult.: DCO=0.51 8.
379.2 2	1527.7	85.0 23	Q	Mult.: DCO=0.99 15.
423.2 2	1022.9	26 6	Q	Mult.: DCO=0.92 25; $A_2=+0.51$ 6, $A_4=-0.10$ 8.
423.9 2	989.1	51.6 10	Q	Mult.: $A_2=+0.51$ 6, $A_4=-0.10$ 8.
428.3 2	701.78	36 4	D+Q	Mult.: DCO=0.8 4; $A_2=-0.74$ 7, $A_4=+0.19$ 10.
433.0 2	1487.5	7 3 7	(Q)	Mult.: $A_2=+0.64$ 24, $A_4=+0.2$ 4.
441.0 5	1986.3	17 5		Mult.: DCO=1.4 4.
453.4 2	1981.1	75 5	Q	Mult.: DCO=1.05 15; $A_2=+0.49$ 6, $A_4=+0.03$ 9.
455.0 5	1054.5	7 3		Mult.: DCO=1.3 6.
464.0 5	1487.5	13.3 20	(Q)	Mult.: DCO=1.0 3; $A_2=+0.46$ 12, $A_4=-0.02$ 19.
498.5 2	1487.5	14 3		Mult.: $A_2=+0.17$ 4, $A_4=+0.28$ 8.
498.9 2	1986.3	25.9 10		Mult.: DCO=0.89 18; $A_2=+0.17$ 4, $A_4=+0.3$ 8.
502.8 2	1491.9	38 4	(Q)	Mult.: $A_2=+0.42$ 11, $A_4=+0.015$ 19.
509.8 2	2490.9	73 6	Q	Mult.: DCO=0.99 20; $A_2=+0.69$ 9, $A_4=+0.05$ 13.
522.0 5	1544.7	15 4		
552.0 5	2096.7	5 2		Mult.: DCO=2.20 11.
555.0 5	1544.7	1.8 3		
555.1 2	2541.4	14.3 18	Q	Mult.: $A_2=+0.32$ 11, $A_4=-0.13$ 15.
557.8 2	3048.7	59 6	(Q)	Mult.: DCO=1.2 4; $A_2=+0.56$ 9, $A_4=+0.08$ 12.
571.5 2	2063.4	19 4	(Q)	Mult.: DCO=1.0 4; $A_2=+0.53$ 10, $A_4=+0.08$ 15.
589.0 5	2685.7	6 3		
607.9 2	3149.3	6.2 5	Q	Mult.: DCO=0.90 17; $A_2=+0.76$ 10, $A_4=-0.22$ 17.
608.0 2	3656.7	27 4		Mult.: DCO=0.90 17; $A_2=+0.39$ 8, $A_4=+0.25$ 13.
609.2 2	2096.7	5 2		
625.0§ 5	3310.7?	1 1		
627.6 2	2691.0	16 4	Q	Mult.: DCO=0.91 14; $A_2=+0.58$ 14, $A_4=-0.08$ 21.
649.5 2	3798.8	5.5 20		Mult.: DCO=0.9 3; $A_2=+0.58$ 14, $A_4=+0.28$ 23.
652.9 2	4309.6	14.3 18		Mult.: DCO=0.7 3; $A_2=+1.0$ 3, $A_4=+0.29$ 25.
662.2 2	4461.0	3.4 20		
668.0§ 5	5129.0?	1 1		
668.9 2	3359.9	13 4	Q	Mult.: DCO=1.2 3; $A_2=+1.02$ 23, $A_4=+0.05$ 28.
679.6 2	4989.2	12 1	(Q)	Mult.: $A_2=+0.56$ 23, $A_4=+0.16$ 31.
692.1 2	5681.3	6.5 10	(Q)	Mult.: $A_2=+0.72$ 20, $A_4=-0.37$ 36.
693.1 2	4053.0	8 4		Mult.: DCO=1.2 6; $A_2=+0.72$ 20, $A_4=-0.4$ 4.
700.2 2	6381.5	3 2		
712.5 2	4765.5	5 2		
729.0 5	7110.5	1 1		
735.0 5	5500.5	2 1		
769.0§ 5	7879.5?	1 1		
776.0§ 5	6276.5?	1 1		

[†] From 1999Mu05.[‡] From measured DCO ratio (24°, 63°) and/or $\gamma(0)$; expected DCO ratios are 1.0 for stretched Q (or D, $\Delta J=0$) transitions and 0.6 for stretched D transitions. Note that A_4 coefficients for Q gammas deexciting the higher spin states are more positive than expected; 1999Mu05 attribute this to measurable correlations between individual γ detectors.

§ Placement of transition in the level scheme is uncertain.

¹⁵⁹Tb(²⁹Si,5nγ), ¹⁵⁹Tb(²⁸Si,4nγ) 2005So01,2002Jo18

2005So01: ¹⁵⁹Tb(²⁹Si,5nγ), E=140 MeV; Au-backed target; GASP detector array (40 Compton suppressed large-volume Ge detectors and a multiplicity filter of 80 BGO elements); measured Eγ, Iγ, γγ coin, DCO ratios.

2002Jo18: ¹⁵⁹Tb(²⁸Si,4nγ), E=140 MeV; array of 12 Compton-suppressed HPGe detectors, 14-element BGO multiplicity filter; measured lifetimes by Doppler-shift recoil-distance method (18 target-stopper distances).

¹⁸³Au Levels

E(level) [†]	Jπ [‡]	T _{1/2} [§]	E(level) [†]	Jπ [‡]	T _{1/2} [§]
0.0 [#]	5/2-		2178.1 ^b 18	27/2+	
12.4 [#] 4	9/2-		2491.9 ^a 22	33/2+	1.09 ps +10-12
68.7 [@] 13	7/2-		2539.6 ^{&} 18	31/2-	
232.3 [#] 8	13/2-	80 ps 4	2683.5 ^b 22	31/2+	
274.3 [@] 8	11/2-		2689.0 [#] 21	33/2-	
566.6 [#] 11	17/2-	10.1 ps +9-8	2742.2 [@] 21	31/2-	
600.7 [@] 10	15/2-		3048.4 ^a 24	37/2+	<0.67 ps
702.4 ^a 10	13/2+		3146.5 ^{&} 21	35/2-	
867.2 ^a 11	17/2+	154 ps 6	3241.4 ^b 24	35/2+	
990.3 [#] 13	21/2-	3.88 ps +25-35	3356.5 [#] 23	37/2-	
1024.0 [@] 12	19/2-		3388.6 [@] 23	35/2-	
1150.9 ^a 15	21/2+	16.8 ps 3	3654 ^a 3	41/2+	
1488.1 ^{&} 13	23/2-		3794.0 ^{&} 23	39/2-	
1492.0 [#] 15	25/2-	1.76 ps +17-18	3838 ^b 3	39/2+	
1530.1 ^a 17	25/2+	4.06 ps +13-11	4047.9 [#] 25	41/2-	
1544.3 [@] 15	23/2-		4306 ^a 3	45/2+	
1739.3 ^b 17	23/2+		4454.5 ^{&} 25	43/2-	
1983.0 ^a 20	29/2+	1.88 ps +10-9	4763 [#] 3	45/2-	
1986.2 ^{&} 15	27/2-		4984 ^a 3	49/2+	
2062.3 [#] 18	29/2-	<0.85 ps	5498 [#] 3	49/2-	
2117.7 [@] 18	27/2-		5675 ^a 4	53/2+	

[†] From least-squares fit to Eγ, assigning 1 keV uncertainty to all transitions and holding E(12.4 level) fixed at the adopted value.

[‡] Values suggested by 2005So01 based on deduced band structure and measured DCO ratios for transitions.

[§] From Doppler-shift recoil-distance method (2002Jo18).

[#] (A): π h_{9/2}, α=+1/2.

[@] (B): π i_{7/2}, α=-1/2.

[&] (C): Band based on 23/2- 1488.

^a (D): 1/2[660], α=+1/2 band.

^b (E): π=+, α=-1/2 band. Probably the unfavored α=-1/2 branch of (π i_{13/2}) band.

γ(¹⁸³Au)

Eγ [‡]	E(level)	Iγ [‡]	Mult. [†]	Comments
12.4 4	12.4			Eγ: from Adopted Levels.
164.9	867.2	33.4 25	Q	R(DCO)=1.09 7.
205.6	274.3	80 4	Q	Mult.: R(DCO)=0.98 4.
220.0	232.3	112 7	Q	Mult.: R(DCO)=1.04 4.
261.8	274.3	59 5	D+Q	Mult.: R(DCO)=0.38 2.
266.5	867.2	60.1 23	D	R(DCO)=0.54 2.
283.7	1150.9	100 4	Q	Mult.: R(DCO)=0.95 5.
300.6	867.2	3.6 5		
326.5	600.7	83 5	Q	R(DCO)=0.93 5.
334.3	566.6	78 3	Q	R(DCO)=0.94 4.
368.3	600.7	19.2 23	D	R(DCO)=0.59 5.
379.2	1530.1	89 4	Q	Mult.: R(DCO)=0.95 3.
423.3	1024.0	22.1 15	Q	R(DCO)=0.92 10.
423.6	990.3	55.2 21	Q	R(DCO)=0.98 4.
428.0	702.4	56.5 21	D	R(DCO)=0.52 3.
438.8	2178.1	3.5 11		
452.9	1983.0	62 3	Q	Mult.: R(DCO)=0.95 4.
457.4	1024.0	4.0 5		
464.1	1488.1	10.6 6		
470.2	702.4	20.9 24	(D)	R(DCO)=1.18 12. Interpreted by 2005So01 as D, ΔJ=0 transition.
494.2	1986.2	3.2 5		

Continued on next page (footnotes at end of table)

$^{159}\text{Tb}(^{29}\text{Si},5n\gamma), ^{159}\text{Tb}(^{28}\text{Si},4n\gamma)$ 2005So01,2002Jo18 (continued) $\gamma(^{183}\text{Au})$ (continued)

$E\gamma^{\ddagger}$	E(level)	$I\gamma^{\ddagger}$	Mult. [†]	Comments
497.8	1488.1	10.2 25		
498.1	1986.2	20.1 18	Q	Mult.: R(DCO)=1.0 5.
501.8	1492.0	33.7 14	Q	Mult.: R(DCO)=0.95 6.
505.4 § #	2683.5			
508.9	2491.9	41.7 19		Mult.: R(DCO)=0.89 5.
520.3	1544.3	6.7 9		
553.4	2539.6	13.4 19	Q	Mult.: R(DCO)=0.93 5.
556.5	3048.4	25.0 17	Q	Mult.: R(DCO)=1.07 9.
557.9 § #	3241.4			
570.3	2062.3	20.4 9	Q	Mult.: R(DCO)=0.97 8.
573.4	2117.7	3.7 9		
588.4	1739.3	10.8 13	D+Q	Mult.: R(DCO)=0.34 8.
597.0 § #	3838			
606.0	3654	10.0 16		
606.9	3146.5	5.9 10		Mult.: R(DCO)=0.9 3.
624.5	2742.2	2.1 4		
626.7	2689.0	9.8 7		Mult.: R(DCO)=0.83 12.
646.4	3388.6	1.2 3		35/2- to 27/2- in table I of 2005So01 is a misprint; it should be 35/2- to 31/2- as shown in authors' level scheme drawing.
647.5	3794.0	1.8 5		
648.0	2178.1	9.1 21	D	Mult.: R(DCO)=0.47 10.
651.3	4306	2.6 3		
660.5	4454.5	1.2 4		
667.5	3356.5	4.4 5		
678.3	4984	1.3 4		
691.0	5675	0.4 2		
691.4	4047.9	2.1 3		
700.5	2683.5	6.7 15		
714.7	4763	1.2 3		
735.0	5498	0.9 2		
749.5	3241.4	1.8 3		
790.0	3838	1.1 2		

[†] From $R(\text{DCO})=I(\gamma_1)(36^\circ) / I(\gamma_1)(90^\circ)$ gated by $\gamma_2(90^\circ)$ / $I(\gamma_1)(90^\circ)$ gated by $\gamma_2(36^\circ)$. Expected values are 1.0 and 0.5, respectively, for stretched Q and pure D $\Delta J=1$ transitions when gating by stretched Q γ .

[‡] From 2005So01. $I\gamma$ is relative to $I(284\gamma)=100$. Uncertainty in $E\gamma$ unstated by authors.

§ From level scheme in fig. 2 and table I of 2005So01; however, in text, authors state that intraband transitions were not observed in this band. The evaluator, therefore, considers existence of this transition to be questionable.

Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Q(β⁻)=-7217 12; S(n)=8299 12; S(p)=2793 21; Q(α)=6038 4 2012Wa38.

Q(εp)=5075 15 (2012Wa38).

Production: ¹⁵⁵Gd(³²S,4nγ), E=159, 160 MeV (1995La10,1995Sh04,1993Bi17); ¹⁶⁸Yb(²²Ne,7nγ), E=129 MeV (2002Du22); ¹⁸⁷Pb α decay.

For calculation of α-cluster preformation probability, see 2015Se01. For calculation of T_{1/2} for α decay, see 2014Is09 (angle-dependent potential), 2013Ja16.

For isotope shift data see, e.g., 1972Bo09, 1976Bo09.

Band structure is adopted from ¹⁵⁵Gd(³²S,4nγ) E=159 MeV (1995La10), with the addition of 422γ, 362γ and 729γ in 9/2[624] band seen only by 1995Sh04. For the 1/2[521] band, however, the structure differs significantly from that deduced in ¹⁵⁵Gd(³²S,4nγ) E=160 MeV by 1995Sh04: the 67γ of 1995La10 is not seen by 1995Sh04 (possibly below their spectrum cutoff); an 89γ in 1995Sh04 is absent in 1995La10 (an 89γ from Coulomb excitation of ¹⁵⁶Gd could have appeared in sum-gate spectrum of 1995Sh04 if their target included ¹⁵⁶Gd); 1995La10 and 1995Sh04 each report three signature-partner linking transitions, none of which is seen by the other authors; structure above J=27/2 in the α=-1/2 partner differs in the two studies. Further measurements will be required to resolve these inconsistencies.

For discussion of level-energy systematics for N=103 isotones, see 2013Sa43.

¹⁸³Hg Levels

Cross Reference (XREF) Flags

A ¹⁸³Tl ε Decay
B ¹⁸⁷Pb α Decay (15.2 s)
C ¹⁸⁷Pb α Decay (18.3 s)
D ¹⁵⁵Gd(³²S,4nγ) E=159 MeV
E ¹⁵⁵Gd(³²S,4nγ) E=160 MeV

E(level) [†]	Jπ [‡]	XREF	T _{1/2}	Comments
0.0 [§]	1/2- [#] e	AB DE	9.4 s 7	%ε+%β ⁺ =88.3 20; %α=11.7 20; %εp=0.00026 6. μ=+0.524 5 (1976Bo09). <r ² > ^{1/2} (charge)=5.442 fm 3 (2004An14). %α: From %I(5904α)=10.6 20 (1970Ha18) and %α=1.07 14 for all other α branches (1979Ha10); from Iα/I(K x ray). Evaluator adopts this value in preference to %I(5904α)=23.2 14 (1980Sc09, from parent-daughter Iα comparison) because it leads to a more reasonable hindrance factor for the 5904α transition (note that 1980Sc09 had to apply a significant correction to the daughter Iα data because the range of the recoils exceeded their implantation depth). %εp: From I(p)/I(α)=2.2x10 ⁻⁵ 3 (1971Ho07), assuming %α=11.7 20. %εp would rise to 0.00056 8 were the %α=25.5 15 datum of 1980Sc09 correct. %ε+%β ⁺ : 100 - (adopted %α=11.7 20). μ: NMR of nuclei polarized by optical pumping with β-asymmetry detection. T _{1/2} : weighted average of 8.8 s 5 (1970Ha18), 12 s 2 (1984Ma41) and 10.7 s 8 (1992BoZO) (the unweighted average is 10.5 s 9). E(level): from systematics of N=103 isotones, 2013Sa43 estimate x=120 10. XREF: E(87). Jπ: 3/2-, 5/2- from E2 67γ to 1/2- g.s.; member of g.s. band; it is (assumed that the 67γ seen in ¹⁸⁷ Pb α decay is the same as that seen in (³² S,4nγ) E=159 MeV). T _{1/2} : based on observation of prompt αγ coin in ¹⁸⁷ Pb α decay (15.2 s). XREF: E(89).
0.0+x ^a	7/2-	DE		
67.16 [@] 23	3/2- [#]	B DE	≤16 ns	XREF: E(87). Jπ: 3/2-, 5/2- from E2 67γ to 1/2- g.s.; member of g.s. band; it is (assumed that the 67γ seen in ¹⁸⁷ Pb α decay is the same as that seen in (³² S,4nγ) E=159 MeV). T _{1/2} : based on observation of prompt αγ coin in ¹⁸⁷ Pb α decay (15.2 s). XREF: E(89).
86.8 [§] 4	5/2- [#]	DE		
104.93+x ^{&} 16	9/2-	DE		
183 ^b 9	(13/2+)	CDE		Jπ: suggested configuration=(v i _{13/2})⊗(slightly oblate 0p-2h Hg core) (1999An10). Unhindered α decay from (13/2+) ¹⁸⁷ Pb. T _{1/2} : possibly exceeds 8 μs, based on absence of αγ coin in ¹⁸⁷ Pb α decay (18.3 s). E(level): from α decay (18.3 s).
251.57+x ^a 16	(11/2-)	DE		
261.6 [@] 3	7/2- [#]	DE		
275.33 24	(3/2-)	B	≤16 ns	XREF: E(281). Jπ: possible configuration=(v 2p _{3/2})⊗(slightly oblate 0p-2h Hg core) (1999An10); (M1) 276γ to 1/2- g.s.. Consistent with apparently unhindered α decay from (3/2-) ¹⁸⁷ Pb. T _{1/2} : based on observation of prompt αγ coin in ¹⁸⁷ Pb α decay (15.2 s).
284.6 ^d 4	(11/2+)	D		
285.9 [§] 4	9/2- [#]	DE		
406.93+x ^{&} 21	13/2-	DE		
537.27 ^d 17	15/2+	DE		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{183}Hg Levels (continued)

E(level) [†]	J π [‡]	XREF	Comments
542.5@ 4	11/2-#	DE	XREF: E(561). Placement of E γ =273.2 5 line from this level in ($^{32}\text{S},4n\gamma$) E=160 MeV not adopted.
577.3§ 5	13/2-#	DE	
585.79+x ^a 22	15/2-	DE	
612.33 ^c 17	17/2+	DE	
779.48+x& 25	17/2-	DE	
883.94 ^d 19	19/2+	DE	XREF: E(925).
906.5@ 4	15/2-#	DE	
953.3§ 5	17/2-#	DE	
993.0+x ^a 3	19/2-	DE	
1016.05 ^c 22	21/2+	DE	
1219.5+x& 3	21/2-	DE	XREF: E(1363).
1319.53 ^d 24	23/2+	DE	
1345.3@ 5	19/2-#	DE	
1404.7§ 6	21/2-#	DE	
1465.8+x ^a 4	23/2-	DE	
1470.4 ^c 3	25/2+	DE	XREF: E(1867).
1720.9+x& 4	25/2-	DE	
1832.6 ^d 3	27/2+	DE	
1849.2@ 6	23/2-#	DE	
1921.5§ 6	25/2-#	DE	
1991.7 ^c 4	29/2+	DE	XREF: E(2426).
1997.7+x ^a 4	27/2-	DE	
2276.7+x& 4	29/2-	DE	
2408.9@ 7	27/2-#	DE	
2414.5 ^d 4	31/2+	DE	
2492.0§ 7	29/2-#	DE	XREF: E(3027).
2574.7 ^c 4	33/2+	DE	
2582.8+x ^a 5	31/2-	DE	
2879.5+x& 5	33/2-	DE	
3010.7? 9	(31/2-)	E	
3022.5@ 8	31/2-#	D	XREF: E(3649).
3055.8 ^d 6	(35/2+)	DE	
3102.1§ 7	33/2-#	DE	
3212.3 ^c 5	(37/2+)	DE	
3214.0+x ^a 6	(35/2-)	DE	
3520.0+x& 7	(37/2-)	DE	XREF: E(3649).
3632.6@ 10	35/2-#	E	
3725.9§ 10	37/2-#	DE	
3748.0 ^d 9	(39/2+)	DE	
3882.4+x ^a 7	(39/2-)	DE	
3895.4 ^c 6	(41/2+)	DE	XREF: E(3649).
4269.2?@ 11	39/2-#	E	
4365.8?§ 11	41/2-#	E	
4474.0 ^d 10	(43/2+)	E	
4618.5 ^c 8	(45/2+)	DE	

[†] From least-squares fit to adopted E γ . Energies for 9/2[624] band members are given assuming E=183 for the 13/2+ state fed in α decay; the 9 keV uncertainty in that energy has not been included in the energies shown here.

[‡] Values given without comment are from $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=159 MeV; they are based on γ multipolarity information and deduced band structure.

§ (A): 1/2[521], α =+1/2 band (1995La10). Differs from that deduced in $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=160 MeV; see comments for this band in that dataset.

Definite J π is assigned to members of the g.s. band based on smooth progression of level energies and independently-established J π (g.s.)=1/2- and E2 multipolarity for intraband 67 γ .

@ (B): 1/2[521], α =-1/2 band (1995La10). Differs from that deduced in $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=160 MeV; see comments on this band in that dataset. Band parameters: E $_0$ =2.7, A=13.2, a=+0.70 (J=1/2,3/2,5/2).

& (C): 7/2[514], α =+1/2 band (1995La10). Band parameters: E $_0$ =-60, A=13.4, B $_0$ =-13.8 (J=9/2,13/2,17/2). Energy offset x estimated from systematics to be 120 10 (2013Sa43).

a (D): 7/2[514], α =-1/2 band (1995La10). Band parameters: E $_0$ =-45, A=12.9, B $_0$ =-13.4 (J=7/2,11/2,15/2). Energy offset x estimated from systematics to be 120 10 (2013Sa43).

b (E): v $i_{13/2}$ band. Oblate, possibly isomeric bandhead is the only state observed.

Footnotes continued on next page

Adopted Levels, Gammas (continued) ^{183}Hg Levels (continued)

- ^c (F): 9/2[624], $\alpha=+1/2$ band (1995La10,1995Sh04). Large signature splitting may indicate hexadecapole deformation or mixing of this prolate band with oblate structure from same ($v\ i_{13/2}$) subshell (1995Sh04). So far, $J=(9/2,13/2)$ members have not been identified. Band parameters: $E_0=85$, $A=10.1$ ($J=17/2,21/2$).
- ^d (G): 9/2[624], $\alpha=-1/2$ band (1995La10,1995Sh04). Large signature splitting may indicate hexadecapole deformation or mixing of this prolate band with oblate structure from same ($v\ i_{13/2}$) subshell (1995Sh04). Band parameters: $E_0=234$, $A=8.5$, $B_0=9.5$ ($J=11/2,15/2,19/2$).
- ^e The spin was measured by optical pumping (1972Bo09); π is based on the agreement of μ with the Nilsson model prediction for the 1/2[521] orbital.

 $\gamma(^{183}\text{Hg})$

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	α	Comments
67.16	67.1 3	100	E2 [§]	32.7 9	B(E2)(W.u.)>12. E γ : average of 67.4 3 from α decay (15.2 s) and 66.8 3 from $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=159 MeV. Mult.: from $\alpha(\text{exp})$ in α decay (15.2 s).
86.8	86.5 [#] 5	100	(E2)	10.3 3	Placement of this γ from $J=3/2$ 67-keV member of 1/2[521] band suggested in ($^{32}\text{S},4n\gamma$) E=160 MeV is not adopted. Other E γ : 88.9 5 from ($^{32}\text{S},4n\gamma$) E=160 MeV. Mult.: Q intraband γ from ($^{32}\text{S},4n\gamma$) E=160 MeV.
104.93+x	104.9 2	100			
251.57+x	146.6 2	29 6	(M1)	2.65	I γ : weighted average of 25 5 from ($^{32}\text{S},4n\gamma$) E=160 MeV and 39 8 from ($^{32}\text{S},4n\gamma$) E=159 MeV; note, however, that the former study does not report a known 253 γ in the 9/2[624] band which may, conceivably, have been unresolved from the 252 γ . I γ : weighted average from ($^{32}\text{S},4n\gamma$) E=160 MeV and ($^{32}\text{S},4n\gamma$) E=159 MeV.
	251.6 2	100 11			
261.6	174.7 3	27 13			Placement of E γ (I γ)=191.4 5 (40 20) from this level in ($^{32}\text{S},4n\gamma$) E=160 MeV is rejected by evaluator.
	194.5 2	100 20			
275.33	208.0 [§] 3		(M1) [§]	0.991	
	275.5 [§] 3		(M1) [§]	0.455	
285.9	199.1 2	100	(E2)	0.397	
406.93+x	155.2 3	7.9 11			I γ : from ($^{32}\text{S},4n\gamma$) E=160 MeV; 12 5 in ($^{32}\text{S},4n\gamma$) E=159 MeV.
	302.0 2	100 9	(E2)	0.1044	Other E γ : 301.5 2 from ($^{32}\text{S},4n\gamma$) E=160 MeV.
537.27	252.7 3	80 20			
	354.4 2	100 30	D+Q		Other E γ : 353.8 2 from ($^{32}\text{S},4n\gamma$) E=160 MeV.
542.5	257 [@]	<7.7			
	280.9 2	100 23	(E2) [#]	0.1298	E γ : 280.4 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
577.3	291.4 2	100	(E2)	0.1161	E γ : 290.8 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
585.79+x	178.8 3	5.9 6	(M1+E2)	1.0 5	I γ : from ($^{32}\text{S},4n\gamma$) E=160 MeV; 9 4 in ($^{32}\text{S},4n\gamma$) E=159 MeV.
	334.3 2	100 6	(E2)	0.0777	E γ : 333.8 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
612.33	75				
	429.2 2	100 8	Q		
779.48+x	193.7 3	9.2 15			I γ : from ($^{32}\text{S},4n\gamma$) E=160 MeV; 9 5 in ($^{32}\text{S},4n\gamma$) E=159 MeV.
	372.5 2	100 4	(E2)	0.0574	I γ : from ($^{32}\text{S},4n\gamma$) E=160 MeV. E γ : 372.0 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
883.94	271.5 2	44 8	(M1+E2)	0.31 17	E γ : 271.0 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
	346.8 2	100 25	(E2)	0.0700	E γ : 346.3 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
906.5	329 [@]	<8.3			
	364.0 2	100 25	(E2) [#]	0.0612	
953.3	376.0 2	100	(E2)	0.0560	E γ : 375.4 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
993.0+x	213.2 4	6 3			
	407.2 2	100 19	(E2)	0.0452	E γ : 406.7 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1016.05	131.9 3	3.8 13			
	403.7 2	100 9	(E2) [#]	0.0463	
1219.5+x	226.4 4	3 3			
	440.0 2	100 12	(E2)	0.0370	E γ : 439.5 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1319.53	303.4 2	33 13	(M1+E2)	0.23 13	E γ : 303.0 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV. I γ : I(303 γ):I(436 γ)=78 8:100 30 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
	435.7 2	100 13	(E2)	0.0379	E γ : 435.3 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1345.3	438.8 3	100			
1404.7	451.4 2	100	(E2)	0.0347	E γ : 450.9 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1465.8+x	472.8 2	100	(E2)	0.0309	E γ : 472.2 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Hg})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. [‡]	α	Comments
1470.4	150.7 4	3.1 15	(M1+E2)	1.8 7	
	454.3 2	100 8	(E2)	0.0341	
1720.9+x	501.4 2	100	(E2)	0.0268	E_{γ} : 500.8 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1832.6	361.9# 5	65 11	(M1)	0.217	I_{γ} : from ($^{32}\text{S},4n\gamma$) E=160 MeV; absent in E=159 MeV experiment.
	513.2 2	100 9			E_{γ} : 512.8 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
					I_{γ} : from ($^{32}\text{S},4n\gamma$) E=160 MeV.
1849.2	503.9 3	100			E_{γ} : 503.4 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1921.5	516.8 2	100			E_{γ} : 516.3 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
1991.7	521.3 2	100	(E2)	0.0244	
1997.7+x	531.9 2	100			E_{γ} : 531.4 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
2276.7+x	555.8 2	100	(E2)	0.0210	E_{γ} : 555.3 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
2408.9	559.7 3	100			E_{γ} : 558.9 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
2414.5	422.6# 5	100 66	(M1)	0.1432	I_{γ}, E_{γ} : from ($^{32}\text{S},4n\gamma$) E=160 MeV; absent in E=159 MeV experiment.
	581.9 3	93 13			E_{γ} : 581.1 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
2492.0	570.5 3	100			
2574.7	583.0 2	100			Other E_{γ} : 582.7 2 from ($^{32}\text{S},4n\gamma$) E=160 MeV.
2582.8+x	585.1 2	100			
2879.5+x	602.8 3	100	(E2)	0.01740	E_{γ} : 602.2 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
3010.7?	601.8#@ 5	100			E_{γ} : Placed as J=31/2 to 27/2 transition in 1/2[521] band in ($^{32}\text{S},4n\gamma$) E=160 MeV but γ is absent in ($^{32}\text{S},4n\gamma$) E=159 MeV, so evaluator considers level and placement to be uncertain.
3022.5	613.6 4	100			Band assignment from ($^{32}\text{S},4n\gamma$) E=159 MeV. Also, see comment on 601.8 γ .
3055.8	641.3 4	100			
3102.1	610.1 3	100	(E2)	0.01693	E_{γ} : 609.6 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
3212.3	637.6 3	100			E_{γ} : 637.0 2 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
3214.0+x	631.2 3	100			
3520.0+x	640.5 4	100			E_{γ} : 638.0 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
3632.6	621.9# 5	100			Not observed in ($^{32}\text{S},4n\gamma$) E=159 MeV.
3725.9	623.8 6	100			E_{γ} : 626.3 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV for weak γ ; possibly γ is contaminated or misplaced in one or both studies.
					E_{γ} : 692.9 5 in ($^{32}\text{S},4n\gamma$) E=160 MeV.
3748.0	692.2 6	100			
3882.4+x	668.4 4	100			
3895.4	683.1 2	100			E_{γ} : from ($^{32}\text{S},4n\gamma$) E=160 MeV.
4269.2?	636.6# 5	100			γ absent in ($^{32}\text{S},4n\gamma$) E=159 MeV.
4365.8?	639.9# 5	100			γ absent in ($^{32}\text{S},4n\gamma$) E=159 MeV.
4474.0	729.0# 5	100			
4618.5	723.1 6	100			

[†] From $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=159 MeV, except as noted.

[‡] ΔJ from $\gamma(\theta)$ and/or DCO ratio data in ($^{32}\text{S},4n\gamma$) E=159 MeV, except as noted. Apart from the 429 γ , all the transitions assigned as Q are intraband transitions so mult=(E2); similarly, except for the 354 γ , transitions assigned in ($^{32}\text{S},4n\gamma$) as D or D+Q are intraband transitions, so $\Delta\pi$ =(no) has been assigned for those also.

[§] From α decay (15.2 s).

[#] From $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=160 MeV.

[@] Placement of transition in the level scheme is uncertain.

Bands for ^{183}Hg

¹⁸³Tl ε Decay 1999Ba45,1992BoZO

Parent ¹⁸³Tl: E=628.7; Jπ=(9/2-); T_{1/2}=53.3 ms 3; Q(g.s.)=7217 12; %ε+%β⁺ decay>0.

Parent ¹⁸³Tl: E=0.0; Jπ=(1/2+); T_{1/2}=6.9 s 7; Q(g.s.)=7217 12; %ε+%β⁺ decay=?

Existence of ¹⁸³Tl ε decay deduced from accumulation of 5900α following α decay of daughter (¹⁸³Hg) (1992BoZO) and from observed α(¹⁸⁷Bi, 9/2-)-5910α(¹⁸³Hg) correlation (1999Ba45).

Parent T_{1/2}=6.9 s 7 for (1/2+) ¹⁸³Tl (1992BoZO), 53.3 ms 3 for (9/2-) ¹⁸³Tl (2004Ra28).

¹⁸³Hg Levels

E(level)	Jπ	Comments
0.0	1/2-	Jπ: from Adopted Levels.

¹⁸⁷Pb α Decay (15.2 s) 1981Mi12

Parent ¹⁸⁷Pb: E=33 13; Jπ=(3/2-); T_{1/2}=15.2 s 3; Q(g.s.)=6393 6; %α decay=7 2.

¹⁸⁷Pb-E: 3/2- g.s., 33 keV 13 below 13/2+ state in ¹⁸⁷Pb from mass measurements (2005We11), or 3/2- level 2 keV 15 above a 13/2+ ¹⁸⁷Pb g.s. from ¹⁹¹Po α decay (2002An19), implying E(13/2+) level in ¹⁸³Hg at 216 16 or 185 18. The former is preferred by 2013Sa43 because the ¹⁸³Hg 13/2+ level presumably must deexcite to the 9/2 7/2[514] level known from Adopted Levels, Gammas to lie 105 keV above the 7/2 7/2[514] level whose energy is estimated from systematics to be 120 10 (2013Sa43); thus, E(13/2+) in ¹⁸³Hg should exceed =225 keV.

¹⁸⁷Pb-%α decay: From α-α correlation data of 1999An36.

Decay scheme based on αγ coincidence measurements on a mass separated source. Substantial ε decay branch could not be quantified by 1981Mi12 due to similar ¹⁸⁷Pb g.s.+isomer half-lives and unknown α branching ratios of the ¹⁸⁷Tl daughters.

For this decay, QxBR=450 129.

¹⁸³Hg Levels

E(level) [†]	Jπ [‡]	T _{1/2} [§]	Comments
0.0	1/2-		No α branch observed to this level. 1981Mi12 estimate an upper limit of 1.5% of all parent α decays for such a branch; the implied lower limit for its hindrance factor (790 240) is surprisingly high compared with that for the branch to the 67-keV level (13 4) which has been postulated to be a member of the same rotational band.
67.43 25	3/2-	≤16 ns	Other E: 44 19 from Q(α) and Eα if parent level energy is 33 13 and 65 19 if E(parent)=2 15.
275.47 25	(3/2-)	≤16 ns	

[†] From least-squares fit to Eγ.

[‡] From Adopted Levels.

[§] Based on observation of prompt α-γ coin (FWHM=16 ns time distribution) (1981Mi12).

α radiations

Eα [†]	E(level)	Iα ^{†§}	HF [‡]
5993 10	275.47	40.3 24	2.6 8
6194 10	67.43	59.7 24	13 4

[†] From 1981Mi12. Intensities are given per 100 parent α decays, based on I(6194α):I(5993α)=21.5 15:14.5 10 (1981Mi12).

[‡] If r₀=1.496 15 (based on r₀(¹⁸²Hg)=1.50 2, r₀(¹⁸⁴Hg)=1.491 14 in 1998Ak04), %α=7 2, Q(α)=6395 7 and T_{1/2}=15.2 s 3 for ¹⁸⁷Pb parent.

[§] For α intensity per 100 decays, multiply by 0.07 2.

γ(¹⁸³Hg)

Eγ	E(level)	Mult.	α	Comments
67.4 3	67.43	E2	32.1 9	Mult.: α(exp)=26 4 from ratio of I(6197α) and I(6197α-67γ coin) (1981Mi12).
^x 187				Coincident with 5993α. Eγ is comparable to that expected for an otherwise unknown transition from 275 level to a known 5/2- 87 level, but no such branch from the 275 level was reported in the extensive (³² S,4nγ) E=159 MeV study by 1995La10.
^x 195				Coincident with 5993α.

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¹⁸⁷Pb α Decay (15.2 s) ¹⁹⁸Mi12 (continued)

γ(¹⁸³Hg) (continued)

<u>Eγ</u>	<u>E(level)</u>	<u>Mult.</u>	<u>α</u>	<u>Comments</u>
208.0 3	275.47	(M1)	0.991	Mult.: 0.87≤α(exp)≤5.3 from intensity balance at the 67 level. D,E2 from RUL.

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¹⁸⁷Pb α Decay (15.2 s) 1981Mi12 (continued)
γ(¹⁸³Hg) (continued)

Eγ	E(level)	Mult.	α	Comments
275.5 3	275.47	(M1)	0.455	Mult.: M1 favored based on strength of 5993α-(K x ray) coin (1981Mi12).

^x γ ray not placed in level scheme.

Decay Scheme

¹⁸⁷Pb α Decay (18.3 s) 1981Mi12

Parent ¹⁸⁷Pb: E=0.0; Jπ=(13/2+); T_{1/2}=18.3 s 3; Q(g.s.)=6393 6; %α decay=12 2.

¹⁸⁷Pb: see comment on ¹⁸⁷Pb parent energy in α decay (15.2 s).

¹⁸⁷Pb-α decay: From α-α correlation data of 1999An36.

Others: 1972Ga27, 1974Le02, 2000By02.

For this decay, QxBR=767 128.

¹⁸³Hg Levels

E(level)	Jπ [†]	Comments
183 9	(13/2+)	T _{1/2} : absence of 6077α-γ coin may indicate that T _{1/2} (266 level) exceeds the 8 μs coincidence time employed in the experiment of 1981Mi12. E(level): from Q(α)=6393 6 (2012Wa38) and Eα=6077 7 from ¹⁸⁷ Pb(g.s.).

[†] From Adopted Levels.

α radiations

Eα [†]	E(level)	Iα [‡] #	HF [§]	Comments
6077 7	183	100	1.5 3	Eα: weighted average of 6073 10 (1981Mi12), 6080 20 (1974Le02), 6080 10 (1972Ga27).

[†] From 1981Mi12.

[‡] Intensity per 100 parent α decays; only one α group has been observed (1981Mi12).

[§] If r₀=1.496 15 (based on r₀(¹⁸²Hg)=1.50 2, r₀(¹⁸⁴Hg)=1.491 14 in 1998Ak04), %α=12 2, Q(α)=6395 6 and T_{1/2}=18.3 s 5 for ¹⁸⁷Pb parent.

[#] For α intensity per 100 decays, multiply by 0.12 2.

¹⁵⁵Gd(³²S,4n γ) E=159 MeV 1995La10

1995La10: E=159 MeV; 91% enriched ¹⁵⁵Gd targets (thin or Pb-backed); CAESAR detector array (6 Compton-suppressed HPGe detectors) for γ and x detection, $\theta=48^\circ$, 97° and 145° ; measured E γ , I γ , $\gamma\gamma$ coin (± 432 ns overlap), $\gamma(0)$, DCO ratios.

¹⁸³Hg Levels

E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
0.0 [§]	1/2-	833.04+x ^b 22	21/2+	2391.6+x ^b 4	33/2+
0.0+x ^a	13/2+	906.2 [#] 5	(15/2-)	2408.6 [#] 7	(27/2-)
0.0+y ^{&}	7/2-	953.2 [§] 6	17/2-	2491.9 [§] 7	29/2-
66.8 [#] 3	(3/2-)	993.0+y ^{&} 3	19/2-	2582.8+y ^{&} 5	31/2-
86.7 [§] 5	5/2-	1136.55+x ^c 24	23/2+	2873.0+x ^c 6	(35/2+)
101.6+x ^c 4	(11/2+)	1219.5+y [@] 3	21/2-	2879.5+y [@] 5	33/2-
104.93+y [@] 16	9/2-	1287.3+x ^b 3	25/2+	3022.2 [#] 8	(31/2-)
251.57+y ^{&} 16	11/2-	1345.0 [#] 6	(19/2-)	3029.2+x ^b 5	(37/2+)
261.3 [#] 4	(7/2-)	1404.6 [§] 6	21/2-	3102.0 [§] 8	33/2-
285.8 [§] 5	9/2-	1465.8+y ^{&} 4	23/2-	3214.0+y ^{&} 6	(35/2-)
354.27+x ^c 17	15/2+	1649.8+x ^c 3	27/2+	3520.0+y [@] 7	(37/2-)
406.93+y [@] 21	13/2-	1720.9+y [@] 4	25/2-	3565.2+x ^c 9	(39/2+)
429.33+x ^b 17	17/2+	1808.6+x ^b 4	29/2+	3712.7+x ^b 7	(41/2+)
542.2 [#] 5	(11/2-)	1848.9 [#] 7	(23/2-)	3725.8 [§] 10	(37/2-)
577.2 [§] 6	13/2-	1921.4 [§] 7	25/2-	3882.4+y ^{&} 7	(39/2-)
585.79+y ^{&} 22	15/2-	1997.7+y ^{&} 4	27/2-	4435.8+x ^b 9	(45/2+)
700.95+x ^c 19	19/2+	2231.7+x ^c 5	31/2+		
779.48+y [@] 25	17/2-	2276.7+y [@] 4	29/2-		

[†] From least-squares fit to E γ . From Adopted Levels, Gammas, energy offset x=183 9.

[‡] Authors' values, based on measured γ multipolarity data and deduced band structure.

[§] (A): 1/2[521], $\alpha=+1/2$ band.

[#] (B): 1/2[521], $\alpha=-1/2$ band.

[@] (C): 7/2[514], $\alpha=+1/2$ band.

[&] (D): 7/2[514], $\alpha=-1/2$ band.

^a (E): $i_{13/2}$ band. Oblate, possibly isomeric, bandhead is the only state observed.

^b (F): 9/2[624], $\alpha=+1/2$ band.

^c (G): 9/2[624], $\alpha=-1/2$ band.

 $\gamma(^{183}\text{Hg})$

E γ	E(level)	I γ	Mult. [†]	Comments
66.8 3	66.8	7 3		
75	429.33+x			
87	86.7			
104.9 2	104.93+y	6 2		Mult.: DCO=1.15 27.
131.9 3	833.04+x	3 1		
146.6 2	251.57+y	29 6	D	Mult.: DCO=0.79 24.
150.7 4	1287.3+x	2 1	D+Q	Mult.: DCO=0.67 25.
155.2 3	406.93+y	7 3		Mult.: DCO=0.67 26.
174.7 3	261.3	4 2		
178.8 3	585.79+y	5 2	D+Q	Mult.: DCO=0.58 23.
193.7 3	779.48+y	4 2		
194.5 2	261.3	15 3		
199.1 2	285.8	55 5	Q	Mult.: DCO=1.51 13.
213.2 4	993.0+y	2 1		
226.4 4	1219.5+y	1 1		
251.6 2	251.57+y	74 8		Mult.: DCO=1.21 25; A ₂ =+0.20 22.
252.7 3	354.27+x	16 4		Mult.: DCO=1.4 5; A ₂ =+0.3 4.
257 [‡]	542.2	<1		
271.5 2	700.95+x	16 3	D+Q	Mult.: DCO=0.60 9; A ₂ =-0.39 19.
280.9 2	542.2	13 3		
291.4 2	577.2	38 4	Q	Mult.: DCO=1.34 17; A ₂ =+0.27 18.
302.0 2	406.93+y	58 5	Q	Mult.: DCO=1.25 20; A ₂ =+0.33 24.
303.4 2	1136.55+x	5 2	D+Q	Mult.: DCO=0.66 16.
329 [‡]	906.2	<1		
334.3 2	585.79+y	55 7	Q	Mult.: DCO=1.34 23; A ₂ =+0.30 9.

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$^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=159 MeV 1995La10 (continued) $\gamma(^{183}\text{Hg})$ (continued)

$E\gamma$	E(level)	$I\gamma$	Mult. [†]	Comments
346.8 2	700.95+x	36 9	Q	Mult.: DCO=1.46 23.
354.4 2	354.27+x	20 6	D+Q	Mult.: DCO=0.20 11; $A_2=-0.7$ 5.
364.0 2	906.2	12 3		
372.5 2	779.48+y	44 4	Q	Mult.: DCO=1.29 20; $A_2=+0.33$ 25.
376.0 2	953.2	38 4	Q	Mult.: DCO=1.34 17; $A_2=+0.30$ 21.
403.7 2	833.04+x	80 7	(Q)	Mult.: DCO=1.26 13; $A_2=+0.11$ 14.
407.2 2	993.0+y	32 6	Q	Mult.: DCO=1.15 16; $A_2=+0.50$ 26.
429.2 2	429.33+x	100 8	Q	Mult.: DCO=1.43 14; $A_2=+0.27$ 9.
435.7 2	1136.55+x	15 2	(Q)	Mult.: $A_2=+0.23$ 12.
438.8 3	1345.0	11 3		
440.0 2	1219.5+y	33 4	Q	Mult.: DCO=1.53 27; $A_2=+0.37$ 14.
451.4 2	1404.6	26 4	Q	Mult.: DCO=1.9 3; $A_2=+0.40$ 18.
454.3 2	1287.3+x	65 5	Q	Mult.: DCO=1.58 18; $A_2=+0.27$ 17.
472.8 2	1465.8+y	24 4	Q	Mult.: DCO=1.45 25; $A_2=+0.25$ 19.
501.4 2	1720.9+y	24 3	Q	Mult.: DCO=1.6 3.
503.9 3	1848.9	6 1		
513.2 2	1649.8+x	8 3		Mult.: DCO=1.28 22.
516.8 2	1921.4	18 3		Mult.: DCO=1.29 19; $A_2=+0.0$ 3.
521.3 2	1808.6+x	38 4	Q	Mult.: DCO=1.49 18; $A_2=+0.20$ 24.
531.9 2	1997.7+y	16 3		Mult.: DCO=1.2 3; $A_2=+0.27$ 26.
555.8 2	2276.7+y	23 3	Q	Mult.: DCO=1.42 25.
559.7 3	2408.6	8 2		
570.5 3	2491.9	11 2		Mult.: DCO=1.3 3.
581.9 3	2231.7+x	5 2		Mult.: DCO=1.3 4; $A_2=+0.5$ 5.
583.0 2	2391.6+x	33 3		Mult.: DCO=1.27 21.
585.1 2	2582.8+y	13 3		Mult.: DCO=1.4 3.
602.8 3	2879.5+y	15 3	Q	Mult.: DCO=1.5 3.
610.1 3	3102.0	10 2	Q	Mult.: DCO=2.0 8.
613.6 4	3022.2	3 1		
623.8 6	3725.8	5 2		
631.2 3	3214.0+y	8 3		
637.6 3	3029.2+x	12 2		Mult.: DCO=1.3 3.
640.5 4	3520.0+y	8 2		Mult.: DCO=1.2 4.
641.3 4	2873.0+x	3 1		
668.4 4	3882.4+y	4 2		
683.5 4	3712.7+x	4 2		
692.2 6	3565.2+x	1 1		
723.1 6	4435.8+x	2 1		

[†] Assigned by evaluator based on measured $\gamma(\theta)$ and/or DCO ratios. 1995La10 expect DCO ratios of =1.4 and 1.0 for stretched Q (or D $\Delta J=0$) transitions and pure stretched D transitions, respectively. They assign Q transitions as E2, D transitions as M1,E2; see 1995La10 for authors' suggested assignments based on $\gamma(\theta)$ or DCO, if available, and on deduced level scheme.

[‡] Placement of transition in the level scheme is uncertain.

 $^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=160 MeV 1995Sh04,1993Bi17

1995Sh04: E=160 MeV; ^{155}Gd enriched self-supporting target; 10 Compton-suppressed Ge detectors, one low-energy photon spectrometer, multiplicity filter with 28 BGO detectors; $\theta=35^\circ, 90^\circ, 145^\circ$; measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, $\gamma(\text{K} \times \text{ray})$ coin, DCO ratios ($90^\circ, 35$ (or 145°)); $\gamma\gamma$ coin matrix added to that from 1993Bi17.

1993Bi17: E=160 MeV; fragment mass analyzer for identification of evaporation residues; Compton-suppressed Ge-detector array; measured $E\gamma$, $I\gamma$ (unstated), residue- γ coin, $\gamma\gamma$ coin, residue- $\gamma\gamma$ coin; identified 9/2[624] and 7/2[514] bands.

The level scheme is taken from 1995Sh04; this is similar to, and presumably supersedes, that from 1993Bi17 for the 9/2[624] and 7/2[514] bands, and also includes the 1/2[521] band. The proposed 1/2[521] band structure differs from that shown in Adopted Levels in several respects (see comments on that band), but is included in the present dataset for completeness.

¹⁵⁵Gd(³²S,4n γ) E=160 MeV ¹⁹⁹⁵Sh04,¹⁹⁹³Bi17 (continued)

¹⁸³Hg Levels

E(level) [†]	J $\pi^{\ddagger}$	E(level) [†]	J $\pi^{\ddagger}$	E(level) [†]	J $\pi^{\ddagger}$
0.0 $\S$	1/2-	954.0 $\S$ 5	17/2-	2580.0+x& 7	(31/2-)
0.0+x&	(7/2-)	991.8+x& 3	(19/2-)	2870.9+y ^c 7	(35/2+)
0.0+y ^a	(13/2+)	1135.36+y ^c 24	(23/2+)	2876.2+x@ 7	(33/2-)
86.4 $\#$ 4	3/2-	1217.9+x@ 4	(21/2-)	3026.9+y ^b 5	(37/2+)
89.0 $\S$ 4	5/2-	1286.3+y ^b 3	(25/2+)	3027.3 $\#$ 12	31/2-
104.90+x@ 16	(9/2-)	1363.2 $\#$ 8	19/2-	3101.0 $\S$ 9	33/2-
251.30+x& 16	(11/2-)	1404.9 $\S$ 6	21/2-	3211.5+x& 9	(35/2-)
280.5 $\#$ 4	7/2-	1464.0+x& 4	(23/2-)	3514.2+x@ 9	(37/2-)
287.8 $\S$ 5	9/2-	1648.2+y ^c 3	(27/2+)	3563.8+y ^c 9	(39/2+)
353.78+y ^a 18	(15/2+)	1718.7+x@ 4	(25/2-)	3649.2 $\#$ 13	(35/2-)
406.40+x@ 23	(13/2-)	1807.2+y ^b 4	(29/2+)	3710.0+y ^b 5	(41/2+)
429.02+y ^b 18	(17/2+)	1866.6 $\#$ 9	23/2-	3727.3 $\S$ 11	(37/2-)
561.0 $\#$ 5	11/2-	1921.2 $\S$ 6	25/2-	3880.3+x& 9	(39/2-)
578.6 $\S$ 5	13/2-	1995.4+x& 5	(27/2-)	4285.8? $\#$ 14	(39/2-)
585.10+x& 24	(15/2-)	2229.6+y ^c 5	(31/2+)	4292.8+y ^c 10	(43/2+)
700.05+y ^c 20	(19/2+)	2274.0+x@ 5	(29/2-)	4367.2? $\S$ 12	(41/2-)
778.4+x@ 3	(17/2-)	2389.9+y ^b 4	(33/2+)	4433.1+y ^b 7	(45/2+)
832.32+y ^b 23	(21/2+)	2425.5 $\#$ 11	27/2-		
924.7 $\#$ 6	15/2-	2491.4 $\S$ 8	29/2-		

[†] From least-squares fit to E γ . From Adopted Levels, Gammas, the energy offset y=266 20.

[‡] From 1995Sh04, based on measured γ multipolarity data and deduced band structure.

 $\S$ (A): 1/2[521], $\alpha=+1/2$ band. This band differs from that in Adopted Levels primarily because 1995Sh04 assign an 88.9 γ (rather than the 86.5 γ) as the 5/2 to 1/2 transition.

 $\#$ (B): 1/2[521], $\alpha=-1/2$ band. This signature partner differs significantly from that in Adopted Levels. Here, the J=3/2 to 1/2 transition has E γ =86.5 instead of the adopted value of 67.1 and the other three transitions connecting to the the 1/2[521] $\alpha=+1/2$ band also differ from the adopted ones; so does the J=31/2 to 27/2 in-band transition (E γ =601.8 here but 613.6 in Adopted Gammas).

@ (C): 7/2[514], $\alpha=+1/2$ band.

& (D): 7/2[514], $\alpha=-1/2$ band.

^a (E): $i_{13/2}$ band.

^b (F): 9/2[624], $\alpha=+1/2$ band.

^c (G): 9/2[624], $\alpha=-1/2$ band.

 $\gamma(^{183}\text{Hg})$

E $\gamma^{\ddagger}$	E(level)	I $\gamma^{\ddagger}$	Mult. [†]	Comments
86.5 5	86.4	1.3 2		
88.9 5	89.0	3.8 6	Q	DCO=1.1 3.
104.9 2	104.90+x	29 3		E γ : 105.7 in 1993Bi17. DCO=0.8 3.
146.4 2	251.30+x	5 1		DCO=0.8 4.
155.1 5	406.40+x	1.5 2		DCO=0.7 2.
178.7 5	585.10+x	1.0 1		DCO=0.7 3.
191.4 5	280.5	4 2		DCO=0.8 3, but γ is not well separated from 194.1 γ .
193.3 5	778.4+x	1.2 2		DCO=0.7 3.
194.1 2	280.5	10 2		DCO=0.8 2, but γ is not well separated from 191.4 γ .
198.9 2	287.8	13 2	Q	DCO=1.0 1.
251.3 2	251.30+x	20 2		DCO=0.9 3.
271.0 2	700.05+y	13 1	D	E γ : 271.8 in 1993Bi17. DCO=0.4 1.
273.2 5	561.0			I γ : weak. Absent in (³² S,4n γ) E=159 MeV; omitted from Adopted Gammas.
280.4 2	561.0	6.9 4	Q	DCO=1.0 2.
290.8 2	578.6	11.4 5		DCO=0.8 2.
301.5 2	406.40+x	19 3	Q	DCO=0.9 1.
303.0 2	1135.36+y	7.8 8	D	E γ : 303.9 in 1993Bi17. DCO=0.6 2.
333.8 2	585.10+x	17 1	Q	DCO=1.0 2.
346.1 5	924.7			I γ : weak. Absent in (³² S,4n γ) E=159 MeV; omitted from Adopted Gammas.
346.3 2	700.05+y	13 1		DCO=1.0 3.
353.8 2	353.78+y	20 2	D	DCO=0.5 2.

Continued on next page (footnotes at end of table)

$^{155}\text{Gd}(^{32}\text{S},4n\gamma)$ E=160 MeV 1995Sh04,1993Bi17 (continued) $\gamma(^{183}\text{Hg})$ (continued)

$E\gamma^{\ddagger}$	E(level)	$I\gamma^{\ddagger}$	Mult. [†]	Comments
361.9 5	1648.2+y	3.6 6	D	E γ : 362.6 in 1993Bi17. DCO=0.4 2.
363.7 5	924.7	4.5 4	Q	DCO=1.1 3.
372.0 2	778.4+x	13.0 5		DCO=0.9 2.
375.4 2	954.0	10.8 5	Q	DCO=1.1 2.
403.3 2	832.32+y	66 3	Q	DCO=1.0 2.
406.7 2	991.8+x	10.7 7		DCO=0.9 2.
422.6 5	2229.6+y	3 2	D	DCO=0.6 2.
429.0 2	429.02+y	100	Q	DCO=1.1 2.
435.3 2	1135.36+y	10 3		DCO=1.0 4.
438.5 5	1363.2	3.9 4		DCO=1.1 4.
439.5 2	1217.9+x	9.1 5		DCO=0.8 2.
450.9 2	1404.9	6.7 5		DCO=1.0 3.
454.0 2	1286.3+y	47 2		DCO=0.9 2.
472.2 2	1464.0+x	8.7 7		DCO=1.1 4.
500.8 2	1718.7+x	7.0 5		DCO=1.1 3.
503.4 5	1866.6	2.6 3		DCO=1.2 4.
512.8 2	1648.2+y	5.5 5		DCO=0.8 4.
516.3 2	1921.2	5.4 5		DCO=1.1 3.
521.0 2	1807.2+y	29 2		DCO=1.2 3.
531.4 2	1995.4+x	7.8 7		E γ : 532.2 in 1993Bi17. DCO=1.0 3.
555.3 2	2274.0+x	5.6 5		DCO=0.8 3.
558.9 5	2425.5	2.1 3		DCO=1.1 5.
570.2 5	2491.4	3.9 4		DCO=1.0 4.
581.1 5	2229.6+y	2.8 4		DCO=0.9 5.
582.7 2	2389.9+y	25 2		DCO=1.0 4.
584.6 5	2580.0+x	3.5 6		DCO=1.0 5.
601.8 5	3027.3	1.1 2		DCO=1.3 9.
602.2 5	2876.2+x	2.3 4		DCO=1.0 5.
609.6 5	3101.0	2.6 4		DCO=0.8 4.
621.9 5	3649.2	0.7 2		
626.3 5	3727.3	2 1		
631.5 5	3211.5+x	1.7 8		E γ : 630.6 in 1993Bi17. DCO=1.2 9.
636.6§ 5	4285.8?			I γ : weak.
637.0 2	3026.9+y	13 2		DCO=1.1 5.
638.0 5	3514.2+x	1.0 3		E γ : 640.0 in 1993Bi17.
639.9§ 5	4367.2?	1 1		
641.3 5	2870.9+y	1.1 3		DCO=1.0 7.
668.8 5	3880.3+x	0.3 3		
683.1 2	3710.0+y	8 3		
692.9 5	3563.8+y	0.6 3		
723.1 5	4433.1+y	4 1		
729.0 5	4292.8+y	0.6 3		

[†] Assigned by evaluator based on measured DCO ratios. 1995Sh04 expect DCO ratios of =1.0 and 0.6 for stretched Q (or D $\Delta J=0$) transitions and pure stretched D transitions, respectively. They assign Q transitions as E2, D transitions as M1; see 1995Sh04 for authors' suggested assignments based on DCO ratio, if available, and on deduced level scheme.

[‡] From 1995Sh04. $\Delta E_{\gamma}=0.5$ keV for weak lines, 0.2 keV for all others (1995Sh04); for the purpose of assigning energy uncertainties, the evaluator designates as "weak" all lines with $I\gamma<5$. 1993Bi17 do not state $I\gamma$ data or energy uncertainties.

§ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

$Q(\beta^-) = -9016.30$; $S(n) = 11350.60$; $S(p) = 300.14$; $Q(\alpha) = 5976.9$ 2012Wa38.

$Q(\epsilon p) = 4425.22$ (2012Wa38).

Production: ^{187}Bi α decay (1999Ba45); $^{108}\text{Pd}(^{78}\text{Kr}, p2n\gamma)$, $E = 340$ MeV (2000Re04); $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$, $E = 209$ MeV (2001Mu26) and $E = 195, 200$ MeV (2004Ra28).

For calculation of $T_{1/2}$ using generalized liquid drop model, see 2013Ni01.

 ^{183}Tl Levels

$\Delta\langle r^2 \rangle, \mu$: from in-source LASER spectroscopic measurements by 2013Ba41. ^{183}Tl from 1 GeV proton bombardment of 91 gm/cm² uranium monocarbide target; two-step resonant ionization using a narrow-band scanning dye LASER tuned to a 276.9 nm transition followed by copper vapor LASER to ionize the Tl atom into the continuum; 554 nm fundamental LASER wavelength produced with Rhodamine 110 dye solution; frequency doubled using nonlinear β -barium borate crystal.

Cross Reference (XREF) Flags

A ^{187}Bi α Decay (38 ms)
 B ^{187}Bi α Decay (0.370 ms)
 C $^{108}\text{Pd}(^{78}\text{Kr}, p2n\gamma)$
 D $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$: $E = 195, 200$ MeV
 E $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$: $E = 209$ MeV

E(level) [†]	$J\pi^{\ddagger}$	XREF	$T_{1/2}$	Comments
0.0	(1/2+)	AB	6.9 s 7	<p>$\% \epsilon + \% \beta^+ > 0$; $\% \alpha = ?$ $\mu = 1.62$ 4 (2013Ba41). μ: HFA correction included. $\Delta\langle r^2 \rangle = -1.056$ 74 (2013Ba41). Systematic uncertainty (due to scaling uncertainties of electronic factor and specific mass shift) is shown here; the statistical uncertainty (arising from isotope shift uncertainties) is 28 (2013Ba41). For isotope shift for 276.9 nm transition and magnetic hfs constants, see 2013Ba41. $\% \epsilon + \% \beta^+$: ϵ decay observed (1992BoZO, 1992BlZW, 1999Ba45). $J\pi$: from systematics of heavier odd-A Tl isotopes. $T_{1/2}$: from K x ray(Hg)(t) (1992BoZO, 1992BlZW). Other: 6.9 s 14 from accumulation of α line from ^{183}Hg α decay following ^{183}Tl ϵ decay (1992BoZO). E(level): from Ey in ^{187}Bi α decay (38 ms). $J\pi$: E is consistent with energy systematics for $(\pi d_{3/2})^{-1}$ levels in ^{185}Tl through ^{201}Tl ($E = 285$ to 385) (2001Mu26); population in ^{187}Bi α decay (38 ms) is consistent with observations for $h_{9/2}$ to $d_{3/2}$ transitions from heavier odd-A Bi isotopes (1999Ba45).</p>
273? 1	(3/2+)	A		
628.7	(9/2-)	A DE	53.3 ms 3	<p>$\% \alpha = 1.5$ 3; $\% \epsilon + \% \beta^+ = ?$; $\% \text{IT} = ?$ $\% \alpha$: from 2006An11. Other: ≈ 1.5, tentative value based on one correlated $7000\alpha(^{187}\text{Bi}) - 6380\alpha(^{183}\text{Tl})$ event (1999Ba45). Decays by 6333α, 6384α and 6456α (2006An11). $\% \text{IT}$: from systematics, this level would be expected to deexcite via an E3 transition to the $d_{3/2}$ state, but such a transition has yet to be identified. E(level): from private communication from A.N. Andreyev to 2011Ve01, uncertainty unstated by 2011Ve01 in ^{187}Bi α decay (38 ms). $E = 625.7$ from energy difference between α group feeding this state and that feeding the g.s.. $T_{1/2}$: from $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$: $E = 195$ MeV (2004Ra28; α-recoil(t)). Other: 60 ms 15 from ^{183}Tl α decay (1980Sc09). $J\pi$: allowed α decay from (9/2-) ^{187}Bi; supported by systematics of heavier odd-A Tl isotopes (see 2001Mu26). Probable configuration = $(\pi h_{9/2})$; oblate state.</p>
905.69 23	(11/2-)	DE		<p>$J\pi$: Possible $(\pi h_{11/2})^{-1}$ bandhead (2001Mu26), based on energy systematics for heavier odd-A Tl isotopes.</p>
927.70 [#] 25	(9/2-)	D		
975.01 [§] 23	(13/2+)	CDE	1.48 μ s 10	<p>$\% \text{IT} = 100$. $T_{1/2}$: from spectrum of time difference between detection of recoil and 347γ in $(^{42}\text{Ca}, p2n\gamma)$: $E = 209$ MeV. Other: 1.3 μs 4 from $(^{42}\text{Ca}, p2n\gamma)$: $E = 209$ MeV.</p>
1027.70 [#] 25	(13/2-)	D		
1095.7 ^{&} 5	(11/2-)	DE		
1134.8 [§] 4	(17/2+)	CDE		

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Adopted Levels, Gammas (continued)

¹⁸³Tl Levels (continued)

E(level) [†]	Jπ [‡]	XREF	Comments
1160.0@ 4	(13/2-)	D	
1332.7# 4	(17/2-)	D	
1394.8§ 5	(21/2+)	CDE	
1442.4& 6	(15/2-)	D	
1467.5@ 5	(15/2-)	D	
1597.0 6		D	
1669.3 7		D	
1713.7# 5	(21/2-)	D	
1749.6§ 6	(25/2+)	C E	
1855.3& 8	(19/2-)	D	
2168.8# 7	(25/2-)	D	
2188.5§ 8	(29/2+)	CDE	
2268.0 8		D	
2337.1& 10	(23/2-)	D	
2344.6 8		D	
2688.7# 9	(29/2-)	D	
2703.0§ 9	(33/2+)	CDE	
2882.8& 11	(27/2-)	D	
3284.3§ 11	(37/2+)	CD	
3315.8# 10	(33/2-)	CD	
3925.1§ 12	(41/2+)	CD	
0+x ^a		D	Possible γ to 902 level.
257.2+x ^a 3		D	
406.5+x ^a 5		D	Possible γ to 1156 level.
579.1+x ^a 6		D	
807.5+x ^a 6		D	
1035.9+x ^a 7		D	

[†] Based on measured E_γ, except as noted. For E(level)>630, energies are expressed relative to E=628.7 for the (9/2-) level; note that the uncertainty in that level energy is unknown.

[‡] Values given without comment are from (⁷⁸Kr,p2nγ) and/or (⁴²Ca,p2nγ) and are based on deduced band structure in comparison with that known for heavier Tl isotopes.

§ (A): (π i_{13/2}) α=+1/2 yrast band (2000Re04). 2001Mu26 suggest that this is the prolate i_{13/2} band, but energy systematics for heavier Tl isotopes predict almost the same energy for the expected oblate and prolate i_{13/2} states.

(B): πh_{9/2} α=+1/2 prolate band (?). Band assignment based on systematics, for example, in ^{185,187}Tl. Band parameters: E₀=867, A=7.4 (J=13/2,15/2,17/2) for poor fit.

@ (C): πh_{9/2} oblate band. Band parameters: E₀=576, A=20.5 (J=13/2,15/2).

& (D): πf_{7/2} α=-1/2 prolate band (?). Band assignment based on systematics, e.g., ^{185,187}Tl. Band parameters: E₀=798, A=12.9, B₀=-9.3 (J=11/2,15/2,19/2,23/2).

^a (E): Tentative γ sequence.

γ(¹⁸³Tl)

E(level)	E _γ [†]	I _γ [†]	Mult. [‡]	α	Comments
273?	273 1	100	(M1)	0.508 9	E _γ : from α decay (38 ms).
905.69	276.7 3	100	[M1]	0.489	Mult.: from α(K)exp=0.55 15 in ¹⁸⁷ Bi α decay (38 ms). Other E _γ : 277.4 5 from ¹⁴⁴ Sm(⁴² Ca,p2nγ):E=209 MeV. Mult.: intensity balance at the 906 level is achieved if the 69γ and 277γ are assumed to have E1 and M1 multipolarity, respectively, in (⁴² Ca,p2nγ).
927.70	299.0 3	100	[E2+M1]	0.25 15	
975.01	69.2 2	26§ 10	[E1]	0.239	B(E1)(W.u.)=4.9×10 ⁻⁸ 20. Mult.: see comment on 277γ.
	346.6 3	100§ 11	[M2]	0.923	B(M2)(W.u.)=0.057 10. Mult.: if M2, hindrance would be comparable to that for 13/2+ to 9/2- transitions in ¹⁹⁵ Bi and ¹⁹⁷ At (2001Mu26).
1027.70	100.0 3	10 5	[E2]	5.92 12	
	399.0 3	100 50			
1095.7	467.0 5	100			
1134.8	159.8 3	100	(E2)	0.914 15	
1160.0	254.3 3	100	[M1]	0.617	

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Adopted Levels, Gammas (continued) $\gamma(^{183}\text{Tl})$ (continued)

E(level)	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\dagger}$	Mult. ‡	α	Comments
1332.7	305.0 3	100			
1394.8	260.0 3	100			Other E_{γ} : 259.7 from ($^{78}\text{Kr}, p2n\gamma$).
1442.4	346.7 3	100			
1467.5	307.5 3	100			
1597.0	622.0 [#] 5	<100			
1669.3	534.5 5	100			E_{γ} : from table III of 2004Ra28; 534.6 in authors' figure 6.
1713.7	381.0 3	100			
1749.6	354.8 3	100			
1855.3	412.9 5	100			
2168.8	455.1 5	100			
2188.5	438.9 5	100	(E2)	0.0388	Other E_{γ} : 439.4 5 from ($^{42}\text{Ca}, p2n\gamma$):E=209 MeV.
2268.0	518.4 5	100			
2337.1	481.8 5	100			
2344.6	595.0 5	100			
2688.7	519.9 5	100			
2703.0	514.5 5				
2882.8	545.7 5				
3284.3	581.3 5	100			Other E_{γ} : 582.4 from ($^{78}\text{Kr}, p2n\gamma$).
3315.8	627.1 5				
3925.1	640.8 5	100			
257.2+x	257.2 3	100			
406.5+x	149.3 3	100			
579.1+x	172.6 3	100			
807.5+x	228.4 3	100			
1035.9+x	228.4 3	100			

[†] From $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$:E=195,200 MeV, except as noted.[‡] From $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$:E=209 MeV, assigning $\Delta\pi$ =(no) for intraband transitions, except as noted.[§] From $^{144}\text{Sm}(^{42}\text{Ca}, p2n\gamma)$:E=209 MeV.[#] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas (continued)

¹⁸⁷Bi α Decay (38 ms) 2006An11,1999Ba45,1984ScZQ

Parent ¹⁸⁷Bi: E=0.0; Jπ=(9/2-); T_{1/2}=38 ms 3; Q(g.s.)=7779 4; %α decay=100.

¹⁸⁷Bi-T_{1/2}: unweighted average of 40 ms 2 (2006An11; 7000α(t)), 32 ms 3 (1999Ba45; 7000α(t)), 45 ms 11 (2002Hu14; 7000α(t)) and 35 ms 4 (1984ScZQ; 6986α(t)). Others: 35 ms +14-8 (6994α(t) and 7605α(t); 2003Ke08), 25 ms +9-5 (7612α(t); 1999Ba45), 21 ms +29-8 (7367α(t); 1999Ba45). Calculation (Coulomb and proximity potential model): 2012Ja14.

2006An11: ¹⁸⁷Bi source from ¹⁴⁴Sm(⁴⁶Ti,p2n) reaction at E(⁴⁶Ti)=224 MeV 1 (production σ=0.20 μb 8); evaporation residues separated by SHIP velocity filter and implanted into position-sensitive Si detector; using 6 Si BOX detectors, 3 time of flight detectors, a veto detector and a four-fold segmented Clover Ge detector; measured Eα, Iα, (recoil)-γ coin, α-γ coin.

1999Ba45: source from ⁹⁷Mo(⁹²Mo,pn), E=420 MeV, 93% ⁹⁷Mo target; recoils identified using fragment mass analyzer and gas-filled parallel-grid avalanche counter, then implanted in double-sided Si strip detector; measured Eα, Iα, recoil-α(t).

For discussion of competition between p and α decay see 2014Wa16 (generalized liquid drop model).

For this decay, Q_xBR=7779 4.

¹⁸³Tl Levels

E(level)	Jπ [†]	Comments
0.0	(1/2+)	
273? 1	(3/2+)	E(level): from Eγ.
628.7	(9/2-)	E(level): from private communication from A.N. Andreyev to authors of 2011Ve01, uncertainty unstated by 2011Ve01. E=625 7 from energy difference between α group feeding this state and that feeding the g.s..

[†] From Adopted Levels.

α radiations

Eα	E(level)	Iα ^{†‡}	HF [‡]	Comments
7000 [§] 5	628.7	88.0 9	=0.47	Eα: from 2006An11. Other: 7000 8 (1999Ba45), 6986 10 (1984ScZQ). This α is correlated with 6380α from ¹⁸³ Tl decay. Reduced α width δ _α ² =0.075 keV 5 (2006An11).
7342 [@] 15	273?	3.0 7	=194	Eα: from 2006An11. Other: 7367 30 (1999Ba45). Reduced α width δ _α ² =0.17 keV 4 (2006An11).
7612 [§] 5	0.0	9.0 5	=435	Eα: from 2006An11. Other: 7612 15 (1999Ba45). The adopted Eα implies Q(α)=7778 5 for ¹⁸⁷ Bi cf. 7779 4 from 2012Wa38. Reduced α width δ _α ² =69 keV 4.

[†] Intensity per 100 parent α decays from I(7612α):I(7342α):I(7000α)=9.0 5:3.0 7:88.4 (2006An11). Other: 8.0:3.7:88.3 (1999Ba45).

[‡] If r₀=1.493 7, unweighted average of (r₀(¹⁸²Hg)=1.50 2 (1998Ak04) and r₀(¹⁸⁴Pb)=1.486 10 (if Eα=7911 13 and %α=100 for ¹⁸⁸Po).

[§] This α is correlated with 5910α from ¹⁸³Hg α decay (1999Ba45) which occurs following ¹⁸³Tl ε decay to ¹⁸³Hg.

[#] For α intensity per 100 decays, multiply by =1.00.

[@] Existence of this branch is questionable.

γ(¹⁸³Tl)

Eγ [†]	E(level)	Mult.	α	Comments
273 1	273?	(M1)	0.508 9	Mult.: from α(K)exp=0.55 15 (2006An11).

[†] From 2006An11.

Decay Scheme

^{187}Bi α Decay (0.370 ms) 2006An11,1999Ba45

Parent ^{187}Bi : E=112 11; $J\pi=(1/2+)$; $T_{1/2}=0.370$ ms 20; $Q(\text{g.s.})=7779$ 4; % α decay=100.

^{187}Bi -E: from 2006An11, based on their measured $E\alpha$ to ^{183}Tl g.s. from this level and from ^{187}Bi g.s..

^{187}Bi - $T_{1/2}$: from 7721 α (t) (2006An11). Others: 0.29 ms +9-5 (1999Ba45; 7721 α (t)) and 0.31 ms +19-9 (2003Ke08; 7714 α (t)). 0.8 ms 6 for $E\alpha=7583$ 10 (1984ScZQ) may have been wrongly assigned to $^{187\text{m}}\text{Bi}$ because that α was not seen by 2003Ke08 or 1999Ba45.

2006An11: ^{187}Bi source from $^{144}\text{Sm}(^{46}\text{Ti},\text{p}2\text{n})$ reaction at $E(^{46}\text{Ti})=224$ MeV 1 (production $\sigma=0.20$ μb 8); evaporation residues separated by SHIP velocity filter and implanted into position-sensitive Si detector; using 6 Si BOX detectors, 3 time of flight detectors, a veto detector and a four-fold segmented Clover Ge detector; measured $E\alpha$, $I\alpha$, (recoil)- γ coin, α - γ coin.

1999Ba45: source from $^{97}\text{Mo}(^{92}\text{Mo},\text{pn})$, E=420 MeV, 93% ^{97}Mo target; recoils identified using fragment mass analyzer and gas-filled parallel-grid avalanche counter, then implanted in double-sided Si strip detector; measured $E\alpha$, $I\alpha$, recoil- α (t).

Other: 1984ScZQ.

For discussion of competition between p and α decay see 2014Wa16 (generalized liquid drop model).

For this decay, $Q_{\text{xBR}}=7891$ 12.

 ^{183}Tl Levels

E(level)	$J\pi$	Comments
0.0	(1/2+)	$J\pi$: from Adopted Levels.

 α radiations

$E\alpha$	E(level)	$I\alpha^{\ddagger}$	HF	Comments
7721 8	0.0	=100	=0.81 †	$E\alpha$: weighted average of 7721 15 (1999Ba45) and 7721 10 (2006An11). Other: 1984ScZQ report $E\alpha=7583$ 10 with $T_{1/2}=0.8$ ms 6; its absence in the 1999Ba45 and 2006An11 studies casts doubt on its assignment to this decay. The adopted $E\alpha$ implies $Q(\alpha)=7790$ 8 cf. 7789 14 from 2003Au03 and 7779 4 from 2012Wa38. Reduced α width $\delta_{\alpha}^2=43$ keV 3 (2006An11).

† If $r_0=1.493$ 7 (unweighted average of ($r_0(^{182}\text{Hg})=1.50$ 2 (1998Ak04) and $r_0(^{184}\text{Pb})=1.486$ 10 (if $E\alpha=7911$ 13 and % $\alpha=100$ for ^{188}Po)) and $Q(\alpha)=7778$ 5 (based on $E\alpha=7612$ 5 for g.s. to g.s. transition (2006An11)).

‡ For α intensity per 100 decays, multiply by =1.00.

 $^{108}\text{Pd}(^{78}\text{Kr},\text{p}2\text{n}\gamma)$ 2000Re04

2000Re04: E=340 MeV; >98% enriched ^{108}Pd target (0.83 mg/cm²); fragment mass analyzer, parallel-grid avalanche counter, double-sided Si strip detector, GAMMASPHERE detector array (97 Compton-suppressed Ge and 4 planar Ge detectors); measured recoil α decay tagged γ spectra, $E\gamma$, $I\gamma$, $\gamma\gamma$ coin ($\Delta t \leq 30$ ns), recoil- γ coin.

 ^{183}Tl Levels

E(level) †	$J\pi^{\ddagger}$	Comments
0.0+x § #	(13/2+)	
159.9+x $^{\#}$	(17/2+)	
419.6+x $^{\#}$	(21/2+)	
774.5+x $^{\#}$	(25/2+)	
1213.3+x $^{\#}$	(29/2+)	
1727.7+x $^{\#}$	(33/2+)	
2310.1+x $^{\#}$	(37/2+)	
2937.1+x $^?$ #	(41/2+)	E(level): differs from value in Adopted Levels because $E\gamma$ for deexciting γ differs there.

† Based on measured $E\gamma$. From Adopted Levels, x=628.7.

‡ Authors' values; assigned by analogy with yrast sequences in heavier odd-A Tl isotopes.

§ Presumably deexcites to the (9/2-) level adopted at E=625 7, but connecting transition not seen by 2000Re04. That transition was seen, however, in a separate (HI,xn γ) study (2001Mu26; see ($^{42}\text{Ca},\text{p}2\text{n}\gamma$): E=209 MeV dataset).

$^{\#}$ (A): (π i_{13/2}) prolate band.

$^{108}\text{Pd}(^{78}\text{Kr}, \text{p}2\text{n}\gamma)$ 2000Re04 (continued) $\gamma(^{183}\text{Tl})$

$E\gamma^\dagger$	E(level)	Comments
159.9	159.9+x	
259.7	419.6+x	
354.9	774.5+x	
^x 418		Assignment to ^{183}Tl is uncertain.
438.8	1213.3+x	
514.4	1727.7+x	
582.4	2310.1+x	
627. [‡]	2937.1+x?	Uncertain transition, not confirmed in subsequent more extensive studies, so omitted from Adopted Gammas.

[†] From 2000Re04; ΔE_γ and intensity data unstated by authors.

[‡] Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

 $^{144}\text{Sm}(^{42}\text{Ca}, \text{p}2\text{n}\gamma)$: E=195,200 MeV 2004Ra28

2004Ra28: E=195, 200 MeV; 95% enriched ^{144}Sm stacked-foil target; JUROSPHERE II array (seven TESSA-type, 5 NORDBALL, 15 EUROGAM Phase I detectors); gas-filled recoil ion separator (RITU) used to separate fusion-evaporation nuclides from unwanted beamlike and fission nuclei; fusion evaporation residues implanted into Si strip detector covering 70% of recoil distribution at the focal plane; measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, α , α -(recoil) coin. Statistics inadequate to unambiguously assign mult from angular correlation data.

 ^{183}Tl Levels

E(level) [†]	$J\pi^\ddagger$	$T_{1/2}$	Comments
628.7@	9/2-	53.3 ms 3	%IT=? E(level): level energy fixed at adopted value for least-squares fit. $T_{1/2}$: From exponential fit to time difference between pairs of recoils and α decays, assuming exponential background (2004Ra28). Three α groups observed by 2004Ra28 from the decay of 9/2- isomer with $E\alpha$ (relative $I\alpha$): 6330 10 (78 9); 6384 16 (16 4); 6456 15 (4 2).
905.4@ 3	(11/2-)		
927.70# 25	(9/2-)		
975.3\$ 3	(13/2+)		
1027.70# 25	(13/2-)		
1095.7& 5	(11/2-)		
1135.1\$ 5	(17/2+)		
1159.7@ 5	(13/2-)		
1332.7# 4	(17/2-)		
1395.1\$ 6	(21/2+)		
1442.4& 6	(15/2-)		
1467.2@ 6	(15/2-)		
1597.3 6			
1669.6 7			
1713.7# 5	(21/2-)		
1749.9\$ 6	(25/2+)		
1855.3& 8	(19/2-)		
2168.8# 7	(25/2-)		
2188.8\$ 8	(29/2+)		
2268.3 8			
2337.1& 10	(23/2-)		
2344.9 8			
2688.7# 9	(29/2-)		
2703.3\$ 9	(33/2+)		
2882.8& 11	(27/2-)		
3284.6\$ 11	(37/2+)		
3315.8# 10	(33/2-)		
3925.4\$ 12	(41/2+)		
0+x ^a			E(level): level energy held fixed in least-squares fit. Possible γ to 902 level.

Continued on next page (footnotes at end of table)

$^{144}\text{Sm}(^{42}\text{Ca},\text{p}2\text{n}\gamma)$: E=195,200 MeV 2004Ra28 (continued) **^{183}Tl Levels (continued)**

E(level) [†]	Comments
257.2+x ^a 3	
406.5+x ^a 5	Possible γ to 1156 level.
579.1+x ^a 6	
807.5+x ^a 6	
1035.9+x ^a 7	

[†] From least-squares fit to $E\gamma$ assuming adopted E(level)=628.7 for the 9/2- isomer.

[‡] Authors' suggested values.

§ (A): π $i_{13/2}$ yrast band.

(B): π $h_{9/2}$ prolate band (?). Band assignment based on systematics, e.g., in $^{185,187}\text{Tl}$.

@ (C): π $h_{9/2}$ oblate band.

& (D): π $f_{7/2}$ prolate band (?). Band assignment based on systematics, for example in $^{185,187}\text{Tl}$.

^a (E): Tentative γ sequence. The ordering of the transitions within this cascade is uncertain, so level energies may differ from those shown here.

 $\gamma(^{183}\text{Tl})$

$E\gamma^{\dagger}$	E(level)	$I\gamma$	Mult.	α	Comments
69.2 [‡] 2	975.3		[E1]	0.239	
100.0 3	1027.70	0.4 2	[E2]	5.92 12	
149.3 3	406.5+x	<1			
159.8 3	1135.1	8.4 8	[E2]	0.914 15	
172.6 3	579.1+x	<1			
228.4 3	807.5+x	<0.2			
	1035.9+x	<0.2			
254.3 3	1159.7	5.7 18	[M1]	0.617	
257.2 3	257.2+x	<1			
260.0 3	1395.1	100	[E2]	0.1718	
276.7 3	905.4	8.4 8	[M1]	0.489	$E\gamma$: also reported as 277.0 (table III of 2004Ra28) in delayed spectrum.
299.0 3	927.70	8.4 8	[E2+M1]	0.25 15	
305.0 3	1332.7	9.8 23			
307.5 3	1467.2	1.9 12			
346.6 3	975.3		[M2]	0.923	
346.7 3	1442.4	6.9 20			
354.8 3	1749.9	78 4			
381.0 3	1713.7	8.0 14			
399.0 3	1027.70	4.0 20			
412.9 5	1855.3	3.7 13			
438.9 5	2188.8	21.4 20			
455.1 5	2168.8	5.3 12			
467.0 5	1095.7	8.4 8			
481.8 5	2337.1	2.2 10			
514.5 5	2703.3	7.0 12			
518.4 5	2268.3	<0.2			
519.9 5	2688.7	<0.2			
534.5 5	1669.6	5 3			$E\gamma$: from table III of 2004Ra28; 534.6 in authors' figure 6.
545.7 5	2882.8	1.6 9			
581.3 5	3284.6	<1			
595.0 5	2344.9	<0.2			$E\gamma$: from table III of 2004Ra28; 595.4 in authors' figure 6.
622.0 [‡] 5	1597.3	<1			
627.1 5	3315.8	<0.2			
640.8 5	3925.4	<1			

[†] Based on authors' estimate of 0.3 keV for low $E\gamma$, rising to 0.5 keV at high energy, the evaluator assigns 0.3 keV if $E\gamma < 400$ keV and 0.5 keV otherwise.

[‡] Placement of transition in the level scheme is uncertain.

$^{144}\text{Sm}(^{42}\text{Ca},\text{p}2\text{n}\gamma)$: E=209 MeV 2001Mu26

E=209 MeV; 92.4% ^{144}Sm metallic target; JUROSPHERE II array (7 TESSA-type, 5 NORDBALL, and 15 EUROGAM I Compton-suppressed Ge detectors) for prompt γ 's; 3 NORDBALL and 2 TESSA suppressed Ge detectors around Si strip detector at focal plane of RITU gas-filled recoil separator to detect delayed γ rays; measured $E\gamma$, $I\gamma$, prompt and delayed $\gamma\gamma$ coin, recoil-(α -tagged γ) coin, recoil- $\gamma\gamma$ coin; $I\gamma(134^\circ \text{ and } 158^\circ)/I\gamma(79^\circ \text{ and } 101^\circ)$.

 ^{183}Tl Levels

E(level) [†]	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
628.7	(9/2-)		E(level), $J\pi$: from Adopted Levels.
906.1 4	(11/2-)		$J\pi$: from Adopted Levels.
975.5 § 3	(13/2+)	1.48 μs 10	Possible ($\pi h_{11/2}$) ⁻¹ bandhead. $T_{1/2}$: from spectrum of time difference between detection of recoil and 347 γ . Other: 1.3 μs 4 from recoil-69 γ time spectrum.
1096.2? 5	(11/2-)		$J\pi$: from Adopted Levels.
1135.6 § 4	(17/2+)		
1395.7 § 5	(21/2+)		
1750.7 § 6	(25/2+)		
2190.1 § 8	(29/2+)		
2704.7 § 10	(33/2+)		

[†] From $E\gamma$; values are given relative to adopted E(level)=628.7, uncertainty unknown.

[‡] Authors' values based on deduced band structure, except as noted.

§ (A): ($\pi i_{13/2}$) prolate band. Assignment based on similarity to $i_{13/2}$ bands in heavier odd-A Tl nuclides.

 $\gamma(^{183}\text{Tl})$

$E\gamma$	E(level)	$I\gamma$	Mult.	α	Comments
69.3 [†] 5	975.5	23 [†] 9	[E1]	0.238 6	Mult.: see comment on 277 γ .
160.1 3	1135.6	83 9	(E2) [‡]	0.908 15	
^x 254.1 5		27 7			
260.1 3	1395.7	100 10			
277.4 [†] 5	906.1	10 [†] 4	[M1]	0.486	Mult.: intensity balance at the 906 level is achieved if the 69 γ and 277 γ are assumed to have E1 and M1 multipolarity, respectively.
346.8 [†] 3	975.5	89 [†] 10	[M2]	0.921	Mult.: hindrance comparable to that for known 13/2+ to 9/2- transitions in ^{195}Bi and ^{197}At (2001Mu26).
355.0 3	1750.7	91 10			
439.4 5	2190.1	51 9	(E2) [‡]	0.0387	
467.5 § 5	1096.2?	49 9			
514.6 5	2704.7	47 9			

[†] Delayed γ rays observed in RITU focal plane.

[‡] $I\gamma(134^\circ \text{ and } 158^\circ)/I\gamma(79^\circ \text{ and } 101^\circ)$ consistent with that measured for known stretched Q transitions in ^{182}Hg .

§ Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

Adopted Levels, Gammas

S(n)=8820 30; S(p)=1550 70; Q(α)=6928 7 2012Wa38.

Q(α): 6928 6 from Eα=6777 6 (weighted average of 6798 25 (1980Sc09), 6781 15 (1989To01), 6775 7 (2002Je09)) for g.s. to g.s. transition cf. Q(α)=6928 7 in 2012Wa38.

Q(εp)=8717 30 (2012Wa38).

Production: ¹⁴⁴Sm(⁴²Ca,3n), E=200 MeV (2002Je09); ¹⁴⁷Sm(⁴⁰Ca,4n), E=212 MeV (1989To01).

¹⁸³Pb Levels

Cross Reference (XREF) Flags

A ¹⁸⁷Po α Decay

B U(p,X)

E(level)	Jπ	XREF	T _{1/2}	Comments
0.0	(3/2-)	AB	535 ms 30	%α=90. μ=-1.158 5 (2009Se13); Q=+0.6 18 (2009Se13). Δ<r ² >(¹⁸³ Pb- ²⁰⁸ Pb)=-1.215 fm ² 13 (2007De09, 2009Se13); uncertainty from isotope shift alone is 0.008 fm ² (2007De09). %α=90 if %(ε+β ⁺)=10 (as estimated from gross β-decay theory (1973Ta30)); only α decay has been observed. T _{1/2} : from 2002Je09. Jπ: by analogy with ¹⁸⁵ Pb and ¹⁸⁷ Pb. %α=100; %IT=? μ=-1.245 6 (2009Se13); Q=+1.7 35 (2009Se13). Δ<r ² >(^{183m} Pb- ²⁰⁸ Pb)=-1.246 fm ² 13 (2007De09,2009Se13); uncertainty from isotope shift alone is 0.008 fm ² (2007De09). T _{1/2} : from 2002Je09. Others: 1987To09 (300 ms 80, 6718α); 1984ScZQ. E(level): from Eα=6704 6 from this level to 171 level in ¹⁷⁹ Hg (weighted average of 6718 10 (1987To09), 6712 10 (1989To01) and 6698 5 (2002Je09)) and Eα=6777 6 from ¹⁸³ Pb g.s. to ¹⁷⁹ Hg g.s. (weighted average of 6798 25 (1980Sc09), 6781 15 (1989To01), 6775 7 (2002Je09)). Jπ: unhindered α decay to (13/2+) 171 level in ¹⁷⁹ Hg. Note that ¹⁸⁵ Pb and ¹⁸⁷ Pb also have 13/2+ isomeric states.
97 9	(13/2+)	B	415 ms 20	Jπ: structure of this state is predicted from calculations to be similar to that of ¹⁸⁷ Po g.s., i.e., prolate, 5/2-[512] state of mixed origin or 1/2[521] from 2f _{5/2} orbital. E(level): from Eγ.
286 1	(1/2-, 5/2-)	A		

γ(¹⁸³Pb)

E(level)	Eγ	Iγ	Mult.	α	Comments
286	286 1	100	(M1)	0.486 9	Eγ: from α decay. Mult.: from α(K)exp in ¹⁸⁷ Po α decay.

¹⁸⁷Po α Decay 2006An11

Parent ¹⁸⁷Po: E=0.0; Jπ=(1/2-, 5/2-); T_{1/2}=1.40 ms 25; Q(g.s.)=7979 15; %α decay=100.

2006An11: ¹⁸⁷Po source from ¹⁴⁴Sm(⁴⁶Ti,3n) at E(⁴⁶Ti)=224 MeV 1; evaporation residues separated by the SHIP velocity filter at GSI and implanted into a position-sensitive silicon (PSSD) detector; six silicon BOX detectors, three time of flight detectors, a veto detector and a four-fold segmented Clover Ge detector; measured Eγ, Eα, Iα, (recoil)-γ coin, α-γ coin. Production cross section for ¹⁸⁷Po: 0.8 nb 3.

For this decay, QxBR=7979 15 cf. Summed decay energies =7985 484.

¹⁸³Pb Levels

E(level)	Jπ [†]	T _{1/2}	Comments
0.0	(3/2-)	535 ms 30	Jπ, T _{1/2} : from Adopted Levels. Level decays by 6570α (28% 4) and 6775α (72% 5).

Continued on next page (footnotes at end of table)

¹⁸⁷Po α Decay 2006An11 (continued)

¹⁸³Pb Levels (continued)

E(level)	Jπ [†]	Comments
286 1	(1/2-, 5/2-)	E(level): from E _γ . E=286 15 based on energy difference for α groups feeding the g.s. and this level. Jπ: structure of this state is predicted from calculations to be similar to that of ¹⁸⁷ Po g.s., i.e., prolate and 5/2-[512] state of mixed origin or 1/2[521] from 2f _{5/2} orbital.

[†] From Adopted Levels.

α radiations

Eα	E(level)	Iα [‡]	HF [†]	Comments
7528 15	286	100	0.26 5	Reduced α width δ _α ² =107 keV 25. Correlated with the known α decays of the ¹⁸³ Pb daughter and ¹⁷⁹ Hg grand-daughter.
7808	0.0	<2	>91	Reduced α width δ _α ² <0.3 keV.

[†] If r₀=1.483 4, unweighted average of r₀(¹⁸²Pb)=1.479 26 (if Eα=8360 15 and %α=100 for ¹⁸⁶Po) and r₀(¹⁸⁴Pb)=1.486 10 (if Eα=7911 13 and %α=100 for ¹⁸⁸Po).

[‡] Absolute intensity per 100 decays.

γ(¹⁸³Pb)

Eγ	E(level)	Iγ [†]	Mult.	α	I(γ+ce) [†]	Comments
286 1	286	67.3 4	(M1)	0.486 9	100	Iγ: from I(γ+ce) and α. Mult.: from α(K)exp=0.7 4.

[†] Absolute intensity per 100 decays.

Decay Scheme

U(p,X) 2009Se13,2007De09,2006Se18

2007De09: E(p)=1.4 GeV spallation of thick UC_x target; reaction products diffused into 2050° C ion source cavity and selectively ionized in 3-step LASER ionization process; Si α detector; measured optical isotope shifts; deduced Δ<r²>. See also 2006Se18.

2009Se13: extension of report by 2007De09; deduced μ and Q.

¹⁸³Pb Levels

E(level) [†]	Jπ [†]	T _{1/2} [†]	Comments
0.0	(3/2-)	535 ms 30	μ=-1.158 5 (2009Se13); Q=+0.6 18 (2009Se13). Δ<r ² >(¹⁸³ Pb- ²⁰⁸ Pb)=-1.215 fm ² 13 (2007De09, 2009Se13); uncertainty from isotope shift alone is 0.008 fm ² (2007De09, 2009Se13).

Continued on next page (footnotes at end of table)

U(p,X) 2009Se13,2007De09,2006Se18 (continued)			
¹⁸³ Pb Levels (continued)			
E(level) [†]	Jπ [†]	T _{1/2} [†]	Comments
97 9	(13/2+)	415 ms 20	μ=-1.245 6 (2009Se13); Q=+1.7 35 (2009Se13). %IT=? Δ<r ² >(^{183m} Pb- ²⁰⁸ Pb)=-1.246 fm ² 13 (2007De09,2009Se13); uncertainty from isotope shift alone is 0.008 fm ² (2007De09, 2009Se13).
[†] From Adopted Levels.			

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