$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

Includes $^{188}Os(^{12}C,6n\gamma)$ from 1986Va03, 1983Va06, $^{186}W(^{16}O,8n\gamma)$ from 2001Gu31, $^{9}Be(^{238}U,X\gamma)$ from 2004Gl04, $Re(^{14}N,xn\gamma)$ from 2002Vy01.

$^{184}W(^{16}O,6n\gamma)$ measurements:

2002Ka01 (also 1995Ka19): E=113 MeV ^{16}O beam was produced from the tandem accelerator at the Nuclear Structure Facility, Daresbury Laboratory. Target was stacked 325 $\mu g/cm^2$ enriched ^{184}W on a 10 $\mu g/cm^2$ carbon backing. γ rays were detected with the EUROGAM-1 array consisting of 45 large volume Ge detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma(\theta)$. Deduced levels, J, π, band structures, γ-ray multipolarities. Comparisons with theoretical calculations.

1986Pa18: E=98 MeV from CYCLONE in Louvain-la-Neuve for excitation function and angular distribution measurements; E=100 MeV from Orsay MP Tandem for half-life measurements. Measured γ, $\gamma\gamma$, γ(t), $\gamma\gamma$(t), $\gamma(\theta)$, ce, ce-γ. Also used $^{185}Re(^{14}N,5n\gamma)$ reaction to get $\gamma(\theta)$ data. Other references from the same group: 1988La21, 1986Pa16, 1977Ro15, 1975Ro15, 1973Al26, 1973Pa03, 1972Al49, 1972Al44. 1988La21 report ce γ coin data from $^{186}W(^{16}O,8n\gamma)$ reaction.

1996Lo12 (also 1997Ha44): E=113 MeV. Measured Eγ, Iγ, $\gamma\gamma\gamma$ and higher fold $\gamma\gamma$ coin with EUROGAM array (54 Compton-suppressed Ge detectors). Deduced connecting transitions between SD band and normal bands. See SD data in (HI,xnγ):SD dataset.

1995Ga10: E=113 MeV. Measured Eγ, Iγ, $\gamma\gamma\gamma$, SD bands using EUROGAM array (45 detectors). See SD data in (HI,xnγ):SD dataset.

1995De26: $^{184}W(^{16}O,6n\gamma)$ E=113 MeV; $^{184}W(^{17}O,7n\gamma)$ E=120 MeV; $^{164}Dy(^{34}S,4n\gamma)$ E=157, 160 MeV; $^{162}Dy(^{36}S,4n\gamma)$ E=162 MeV. Measured yield of SD band from different reactions using EUROGAM array. See also 1995De65 for methodology of SD band spectral analysis using reaction: $^{184}W(^{16}O,6n\gamma)$ at 159 MeV, intensity pattern for SD-1 band is given. See SD data in (HI,xnγ):SD dataset.

$^{182}W(^{16}O,4n\gamma)$ measurements:

1998Ka59: E=95 MeV ^{16}O beam was produced from the MP Tandem of Orsay. Targets were 500 and 250 $\mu g/cm^2$ self-supporting ^{182}W. γ rays were detected with a clover detector of four closely-packed Ge detector and conversion electrons were detected with an electron spectrometer consisting of a Kleinheinz magnetic lens coupled to a Si(Li) detector. Measured Eγ, Iγ, E(ce), I(ce), γ(lin pol). Deduced levels, J, π, band structures, conversion coefficients, γ-ray multipolarities. Report ce and γ(lin pol) data for 26 transitions, mostly involved in magnetic-dipole rotational bands.

1985St16,1987Be35: E=85 MeV. Measured $\gamma(\theta$,H,t).

Other measurements:

1986Va03 (also 1983Va06): $^{188}Os(^{12}C,6n\gamma)$ E=100 MeV ^{12}C beam was produced from the AVF cyclotron of the Kernfysisch Versneller Instituut in Groningen. Target was 97% enriched 0.7 mg/cm^2 ^{188}Os on a 0.1 mg/cm^2 carbon foil. γ rays were detected with a 4π NaI(Tl) sum spectrometer Ge(Li) and Ge detectors; conversion electrons were detected with three mini-orange filters and coated Si(Li) detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma(\theta)$, $\gamma\gamma$(DCO), $\gamma\gamma$(t), E(ce), I(ce). Deduced levels, J, π, conversion coefficients, γ-ray multipolarities. Systematics of neighboring Pb isotopes.

2001Gu31: $^{186}W(^{16}O,8n\gamma)$ beam from the Vivitron tandem accelerator at the IReS Strasbourg. γ rays were detected with the EUROGAM-2 consisting of 30 large-volume Ge detectors. Measured half-life of 9^- isomer by recoil shadow anisotropy method (RSAM).

2004Gl04 (also 2003Po14,2003Gl05): $^{9}Be(^{238}U,X\gamma)$ E=750 MeV/nucleon. Measured (γ)(fragment) coin and lifetime of 12^+ isomer. Cascade 174-166-421-281-575-965 from 10^+ seen in delayed γ spectrum.

2002Vy01: $Re(^{14}N,xn\gamma)$ E=87 MeV. Measured $\gamma(\theta$,H) following implantation of recoil fragments in Re crystal. Deduced quadrupole moment of 11^- isomer by level-mixing spectroscopy technique (LEMS).

Level scheme is from 2002Ka01 and is partly different from that in Adopted dataset, which is adopted by evaluators from that in 2009Ku03 in $(^{30}Si,4n\gamma)$ because of higher statistics and completeness.

^{184}W(^{16}O,6nγ),^{182}W(^{16}O,4nγ) 2002Ka01,1998Ka59,1986Pa18 (continued)

^{194}Pb Levels

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	Comments
0.0	0$^+$		
931.0 *10*	0$^+$		
965.11 *10*	2$^+$		
1308.6 *8*	2$^+$		
1540.11 *14*	4$^+$		
1820.31 *17*	5$^-$	1.1 ns *2*	T$_{1/2}$: from $\gamma\gamma$(t) in 1986Pa18.
2134.9 *3*	6$^+$		
2241.32 *20*	7$^-$		
2407.49 *22*	9$^-$	17 ns *3*	μ=−0.63 *36* T$_{1/2}$: weighted average of 17 ns *5* (2001Gu31, recoil-shadow anisotropy), 18 ns *3* (1985St16, $\gamma\gamma$(t)), and 15 ns *5* (1972Al49, $\gamma\gamma$(t)). μ: from g factor=−0.07 *4* (1985St16, TDPAD).
2419.6 *3*	8$^-$		
2437.5[#] *3*	8$^+$		
2502.0 *3*	8$^-$		
2581.21 *23*	10$^+$	17.2 ns *5*	T$_{1/2}$: from $\gamma\gamma$(t) in 1986Pa18. Value is from authors′ text. They quote 17 ns *1* in a table. Possible configuration=((ν i$_{13/2}$)^2) (1986Va03).
2628.3[@] *3*	12$^+$	370 ns *13*	μ=−2.004 *24*; Q=0.49 *3* T$_{1/2}$: weighted average of 389 ns *28* (2004Gl04), 350 ns *10* (1985St16), 392 ns *10* (1977Ro15), 335 ns *30* (1972Al49). μ: from g factor=−0.167 *2* (1985St16). Other: −1.90 *7* from g factor=−0.158 *6* (1977Ro15). g factors are obtained from $\gamma(\theta$,H,t) corrected by authors for Knight shift and diamagnetic shielding. Q: from TDPAD in 1985St16.
2645.4 *5*			
2913.6 *3*	9$^-$		
2930.7[#] *3*	9$^+$		
2933.2[&] *3*	11$^-$	124 ns *10*	Q=4.5 *9* T$_{1/2}$: weighted average of 122 ns *10* (1986Va03), and 135 ns *25* (1986Pa18). Measured g factor is smaller than the calculated value of 1.10 for configuration=$\pi(3s_{1/2}^{-1}h_{9/2}i_{13/2})$. Considerations of Particle-vibration coupling and core excitations (giving 1.12) do not improve the agreement. The Nilsson model approach gives a value of 1.055 in better agreement, supporting proposed oblate deformation. Q: from $\gamma(\theta$,H), level-mixing spectroscopy technique (2002Vy01). Configuration=((π 9/2[505])(π 13/2[606])) (1986Pa18).
3178.5 *6*			
3207.53[e] *25*	10$^-$		
3271.5[e] *3*	11$^-$		
3282.8[#] *3*	10$^+$		
3349.1 *3*			
3373.1 *4*	11$^-$		
3474.8[&] *3*	12$^-$		
3560.8[@] *3*	14$^+$		
3609.4 *3*			
3647.1 *4*	(12$^+$)		
3727.1[e] *3*	12$^-$		
3771.3[#] *3*	11$^+$		
3839.0[&] *3*	13$^-$		
3844.2 *4*			
3849.6[e] *4*	13$^-$		
3936.1 *5*			
3985.1 *11*			
4002.4 *4*	15$^-$		

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$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

^{194}Pb Levels (continued)

E(level)[†]	J^{π}[‡]	E(level)[†]	J^{π}[‡]	E(level)[†]	J^{π}[‡]	E(level)[†]	J^{π}[‡]
4135.4[@] *4*	16^+	5108.6[b] *5*	17^+	6131.7[d] *5*	21^+	7611.3[f] *8*	(24)
4235.9[#] *3*	12^+	5109.6 *6*		6203.6 *5*		7678.7[a] *8*	25^-
4265.1[e] *4*	14^-	5121.6[d] *4*	18^+	6219.6 *6*		7880.8[c] *13*	26^+
4332.7[b] *4*	12^+	5183.9 *12*		6245.2[b] *6*	20^+	7907.8[f] *8*	(25)
4365.3[&] *4*	14^-	5227.2[a] *5*	18^-	6263.7 *7*		8106.9[a] *8*	26^-
4374.6 *4*	16^-	5256.7 *5*		6264.7[g] *8*		8274.4[c] *13*	27^+
4375.9[b] *4*	(13^+)	5326.3 *11*		6291.3[f] *6*	20^+	8491.9[a] *13*	(27)
4408.3[e] *4*	15^-	5326.9 *5*	19	6369.8[@] *6*		8695.3[c] *13*	(28)
4448.4[&] *4*	15^-	5409.6[d] *4*	19^+	6374.3 *5*		9136.2[c] *14*	(29)
4453.6 *4*	15^+	5424.1[a] *5*	19^-	6395.9[a] *6*	22^-	9598.2[c] *17*	(30)
4477.5 *5*		5433.9 *6*		6426.2 *6*		10082.4[c] *17*	(31)
4505.9[b] *5*	14^+	5462.1[g] *5*		6489.4 *6*		10587.4[c] *20*	(32)
4599.4 *4*	17^-	5505.4[b] *5*	18^+	6505.8[c] *6*	21^+	11112.4?[c] *22*	(33)
4615.6 *4*	16^-	5549.5 *5*	19^-	6528.6[d] *5*	22^+	x[i]	
4642.4[b] *4*	15^+	5549.9[@] *5*	20^+	6561.3 *6*		201.9+x[i] *3*	
4692.3[e] *5*	16^-	5591.1[g] *7*		6630.0 *6*		451.0+x[i] *4*	
4700.7 *5*	18^-	5684.2[a] *6*	20^-	6639.3[f] *7*	21^+	727.3+x[i] *5*	
4708.0 *4*	15^-	5685.4? *5*		6718.0[c] *7*	22^+	1044.8+x[i] *5*	
4726.6[d] *4*	16^+	5729.5 *6*	20^-	6813.1[a] *7*	23^-	1407.9+x[i] *5*	
4794.9[@] *4*	18^+	5757.5[d] *5*	20^+	6906.1[d] *7*		1792.6+x[i] *6*	
4805.3[b] *5*	16^+	5759.5 *6*		6945.6[c] *7*	23^+	2205.1+x[i] *7*	
4888.8[d] *4*	17^+	5786.9[g] *7*		6961.9 *5*		y[h]	
4889.3 *11*		5824.0 *7*		6989.9[f] *7*	22^+	328.60+y[h] *20*	
4950.3 *4*	17^-	5824.7 *6*		7160.1 *7*		692.1+y[h] *6*	
4963.3[a] *4*	16^-	5881.9[b] *6*	19^+	7212.9[c] *7*	24^+	1064.9+y[h] *7*	
5053.5[e] *6*		5908.0 *5*	(21^-)	7236.8[a] *7*	24^-	1461.5+y[h] *7*	
5059.3 *6*		5934.1 *6*		7267.1[d] *12*		1849.3+y[h] *8*	
5082.5[a] *5*	17^-	5942.2 *7*		7306.3[f] *8*	23^+		
5089.4 *4*	17^-	5995.3[g] *7*		7307.0 *6*			
5108.5 *6*		6020.3[a] *6*	21^-	7519.8[c] *8*	25^+		

[†] From a least-squares fit to γ-ray energies, assuming $\Delta E\gamma$=0.3 keV for values quoted to tenth keV and 1 keV for those quoted to keV if not given.
[‡] As proposed by 2002Ka01, based on $\gamma(\theta)$, γ-decay patterns, and band assignments.
[#] Band(A): Band based on 8^+.
[@] Band(B): Band based on 12^+.
[&] Seq.(L): ΔJ=1 sequence based on 11^-. Configuration=((π 9/2[505])(π 13/2[606])) (1986Pa18) for $(11)^-$ level. 1986Va03 suggest configuration=((π $1/2[404]^{-2}$)(π 9/2[514])(π 13/2[606])).
[a] Band(C): Magnetic-dipole rotational band based on 16^-.
[b] Band(D): Magnetic-dipole rotational band based on 12^+.
[c] Band(E): Magnetic-dipole rotational band based on 21^+.
[d] Band(F): Magnetic-dipole rotational band based on 16^+.
[e] Band(G): Dipole band based on 10^-.
[f] Band(H): Dipole band based on 20^+.
[g] Band(I): Dipole band.
[h] Band(J): Floating dipole band. This band is ΔJ=1 band #7 in 2009Ku03, connected to the lower levels in the level scheme. See

Continued on next page (footnotes at end of table)

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

^{194}Pb Levels (continued)

$^{168}Er(^{30}Si,4n\gamma)$ dataset from 2009Ku03 or the Adopted dataset for details.

[i] Band(K): Floating dipole band. This band is ΔJ=1 band #5 in 2009Ku03, connected to the lower levels in the level scheme. See $^{168}Er(^{30}Si,4n\gamma)$ dataset from 2009Ku03 or the Adopted dataset for details.

$\gamma(^{194}Pb)$

Some transitions are placed differently from those in Adopted Level, Gammas, as noted.
A_2 values given under comments are from $\gamma(\theta)$ in 2002Ka01 if not specially noted.

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	Comments
(43[#])		4375.9	(13⁺)	4332.7	12⁺		
(47[#])		2628.3	12⁺	2581.21	10⁺		
(65[#‡])		2645.4		2581.21	10⁺		
(83[#])		4448.4	15⁻	4365.3	14⁻		
119.2[‡] *2*	1.7 *5*	5082.5	17⁻	4963.3	16⁻	M1	A_2=−0.38 *5* α(L)exp=0.47 *9* (1998Ka59).
129.0[‡] *4*	0.7 *3*	5591.1		5462.1		D	A_2=−0.05 *5*
130.1[‡] *4*	1.2 *3*	4505.9	14⁺	4375.9	(13⁺)	M1	A_2=−0.17 *5* α(L)exp=0.53 *9* (1998Ka59).
136.6[‡] *4*	1.0 *5*	4642.4	15⁺	4505.9	14⁺	M1	A_2=−0.11 *5* α(L)exp=0.85 *13* (1998Ka59).
140.1 *3*		4375.9	(13⁺)	4235.9	12⁺	M1+E2	A_2=−0.17 *5* α(K)exp=0.11 *3* (1998Ka59).
143.4 *3*	0.7 *2*	4408.3	15⁻	4265.1	14⁻	D	A_2=−0.13 *5*
144.7[‡] *2*	2.9 *5*	5227.2	18⁻	5082.5	17⁻	M1	A_2=−0.32 *5* α(L)exp=0.45 *5* (1998Ka59).
158.1 *2*		4002.4	15⁻	3844.2			
162.2 *2*	0.4 *1*	4888.8	17⁺	4726.6	16⁺		
162.9[‡] *2*	3.2 *5*	4805.3	16⁺	4642.4	15⁺	M1	A_2=−0.26 *5* α(K)exp=1.6 *5* (1998Ka59).
166.2[‡] *1*	4.9 *3*	2407.49	9⁻	2241.32	7⁻	E2	A_2=+0.20 *5* (2002Ka01); A_2=+0.20 *12* (1977Ro15) A_2=+0.21 *10*; A_4=−0.25 *15* (1986Va03) E_γ: from 1986Pa18 and 1986Va03. Other: 166.1 *2* (2002Ka01). I_γ: other: I(166γ/965γ)=47 *3*/100 (1986Va03). $I_{(\gamma+ce)}$: 24.3 *3* in 1986Pa18 discrepant with 9 in 2002Ka01 9.1 in 2009Ku03. Mult.: α(K)exp=0.270 *30*, α_{L12}exp=0.301 *20*, α(L3)exp=0.180 *20* (1986Pa18).
173.7[‡] *1*	2.9 *2*	2581.21	10⁺	2407.49	9⁻	E1	A_2=−0.12 *5* (2002Ka01); A_2=−0.063 *4* (1985St16); A_2=−0.13 *3* (1977Ro15) A_2=−0.18 *9*; A_4=−0.29 *15* (1986Va03) E_γ: from 1986Pa18. Others: 173.6 *1* (1986Va03), 173.7 *2* (2002Ka01). I_γ: other: I(174γ/965γ)=75 *5*/100 (1986Va03). $I_{(\gamma+ce)}$: 24.1 *3* in 1986Pa18 discrepant with 3.2 quoted in 2002Ka01 3.3 in 2009Ku03. Mult.: α(K)exp=0.040 *27*, α(L)exp<0.020 *6* (1986Pa18).
178.1 *2*	2.0 *5*	2419.6	8⁻	2241.32	7⁻	D	A_2=−0.08 *5*
195.8[‡] *2*		5786.9		5591.1		D	A_2=−0.19 *5*
196.4 *3*	1.4 *3*	2437.5	8⁺	2241.32	7⁻		

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$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

$\gamma(^{194}Pb)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	$I_{(\gamma+ce)}$	Comments
196.9[‡] 2	5 1	5424.1	19⁻	5227.2	18⁻	M1+E2		A_2=−0.38 5 α(K)exp=0.79 9 (1998Ka59) for doublet.
197[‡] 1	0.3 2	4889.3		4692.3	16⁻			
201.9[‡] 3	0.3 1	201.9+x		x				
208.4[‡] 2	1.1 3	5995.3		5786.9		D		A_2=−0.23 5
212.2[‡] 2	1.7 2	6718.0	22⁺	6505.8	21⁺	D		A_2=−0.28 5
227.6[‡] 2	1.5 2	6945.6	23⁺	6718.0	22⁺	M1		A_2=−0.33 5 α(K)exp=0.56 8 (1998Ka59).
232[@]		1540.11	4⁺	1308.6	2⁺			
232.8 2	1.4 4	5121.6	18⁺	4888.8	17⁺	D		A_2=−0.35 5
249.1[‡] 2	0.7 2	451.0+x		201.9+x		D		A_2=−0.24 5
255.5 3		4963.3	16⁻	4708.0	15⁻			
255.7 3	0.2 1	6630.0		6374.3				
260.1[‡] 2	6 1	5684.2	20⁻	5424.1	19⁻	M1		A_2=−0.34 5 α(K)exp=0.54 5, POL=−0.65 11 (1998Ka59) for doublet.
260.5 3	1.7 2	2502.0	8⁻	2241.32	7⁻	D		A_2=−0.15 5
260.6[‡] 2	2.4 5	6505.8	21⁺	6245.2	20⁺	M1		A_2=−0.22 5 α(K)exp=0.54 5, POL=−0.65 11 for doublet (1998Ka59).
267.3[‡] 2	1.5 2	7212.9	24⁺	6945.6	23⁺	D		A_2=−0.20 5
269.4[‡] 2	2.2 5	6264.7		5995.3		D		A_2=−0.20 5
273.0 3	0.5 2	4726.6	16⁺	4453.6	15⁺			
276.3[‡] 2	0.6 2	727.3+x		451.0+x		D		A_2=−0.36 5
280.2 1	20 3	1820.31	5⁻	1540.11	4⁺	E1		A_2=−0.28 5 (2002Ka01); A_2=−0.076 4 (1985St16); A_2=−0.18 7 (1977Ro15) A_2=−0.23 11; A_4=−0.2 2 (1986Va03) E_γ: from 1986Pa18. Others: 280.1 1 (1986Va03), 280.1 2 (2002Ka01). I_γ: other: I(280γ/965γ)=92 4/100 (1986Va03). $I_{(\gamma+ce)}$: other: 25.3 5 (1986Pa18). Mult.: α(K)exp=0.029 4 (1986Pa18).
283[a]		3844.2		3560.8	14⁺			
284.0 2	1.4 4	4692.3	16⁻	4408.3	15⁻	D		A_2=−0.34 5
287.9 2	1.7 4	5409.6	19⁺	5121.6	18⁺	D		A_2=−0.4 1
294.6[‡] 3	0.3 2	5183.9		4889.3				
296.5[‡] 2		7907.8	(25)	7611.3	(24)			
302.6 1	1.8 5	2437.5	8⁺	2134.9	6⁺	(E2)		E_γ: from 1986Pa18. Other: 302 1 (2002Ka01). $I_{(\gamma+ce)}$: other: 1.8 4 (1986Pa18). Mult.: α(K)exp=0.23 7 (1986Pa18) gives E2+M1 with δ=1.0 5, but the ce(K) line is very weak in this work.
303.2[‡] 2	8 2	5108.6	17⁺	4805.3	16⁺	M1+E2		A_2=−0.4 1 α(K)exp=0.21 5 for doublet (1998Ka59).
304.9 1		2933.2	11⁻	2628.3	12⁺	E1	3.2 9	E_γ,$I_{(\gamma+ce)}$: from 1986Pa18; not reported in 2002Ka01. Mult.: α(K)exp≤0.025 (1986Pa18).
305.0[‡] 2		7611.3	(24)	7306.3	23⁺			
306.9[‡] 2	1.3 3	7519.8	25⁺	7212.9	24⁺	D		A_2=−0.4 1
316.4[‡] 3		7306.3	23⁺	6989.9	22⁺	D		A_2=−0.38 5
317.5[‡] 2	0.6 2	1044.8+x		727.3+x		D		A_2=−0.4 1

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$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

$\gamma(^{194}Pb)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	Comments
326.3 2	8 1	4700.7	18⁻	4374.6	16⁻	E2	A_2=+0.12 5 α(K)exp=0.05 1, POL=+0.24 4 (1998Ka59).
328.6[‡] 2	1.9 3	328.60+y		y		D	A_2=−0.39 5
336.2[‡] 2	6 1	6020.3	21⁻	5684.2	20⁻	M1	A_2=−0.38 5 α(K)exp=0.20 5, POL=−0.46 12 (1998Ka59).
341.7 3	0.2 1	6561.3		6219.6			
342.8 2		4708.0	15⁻	4365.3	14⁻		
347.8 2	1.6 3	5757.5	20⁺	5409.6	19⁺	D	A_2=−0.4 1
348.0[‡] 3	2.2 4	6639.3	21⁺	6291.3	20⁺	D	A_2=−0.34 5
350.6[‡] 3		6989.9	22⁺	6639.3	21⁺	D	A_2=−0.33 5
351.8 2	0.8 2	2933.2	11⁻	2581.21	10⁺	E1	E_γ: from 1986Pa18. Others: 351.9 2 (1986Va03), 352 1 (2002Ka01). I_γ: other: I(352γ/965γ)=19 3/100 (1986Va03). $I_{(\gamma+ce)}$: other: 3.4 4 (1986Pa18). Mult.: α(K)exp≤0.025 (1986Pa18), 0.014 5 (1986Va03). DCO=2.7 7, gating on ΔJ=1, 173.7γ (1986Va03).
351.8 2		3282.8	10⁺	2930.7	9⁺		
358.1 3	1.4 3	3271.5	11⁻	2913.6	9⁻		
361[‡] 1		7267.1		6906.1			
361[‡] 1	1.3 5	7880.8	26⁺	7519.8	25⁺	D	A_2=−0.3 2
361.2 3	1.0 3	5053.5		4692.3	16⁻		
363[‡] 1	3.9 6	6245.2	20⁺	5881.9	19⁺	M1	A_2=−0.3 2 α(K)exp=0.20 6, POL=−0.38 8 for doublet (1998Ka59).
363.1[‡] 2	0.5 2	1407.9+x		1044.8+x		D	A_2=−0.4 1
363.5[‡] 5		692.1+y		328.60+y		D	A_2=−0.3 1
364 1	10	3839.0	13⁻	3474.8	12⁻	M1	A_2=−0.3 2 I_γ: from I(γ+ce)=12 (2002Ka01) and α_T=0.252 4 from BrIcc. α(K)exp=0.20 6, POL=−0.38 8 (1998Ka59) for doublet.
372.5 2	10 2	4374.6	16⁻	4002.4	15⁻	M1	A_2=−0.37 5; pol=−0.26 4 (1998Ka59) α(K)exp=0.23 5 (1998Ka59).
372.8[‡] 3		1064.9+y		692.1+y		D	A_2=−0.13 5
374.3 3	1.0 3	6131.7	21⁺	5757.5	20⁺		
375.5[‡] 2	5 2	6395.9	22⁻	6020.3	21⁻	M1	A_2=−0.35 5 α(K)exp=0.19 5, POL=−0.23 13 (1998Ka59) for doublet.
376 1	1.9 5	5326.3		4950.3	17⁻		
376.4[‡] 4	6 2	5881.9	19⁺	5505.4	18⁺	M1	A_2=−0.41 5 α(K)exp=0.19 5, POL=−0.23 13 for doublet (1998Ka59).
377.5 5	0.3 1	6906.1		6528.6	22⁺		
380.4 3	0.5 2	5433.9		5053.5			
384.7[‡] 2	0.3 1	1792.6+x		1407.9+x		D	A_2=−0.5 1
385[‡] 1	0.4 2	8491.9	(27)	8106.9	26⁻		
387.8[‡] 3		1849.3+y		1461.5+y		D	A_2=−0.5 1
393.6[‡] 3	0.7 2	8274.4	27⁺	7880.8	26⁺	D	A_2=−0.4 1
396.6[‡] 2	1.7 3	1461.5+y		1064.9+y		D	A_2=−0.6 1
396.9[‡] 2	9 2	5505.4	18⁺	5108.5		M1	A_2=−0.40 5 α(K)exp=0.17 5, POL=−0.48 9 (1998Ka59).
396.9 2	0.6 2	6528.6	22⁺	6131.7	21⁺	D	A_2=−0.4 1
409.4[‡] 2	2.8 4	6291.3	20⁺	5881.9	19⁺	D	A_2=−0.44 5
412.5[‡] 3	0.25 3	2205.1+x		1792.6+x		D	A_2=−0.4 1
416.2 4	0.4 2	5108.5		4692.3	16⁻		E_γ: 416.2γ and 632.1γ placed by 2002Ka01 from two

Continued on next page (footnotes at end of table)

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

γ(^{194}Pb) (continued)

Eγ[†]	Iγ[†]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[&]	Comments
							separate levels with close energies; they are placed from the same level by 2009Ku03 in (^{30}Si,4nγ), and in the Adopted dataset.
417.1[‡] 3	2.1 5	6813.1	23⁻	6395.9	22⁻	M1	A_2=−0.5 1 α(K)exp=0.11 3 (1998Ka59).
420.9[‡] 3	0.6 1	8695.3	(28)	8274.4	27⁺		
421.0 1	21 3	2241.32	7⁻	1820.31	5⁻	E2	A_2=+0.16 5 (2002Ka01); A_2=+0.080 3 (1985St16); A_2=+0.12 4 (1977Ro15) A_2=+0.32 15; A_4=−0.06 20 (1986Va03) Eγ: from 1986Pa18. Others: 421.1 2 (1986Va03), 421.2 2 (2002Ka01). Iγ: other: I(421γ/965γ)=81 5/100 (1986Va03). $I_{(\gamma+ce)}$: other: 25.0 3 (1986Pa18). Mult.: α(K)exp=0.030 3, α(L+...)exp=0.0112 20 (1986Pa18).
423.7[‡] 3	1.5 5	7236.8	24⁻	6813.1	23⁻	D	A_2=−0.4 1
428.2[‡] 3	0.7 5	8106.9	26⁻	7678.7	25⁻	D	A_2=−0.37 5
440.9[‡] 3	0.3 1	9136.2	(29)	8695.3	(28)		
441.6 2	22 3	4002.4	15⁻	3560.8	14⁺	E1	A_2=−0.18 5 (2002Ka01); A_2=0.0 2 (1986Va03); pol=+0.27 14 (1998Ka59) Eγ: also from 1986Va03. Iγ: other: I(442γ/965γ)=19 4/100 (1986Va03). α(K)exp=0.009 2 (1998Ka59), α(K)exp=0.012 6 (1986Va03).
441.9[‡] 2	1.3 5	7678.7	25⁻	7236.8	24⁻	D	A_2=−0.35 5
456 1	0.3 1	3727.1	12⁻	3271.5	11⁻		
459.5 2	1.8 2	3373.1	11⁻	2913.6	9⁻		
459.9 2	0.9 3	5549.5	19⁻	5089.4	17⁻		
461.8 2	2.7 3	5256.7		4794.9	18⁺		
462[‡] 1	0.2 1	9598.2	(30)	9136.2	(29)		
464.7 2		4235.9	12⁺	3771.3	11⁺		
473.5 2	0.7 2	5089.4	17⁻	4615.6	16⁻		
484.2[‡] 2	0.06 3	10082.4	(31)	9598.2	(30)		
488.4 2		3771.3	11⁺	3282.8	10⁺		
493.2 1		2930.7	9⁺	2437.5	8⁺		
496 1	0.8 3	2933.2	11⁻	2437.5	8⁺	[E3]	
498.8[‡] 3	2.2 5	5462.1		4963.3	16⁻	D	A_2=−0.6 2
505[‡a]		10587.4	(32)	10082.4	(31)		
506.8 3	0.6 3	4642.4	15⁺	4135.4	16⁺		
514.8 2	26 3	4963.3	16⁻	4448.4	15⁻	M1+E2	A_2=−0.3 1 α(K)exp=0.081 5, POL=−0.19 9 (1998Ka59).
519.6 2	5.1 5	3727.1	12⁻	3207.53	10⁻	(Q)	A_2=+0.15 5
525[‡a]		11112.4?	(33)	10587.4	(32)		Eγ: γ not reported in 2009Ku03.
526.4 2		4365.3	14⁻	3839.0	13⁻		
534[‡a]		3178.5		2645.4			
536.9 2	3.4 5	4375.9	(13⁺)	3839.0	13⁻	D	A_2=+0.11 5
538.1 2	3.1 4	4265.1	14⁻	3727.1	12⁻	(Q)	A_2=+0.20 5
541.6 2	13	3474.8	12⁻	2933.2	11⁻	M1+E2	A_2=−0.5 1; pol=−0.20 10 (1998Ka59) Iγ: from I(γ+ce)=14 and α_T=0.06 4 from BrIcc assuming δ(E2/M1)=1. α(K)exp=0.056 5.
558.6 3	0.4 1	4408.3	15⁻	3849.6	13⁻		
568.0 3	0.5 2	5824.7		5256.7			
574.6 2	18 3	4135.4	16⁺	3560.8	14⁺	(Q)	A_2=+0.26 5

Continued on next page (footnotes at end of table)

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ **2002Ka01,1998Ka59,1986Pa18 (continued)**

$\gamma(^{194}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	Comments
575.0 *1*	25 *3*	1540.11	4+	965.11	2+	E2	A_2=+0.10 *9*; A_4=−0.08 *15* (1986Va03) E_γ: from 1986Pa18 and 1986Va03. Other: 575.1 *2* (2002Ka01). I_γ: other: I(575γ/965γ)=95 *5*/100 (1986Va03). $I_{(\gamma+ce)}$: other: 27 *1* (1986Pa18). Mult.: α(K)exp=0.0161 *10*, α(L)exp=0.0038 *8* (1986Pa18).
576 *1*	0.7 *3*	4950.3	17−	4374.6	16−		
577.9 *3*	4.2 *3*	3849.6	13−	3271.5	11−	(Q)	A_2=+0.12 *5*
581.1 *2*	1.7 *5*	5908.0	(21−)	5326.9	19		
587.0 *3*		3936.1		3349.1			
591.2 *2*	1.3 *2*	4726.6	16+	4135.4	16+	D	A_2=+0.3 *1*
594.8 *3*	4 *2*	2134.9	6+	1540.11	4+	E2	E_γ: from 1986Pa18. Other: 595 *1* (2002Ka01). $I_{(\gamma+ce)}$: other: 1.7 *4* (1986Pa18). Mult.: α(K)exp=0.013 *4* (1986Pa18).
597.0 *2*	4.1 *5*	4599.4	17−	4002.4	15−		
609.3 *2*	24 *2*	4448.4	15−	3839.0	13−	E2	A_2=+0.4 *1* α(K)exp=0.017 *5* (1998Ka59).
612[a]	0.7 *3*	3985.1		3373.1	11−		E_γ: placement from 2002Ka01; γ not reported in 2009Ku03.
613.0 *2*	1.8 *3*	4615.6	16−	4002.4	15−		
614.7 *3*	0.5 *2*	5409.6	19+	4794.9	18+	D	A_2=−0.3 *1*
627.9 *3*	0.9 *3*	4477.5		3849.6	13−		
632.1 *3*	0.3 *1*	5109.6		4477.5			
636.0 *3*	0.2 *1*	5757.5	20+	5121.6	18+		
654.1 *2*	1.9 *2*	6203.6		5549.5	19−		
659.5 *2*	10 *2*	4794.9	18+	4135.4	16+	E2	A_2=+0.26 *5* α(K)exp=0.015 *5* (1998Ka59).
672.3 *2*	2.5 *4*	2913.6	9−	2241.32	7−	(Q)	A_2=+0.12 *5*
677.4 *3*	0.6 *2*	5934.1		5256.7			
696.7 *3*		6426.2		5729.5	20−		
699[‡a]		6989.9	22+	6291.3	20+		E_γ: could correspond to the 699.0 doublet placed from 6028 and 6641 levels in 2009Ku03.
700[‡] *1*		5505.4	18+	4805.3	16+		
705.4 *2*	1.4 *4*	3207.53	10−	2502.0	8−	(Q)	A_2=+0.14 *5*
711.7[‡] *4*	0.6 *3*	6395.9	22−	5684.2	20−	(E2)	A_2=+0.27 *5*
714.9 *2*	1.4 *3*	5089.4	17−	4374.6	16−		
722.2 *3*	0.2 *1*	6131.7	21+	5409.6	19+		
723.1 *3*		4332.7	12+	3609.4			
727.5 *2*	2.0 *3*	5326.9	19	4599.4	17−		
739.8[‡] *3*	0.7 *2*	6245.2	20+	5505.4	18+		
753.3 *2*	1.4 *2*	4888.8	17+	4135.4	16+	D	A_2=−0.34 *5*
755.0 *2*	3.7 *3*	5549.9	20+	4794.9	18+		
757[‡a]		6639.3	21+	5881.9	19+		
758.3 *2*	1.0 *3*	6961.9		6203.6			
759.9 *2*	0.8 *3*	6489.4		5729.5	20−		
767.9 *2*	0.9 *3*	3349.1		2581.21	10+		
771.1 *3*	0.2 *1*	6528.6	22+	5757.5	20+		
773.5[‡] *3*	1.0 *5*	5881.9	19+	5108.5		(Q)	A_2=+0.2 *1*
785.8 *4*	0.3 *2*	7160.1		6374.3			
787.7 *2*	4.2 *2*	3207.53	10−	2419.6	8−	(Q)	A_2=+0.45 *5*
793.3[‡] *5*	0.5 *2*	6813.1	23−	6020.3	21−	(Q)	A_2=+0.4 *1*
800.4 *2*	1.0 *3*	3207.53	10−	2407.49	9−		
817.6 *2*	0.4 *2*	7307.0		6489.4			
819.9 *3*	0.8 *2*	6369.8		5549.9	20+		
824.4 *2*	1.4 *2*	6374.3		5549.9	20+		
840[‡a]		7236.8	24−	6395.9	22−		

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$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

$\gamma(^{194}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	Comments
840.8 2		3771.3	11+	2930.7	9+		
845.4 2		3282.8	10+	2437.5	8+		
849.1 3	3.9 5	5549.5	19−	4700.7	18−	(Q)	A_2=+0.23 5
858.0 2	1.8 5	4332.7	12+	3474.8	12−	D	A_2=+0.12 5
863.9 2	4.5 5	3271.5	11−	2407.49	9−	(Q)	A_2=+0.16 5
869[a]		4708.0	15−	3839.0	13−		
890.6 3		4365.3	14−	3474.8	12−		
892.7 2	2.0 3	4453.6	15+	3560.8	14+	D	A_2=−0.4 1
905.7 2	15	3839.0	13−	2933.2	11−	E2	A_2=+0.4 1 (2002Ka01); A_2=+0.2 3 (1986Va03); pol=+0.38 19 (1998Ka59) E_γ: weighted average of 905.6 1 (1986Va03) and 906.0 2 (2002Ka01). I_γ: from I(γ+ce)=15 (2002Ka01) and α_T=0.008 from BrIcc. Other: I(906γ)/I(965γ)=15 4/100. Mult.: α(K)exp=0.0058 20 (1986Va03).
931[@]		931.0	0+	0.0	0+	[E0]	
932.5 1	43	3560.8	14+	2628.3	12+	E2	A_2=+0.30 10; A_4=−0.04 15 (1986Va03) E_γ: weighted average of 932.4 1 (1986Va03) and 932.7 2 (2002Ka01). I_γ: from I(γ+ce)=43 and α_T=0.0076 from BrIcc. Other: I(933γ)/I(965γ)=34 3/100 (1986Va03). Mult.: α(K)exp=0.0070 15 (1986Va03).
947.9 2	0.7 4	4950.3	17−	4002.4	15−		
953.2 2		4235.9	12+	3282.8	10+		
962.9 3	0.9 3	6219.6		5256.7			
963[‡a]		3609.4		2645.4			
965.1 1	27	965.11	2+	0.0	0+	E2	A_2=+0.079 3 (1985St16); A_2=+0.12 3 (1977Ro15) A_2=+0.15 13; A_4=−0.2 2 (1986Va03) E_γ: from 1986Pa18. Other: 965.2 2 (2002Ka01). I_γ: from I(γ+ce)=27 (2002Ka01). Mult.: α(K)exp=0.0059 10 (1986Pa18).
980.9 2		3609.4		2628.3	12+		
1007.0 5	0.5 2	6263.7		5256.7			
1028.3 3		3609.4		2581.21	10+		
1028.8 3	1.7 6	5729.5	20−	4700.7	18−	(Q)	A_2=+0.16 5
1056.9 4	1.5 5	5059.3		4002.4	15−		
1058.8 4	0.5 2	5759.5		4700.7	18−		
1065.9 3	1.0 5	3647.1	(12+)	2581.21	10+		
1081.7 5	1.0 4	4642.4	15+	3560.8	14+		
1123.3 5	0.3 1	5824.0		4700.7	18−		
1154.5[‡] 5		4332.7	12+	3178.5			
1165.6 5		4726.6	16+	3560.8	14+	(Q)	A_2=+0.3 1
1215.5 5	0.3 1	3844.2		2628.3	12+		
1241.5 5	0.6 3	5942.2		4700.7	18−		
1302.5 5		4235.9	12+	2933.2	11−		
1309[@]		1308.6	2+	0.0	0+		
1310.8[a]	0.2 1	5685.4?		4374.6	16−		E_γ: placement from 2002Ka01; γ not reported in 2009Ku03.
1399.5 5		4332.7	12+	2933.2	11−		
1687.5[‡] 5		4332.7	12+	2645.4			
1704.7 8		4332.7	12+	2628.3	12+		

[†] From 2002Ka01, unless otherwise noted. Values of I(γ+ce) are also available from 1986Pa18 and given under comments with

Continued on next page (footnotes at end of table)

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)

$\gamma(^{194}Pb)$ (continued)

original values renormalized to I(γ+ce)=27 for 965γ by the evaluators.

‡ Placed from a different level in Adopted Levels, Gammas.

γ inferred from $\gamma\gamma$-coin data; not observed directly in 2002Ka01. Energy from level-energy difference.

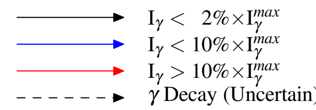
@ Rounded values from Adopted Gammas; γ not observed in 2002Ka01.

& From $\gamma(\theta)$ in 2002Ka01, ce data and γ(lin pol) in 1998Ka59, ce data in 1986Pa18 and 1986Va03, where available, unless otherwise noted.

[a] Placement of transition in the level scheme is uncertain.

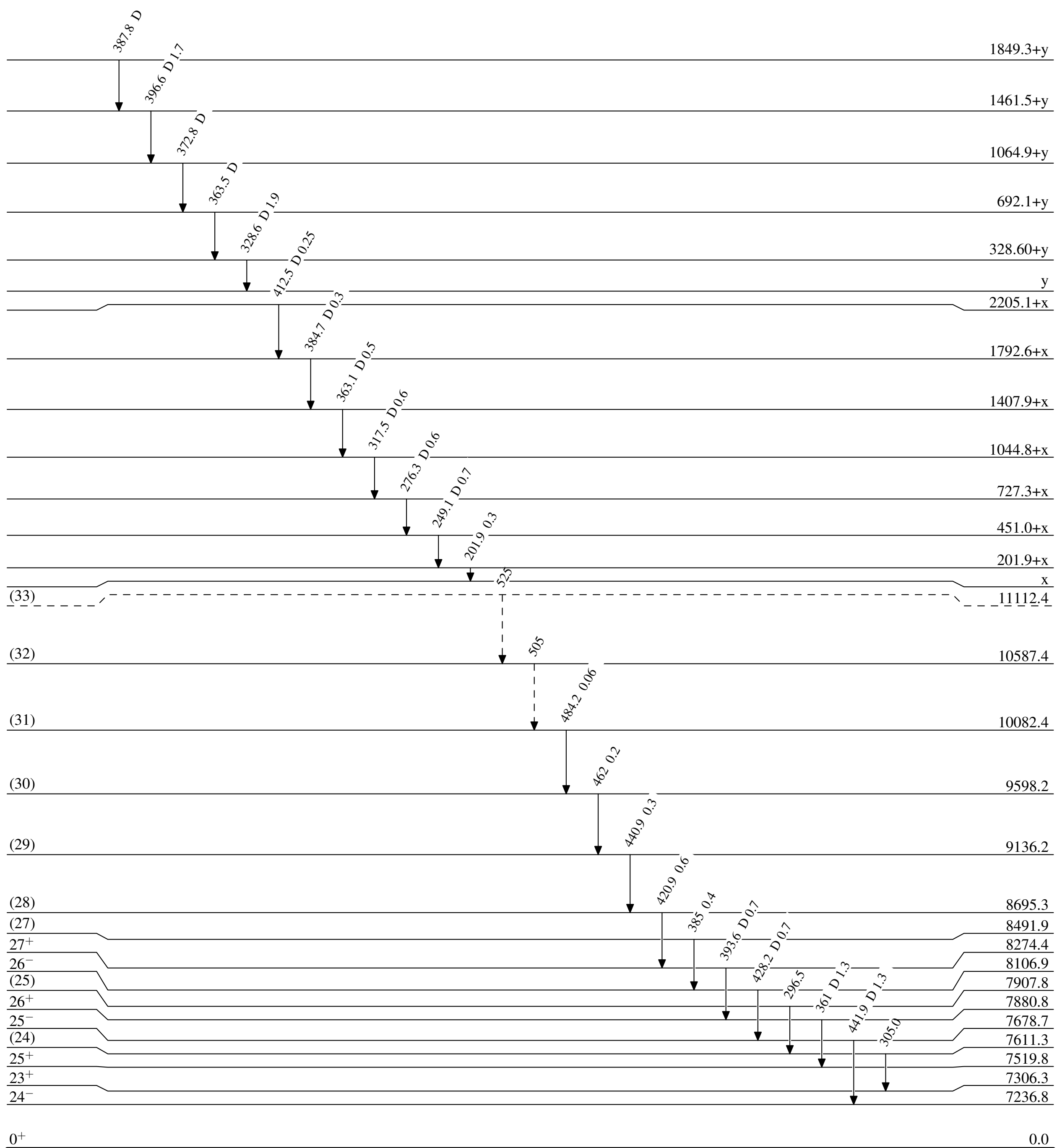
$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Legend



Level Scheme

Intensities: Relative I_γ

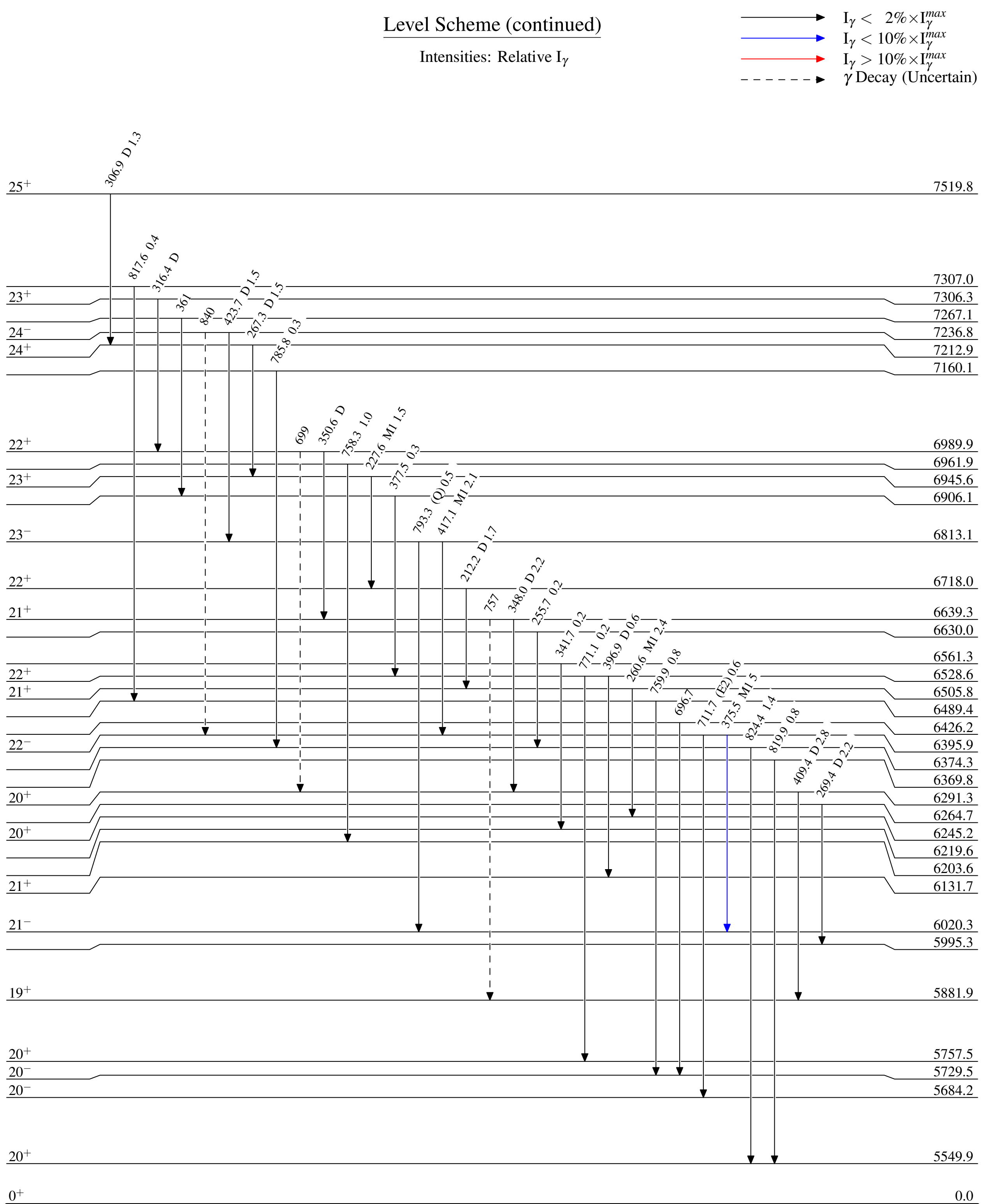


$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma)$,$^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Level Scheme (continued)

Intensities: Relative I_γ

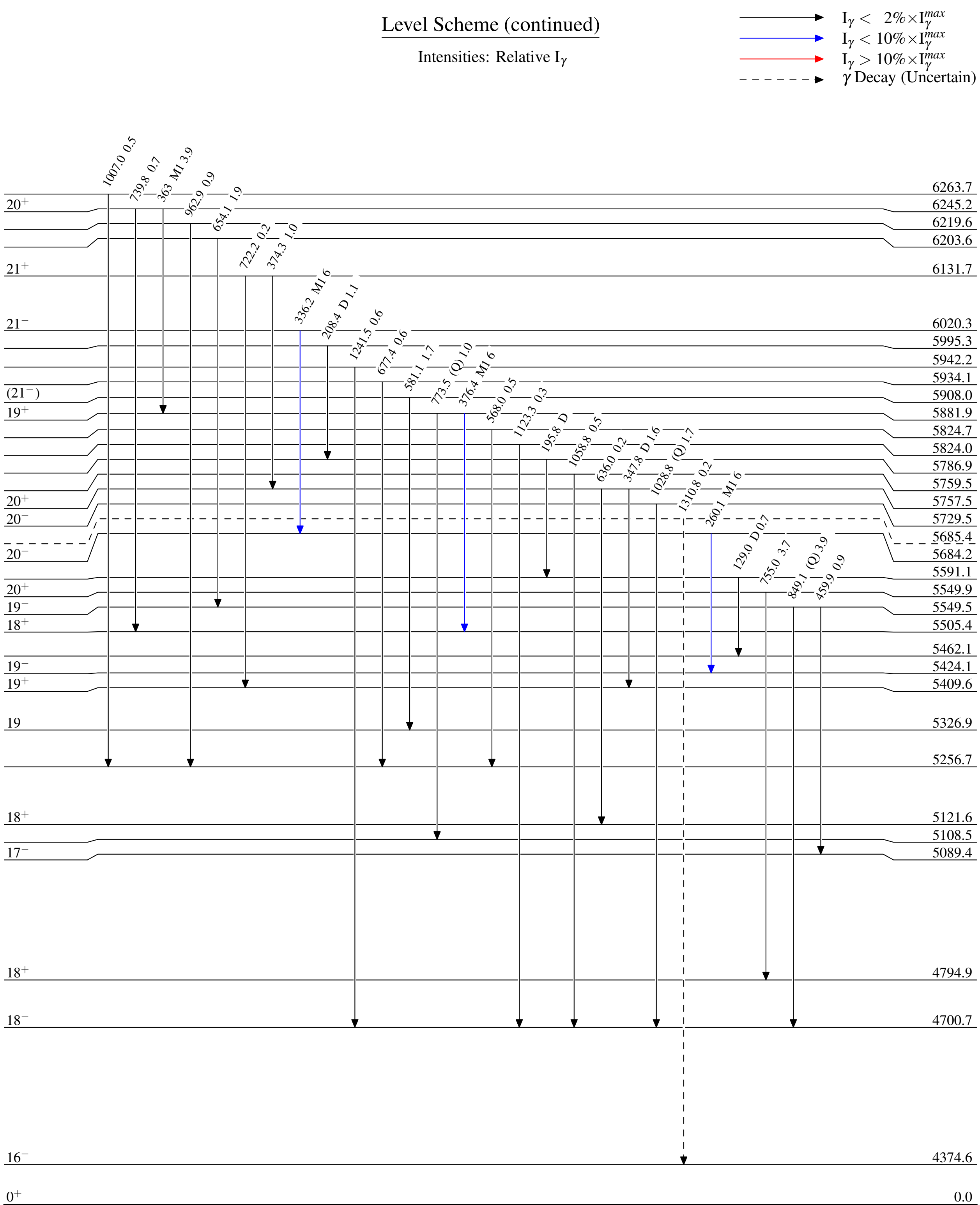


$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Level Scheme (continued)

Intensities: Relative I_γ

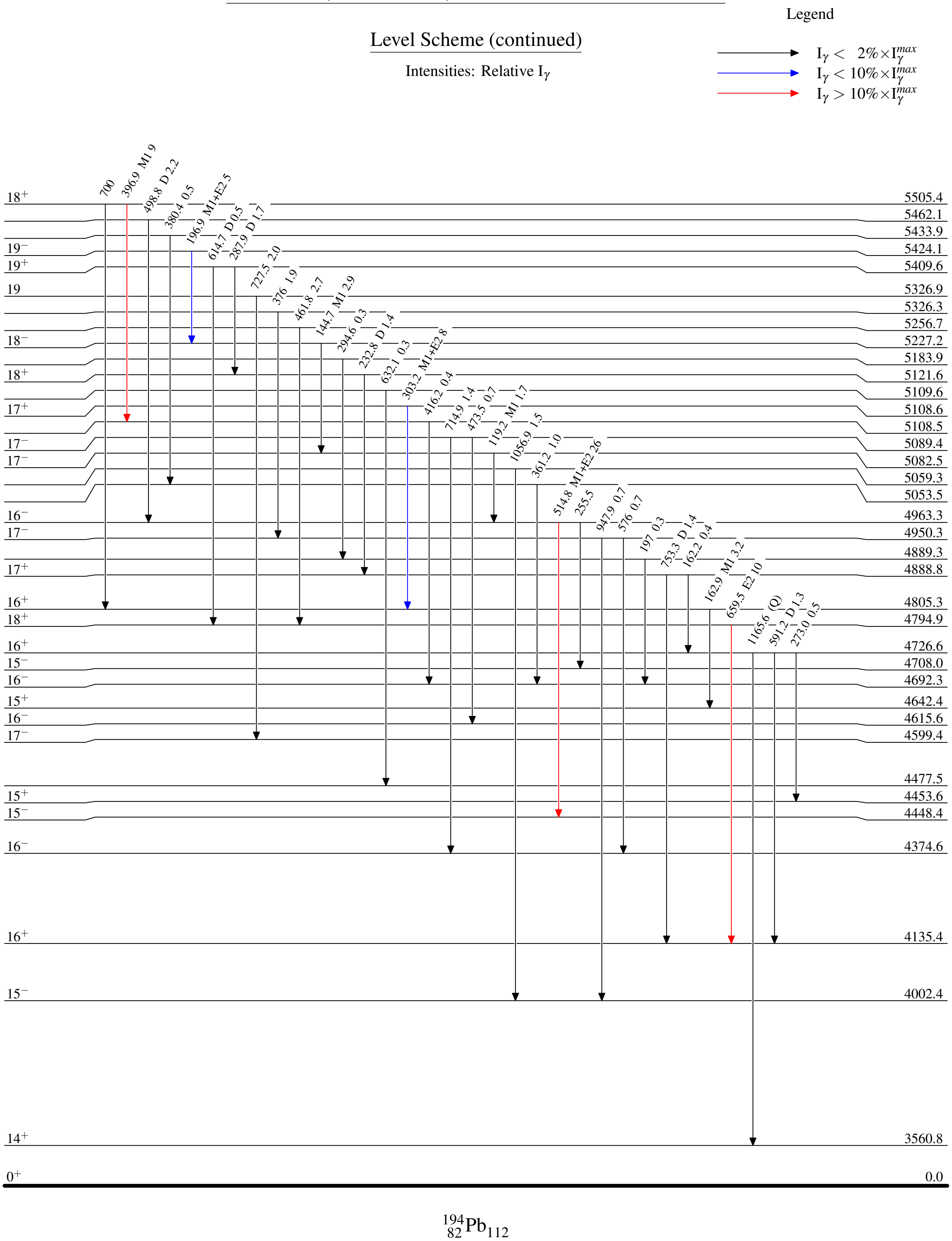


$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Level Scheme (continued)

Intensities: Relative I_γ

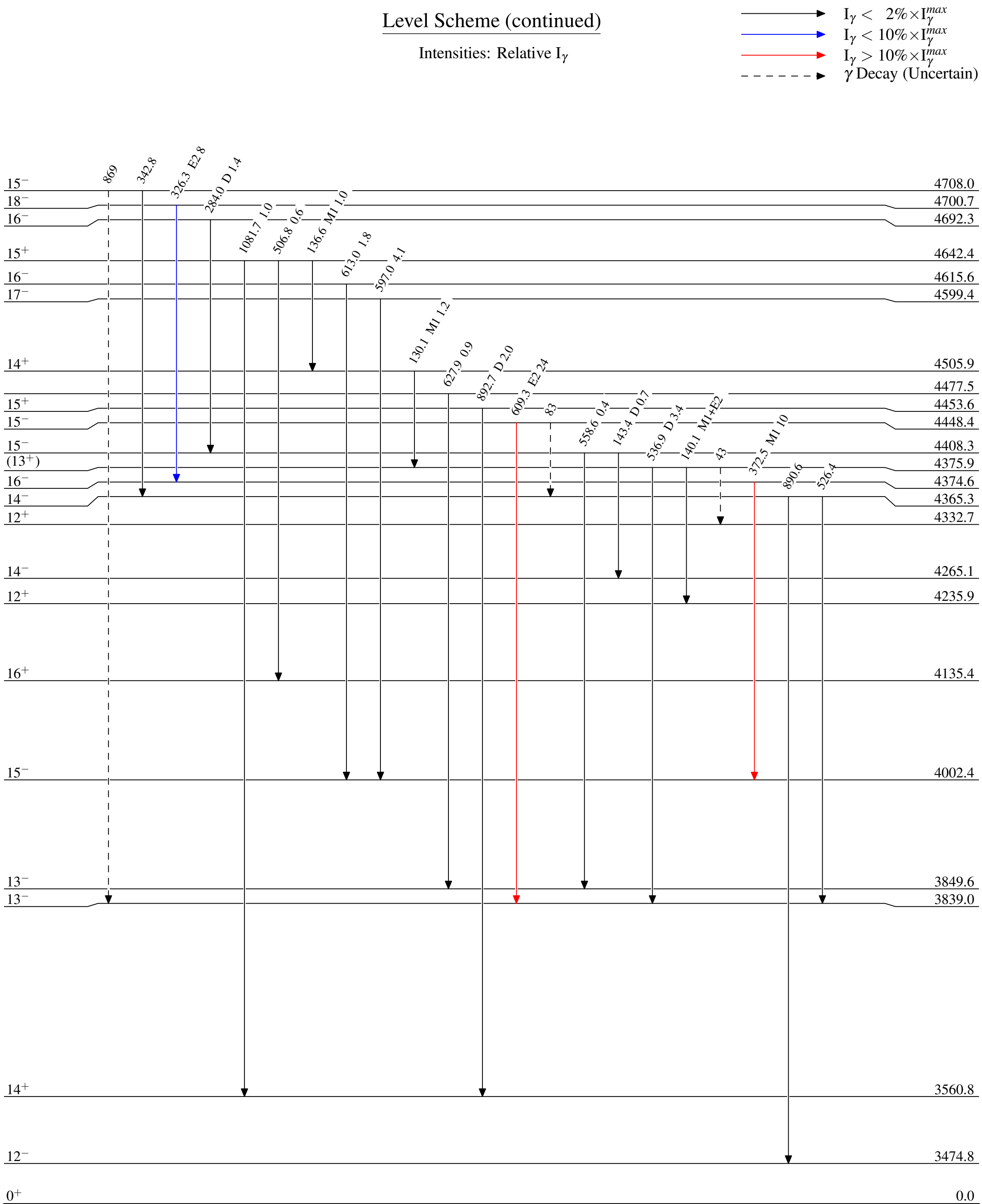


$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Level Scheme (continued)

Intensities: Relative I_γ

Legend

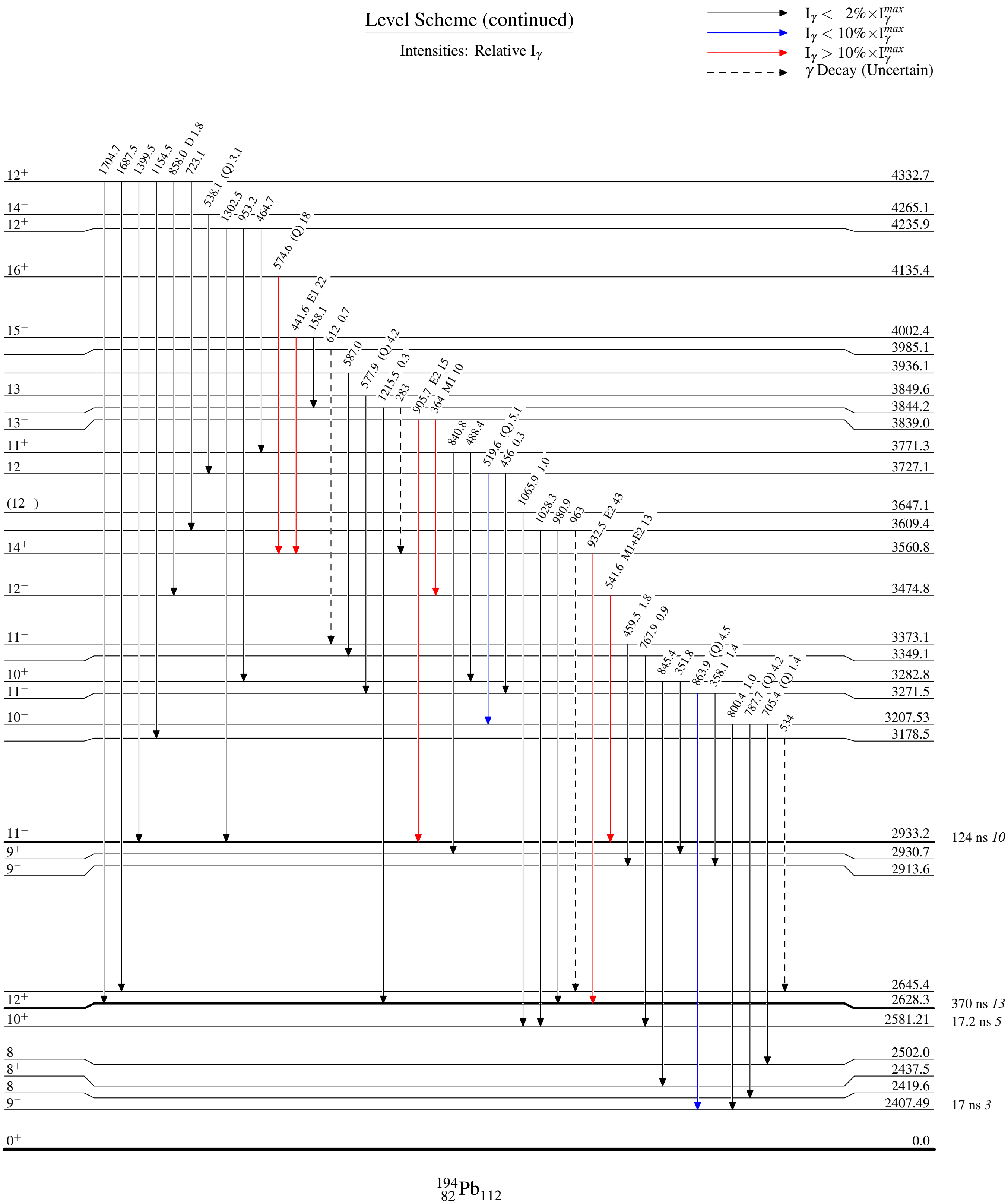


$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Level Scheme (continued)

Intensities: Relative I_γ



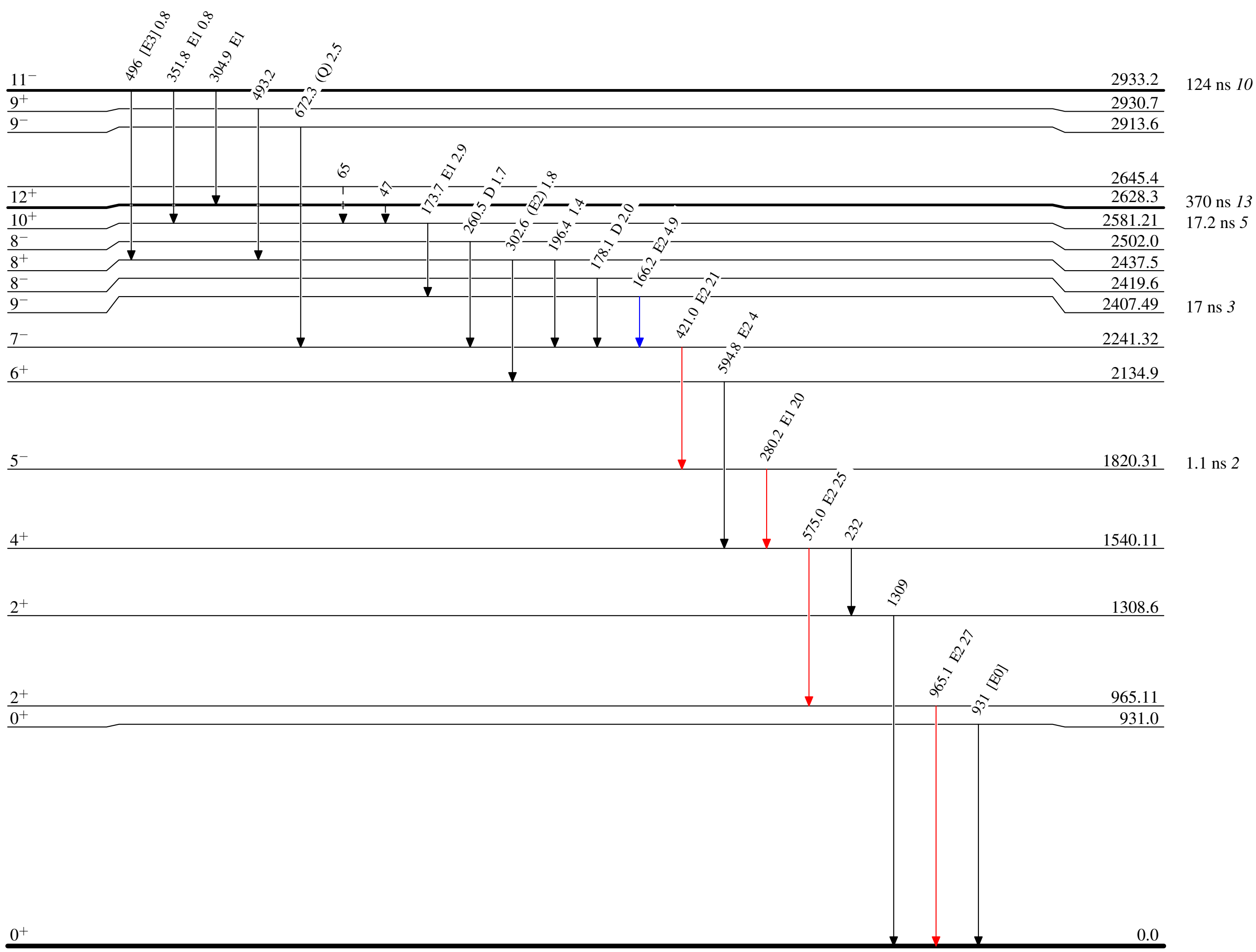
$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18

Legend

Level Scheme (continued)

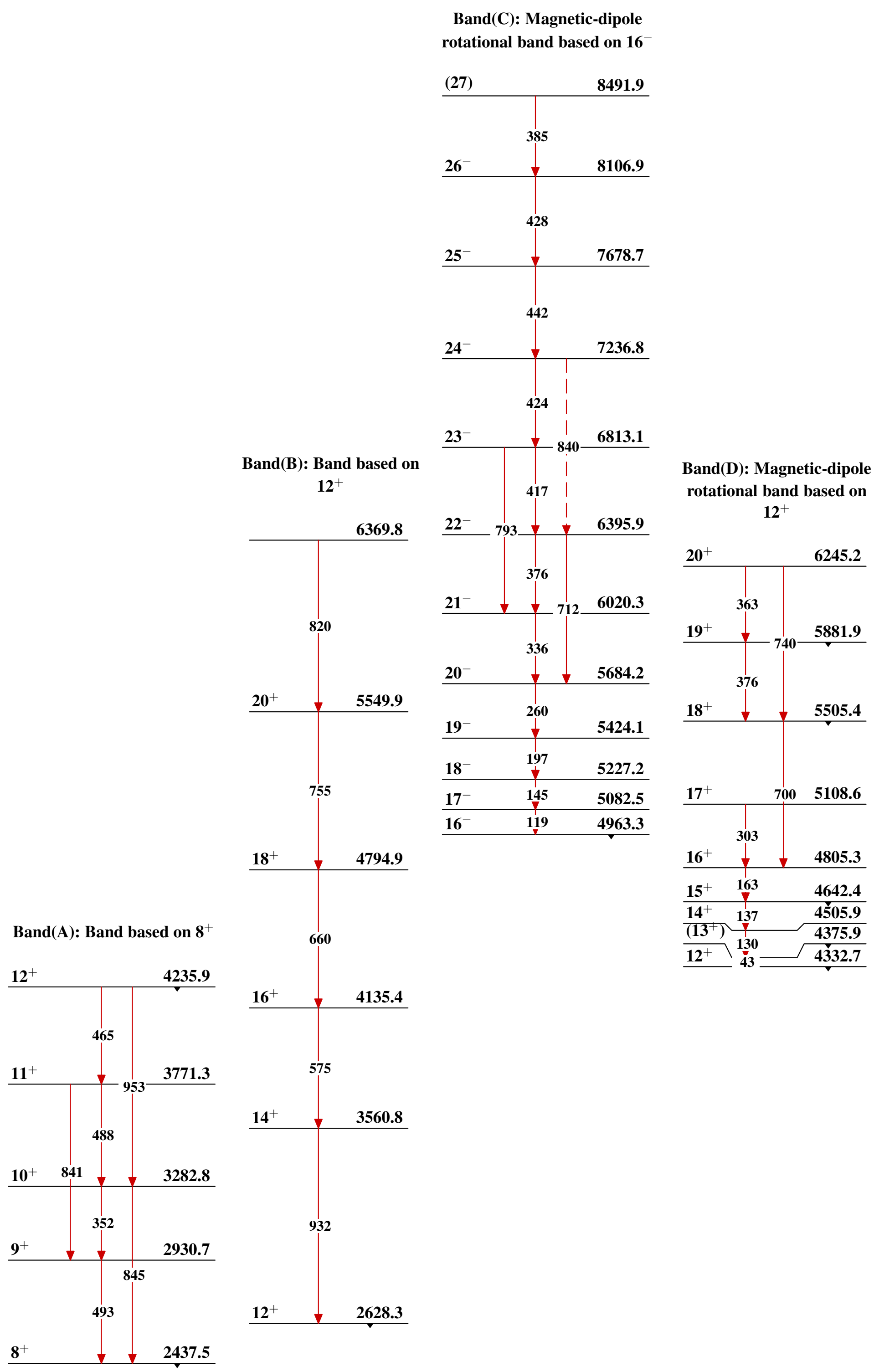
Intensities: Relative I_γ

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



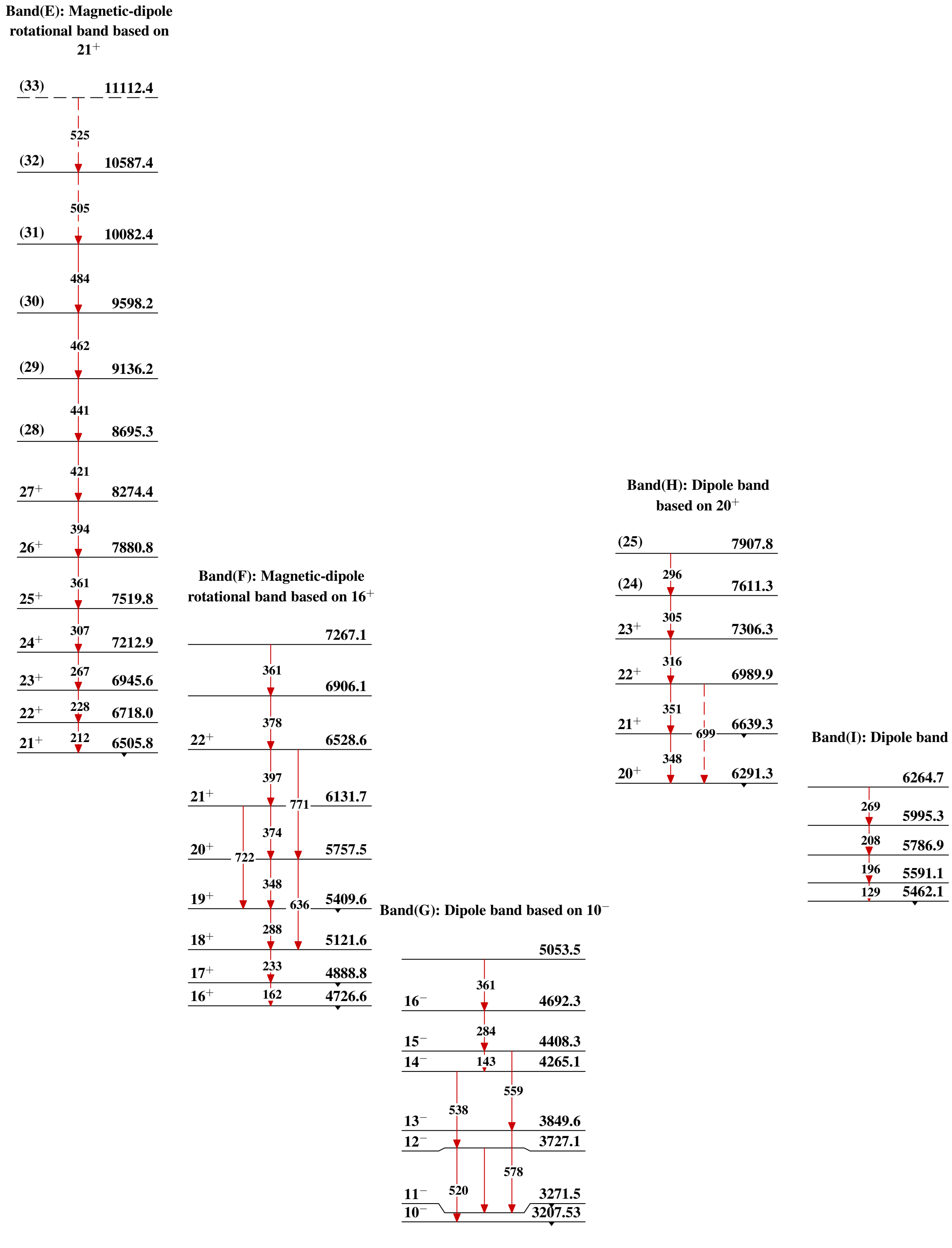
$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18



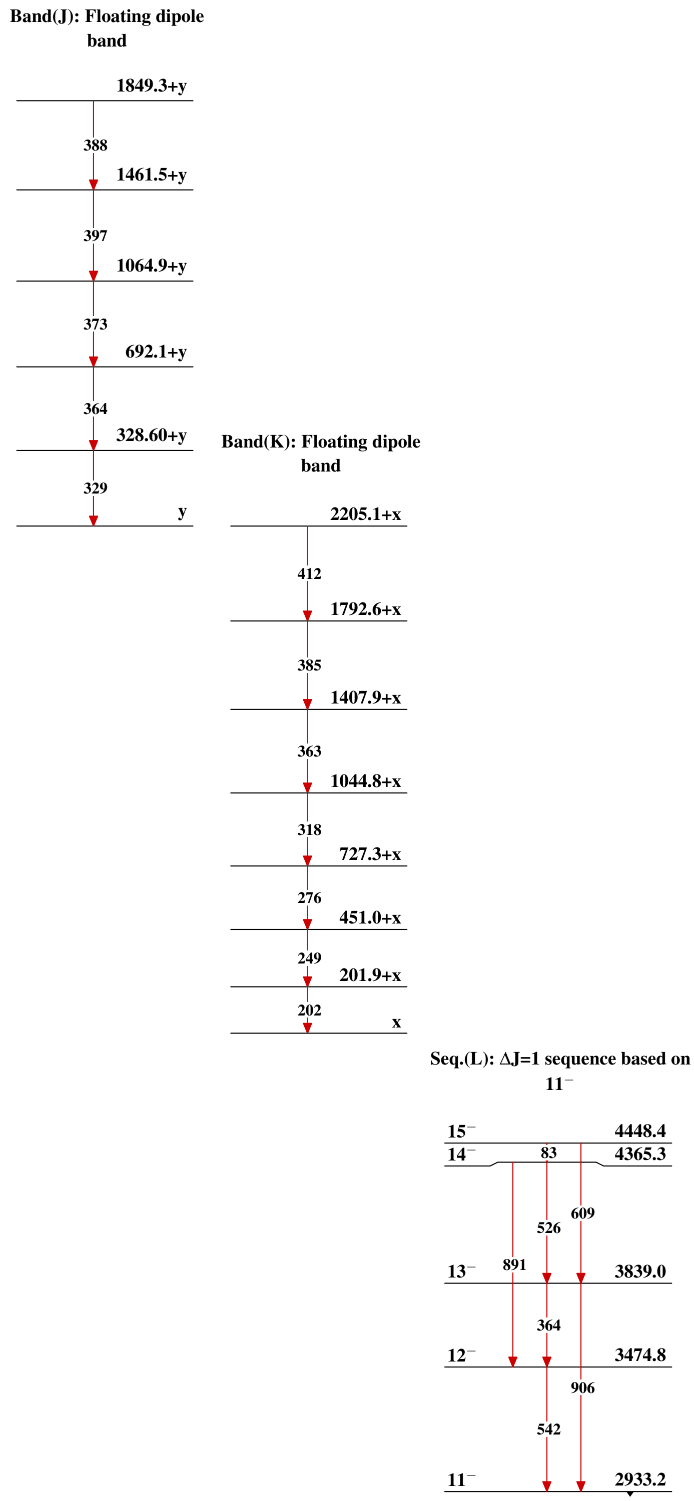
$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)



$^{194}_{82}Pb_{112}$

$^{184}W(^{16}O,6n\gamma),^{182}W(^{16}O,4n\gamma)$ 2002Ka01,1998Ka59,1986Pa18 (continued)



$^{194}_{82}Pb_{112}$