Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Q(β^-)=−581.3 *12*; S(n)=7192.0 *12*; S(p)=8403 *14*; Q(α)=1116 *6* 2021Wa16

Other Reactions:

Isotope shift data: see, e.g., 1988Au04, 1994Ji02, 1995Au08.

^{186}W Levels

Cross Reference (XREF) Flags

A	^{186}Ta β^- decay	E	^{186}W(n,n′γ)	I	^{186}W(^{136}Xe,^{136}Xe′γ)
B	^{186}Re ε decay (3.7185 d)	F	Coulomb excitation	J	^{186}W(^{238}U,^{238}U′γ): delayed γ′s
C	^{186}W(γ,γ′)	G	^{186}W(d,d′), (p,p′), (α,α′)		
D	^{186}W(n,n′)	H	^{184}W(t,p)		

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0[&]	0$^+$	stable[@]	ABCDEFGHIJ	Δ<r^2>(^{186}W−^{184}W)=0.085 fm^2 *4* (1994Ji02).
122.632[&] *15*	2$^+$	1.040 ns *10*	ABCDEFGHIJ	μ=+0.621 *17* Q=−1.6 *3* μ: from Mossbauer and recoil into gas or vacuum (2020StZV, based on data of 1976St23). Other: 0.62 *3* from g-factor ratio in Coulomb excitation (1991St04). Q: from Coulomb excitation reorientation (2021StZZ, from 1977RuZV). Other data: Q/Q(2$^+$ ^{182}W)=0.882 *17* (1968Pe06), 0.908 *24* (1969Ch23), 0.906 *18* (1971Ob02). Q<0 (1973Kl08). T$_{1/2}$: Weighted ave. of 1.036 ns *10* (1975Ka11 – ^{186}Ta β^- decay), 1.08 ns *3* from B(E2)=3.42 *5* (see Coulomb Exci. dataset), 1.12 ns *7* (p,p′γ) (1959Bi10), and 1.01 ns *4* (α,α′γ) (1962Bi05) – considered following the systematics of B(E2) 2$^+$ → 0$^+$ values of neighboring even-even W isotopes (see 2016Pr01). Others: 1.30 ns *21* (1967As03), 1.116 ns *21* pulsed beam (1967Ku07); 1.38 ns *12* (1970Me09, Mossbauer); 1.39 ns *12* (1971Ob02, Mossbauer); ≥1.15 ns *6* (1972Hi14, Mossbauer) – all are listed in Coul. Exci. dataset. J$^\pi$: direct E2 Coulomb excitation from 0$^+$.
396.551[&] *18*	4$^+$	36.4 ps *25*	A DEFGHIJ	μ=+1.28 *10*; Q=−2.6 *13* B(E4)↑=0.14 *+15−10* μ: from transient field integral PAC (2020StZV – from 1985St07); relative to ^{186}W(123 keV level). Q: from Coulomb excitation reorientation (2021StZZ – from 1970McZQ). B(E4)↑: from Coulomb excitation. T$_{1/2}$: from B(E2)=1.63 *11* in Coulomb excitation. Other: 38 ps *3* (1986Bi13 – Coul. Exci. J$^\pi$: stretched E2 274γ to 2$^+$; Coulomb excited member of g.s. band.
737.960[a] *20*	2$^+$	4.78 ps *16*	A CDEFGHIJ	μ=+0.39 *8* Q=+1.3 *3* μ: from transient field integral PAC (2020StZV, from 1985St07); relative to ^{186}W(123 keV level). Q: from Coulomb excitation reorientation (2021StZZ, from 1977Ob02). Other: 1.3 *3* (2014StZZ from revised value of 1.2 *3* (1977Mc11). Opposite signs in 2016St14 compared to those in 1977Ob02 and 1977Mc11. 0.7 *4* (1970McZQ). T$_{1/2}$: from B(E2)=0.140 *4* in Coulomb excitation.

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Adopted Levels, Gammas (continued)

^{186}W Levels (continued)

E(level)[†]	J$^{\pi}$	T$_{1/2}$	XREF	Comments
				J$^{\pi}$: direct E2 Coulomb excitation from 0$^+$.
809.26[&] 3	6$^+$	4.0 ps 3	A EFGHIJ	μ=+1.9 4 μ: from transient field integral PAC (2020StZV, from 1985St07); relative to ^{186}W(123 keV level). T$_{1/2}$: from B(E2)=1.70 12 in Coulomb excitation. J$^{\pi}$: E2 412γ to 4$^+$ 396; Coulomb excited member of g.s. band.
862.286[b] 21	3$^+$		A DEF IJ	J$^{\pi}$: E1 183γ from 3$^-$ 1045; D+Q gammas to 2$^+$ and 4$^+$.
883.597[e] 25	(0$^+$)		A EFG I	J$^{\pi}$: from σ(90°)/σ(125°) in (d,d′).
952.745[c] 24	(2)$^-$	0.193 ns 15	A DEF IJ	J$^{\pi}$: E1 215γ to 2$^+$ 738; M1+E2 92.7γ from 3$^-$ 1045. T$_{1/2}$: from ^{186}Ta β^- decay (1975Ka11).
1006.734[a] 20	4$^+$		A EFG IJ	J$^{\pi}$: stretched E2 884γ to 2$^+$; D+Q 610γ to 4$^+$. 2$^+$ is favored by σ ratio in (d,d′), however.
1014.97[‡] 10	(2$^+$,3,4$^+$)		A	J$^{\pi}$: gammas to 2$^+$ and 4$^+$.
1030.234[e] 16	2$^+$		A dEFG I	XREF: d(1035). J$^{\pi}$: E2 1030γ to g.s.; (M1+E2) 908γ to 2$^+$; Q 634γ to 4$^+$. 4$^+$ from σ(90°)/σ(125°) in (d,d′); However, note that in (d,d′), β^- decay and one (n,n′γ) study, this level has been designated as the 4$^+$ member of the γ band.
1045.401[d] 20	3$^-$		A dEFGHIJ	B(E3)↑=0.101 8 XREF: d(1035). J$^{\pi}$: direct E3 Coulomb excitation from 0$^+$.
1150[f] 2	(0$^+$)		G	J$^{\pi}$: from σ ratio in (d,d′).
1171.63[c] 4	(4)$^-$		A E IJ	J$^{\pi}$: 218.93γ Q to (2)$^-$; D(+Q) 309γ to 3$^+$; band assignment.
1197.30[b] 3	5$^+$		EF I	J$^{\pi}$: Q γ to 3$^+$; largely quadrupole D+Q 801γ to 4$^+$; band assignment in multiple Coulomb excitation.
1279.19[‡] 23	(1,2,3)		A	J$^{\pi}$: gammas to 2$^+$ and 2$^-$.
1285.419[f] 21	2$^+$	4.0 ps 4	A EFG	J$^{\pi}$: direct E2 Coulomb excitation from 0$^+$. T$_{1/2}$: from B(E2) and branching in Coulomb excitation.
1298.93[e] 3	4$^+$		A E G I	J$^{\pi}$: D+Q 902γ to 4$^+$; stretched E2 1176γ to 2$^+$. 1973Gu02 report (^{186}Ta β-decay) a 1298 keV γ-ray from this level. The placement is not consistent with the assigned J$^{\pi}$=4$^+$ and not adopted. Reported peak may be due to summing.
1322.137[d] 25	5$^-$		E g IJ	J$^{\pi}$: 276.72γ Q to 3$^-$; band assignment.
1322.41 19	(2$^+$)		A g	J$^{\pi}$: 1322γ to 0$^+$; 460γ to 3$^+$; possible 316γ to 4$^+$ 1006 level.
1349.0[&] 4	8$^+$	1.08 ps 7	EF I	T$_{1/2}$: from B(E2) in Coulomb excitation. J$^{\pi}$: E2 to 6$^+$; Coulomb excited member of g.s. band.
1398.08[a] 4	6$^+$		EFG IJ	J$^{\pi}$: stretched Q gammas to 4$^+$; 589γ to 6$^+$.
1453.449? 23			E	J$^{\pi}$: gammas to 2$^+$ and 3$^+$, so J$^{\pi}$=(1$^+$,2,3,4$^+$). 2$^+$ favored by 1988GoZC in (n,n′γ).
1458.38? 4			E	J$^{\pi}$: gammas to 2$^+$, so J$^{\pi}$=(0$^+$,1,2,3,4$^+$). 3$^+$ favored by 1988GoZC in (n,n′γ).
1463.42 15	(2$^+$,3$^+$)	<0.1 ns	A	J$^{\pi}$: gammas to 3$^-$; (E1) 511γ to 2$^-$ 953 level. T$_{1/2}$: from ^{186}Ta β^- decay (1975Ka11). Presumed to differ from 1463.8 level in (n,n′γ) based on γ branching.
1463.77 3	(2$^-$,3$^-$,4$^-$)		E	J$^{\pi}$: (M1+E2) 418γ to 3$^-$; possible γ to (4$^-$). presumed to differ from 1463.4 level in β^- decay based on γ branching.
1514.64[c] 25	(6)$^-$		I	J$^{\pi}$: 343γ to (4)$^-$, band assignment.
1517.2[g] 6	(7$^-$)	18 μs 1	J	J$^{\pi}$: gammas to 6$^+$ and (5$^-$); proposed as bandhead for K$^{\pi}$=7$^-$ configuration based on T$_{1/2}$ and model calculation of level energy (1998Wh02). T$_{1/2}$: from (^{238}U,^{238}U′γ): delayed γ′s.

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Adopted Levels, Gammas (continued)

^{186}W Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
1521.32 *3*	(4$^+$)		A E G	J^π: stretched Q 783γ to 2$^+$; γ to 4$^+$.
1532.32 *3*	2$^{(+)}$,3$^{(+)}$		E	J^π: (M1+E2) 1409.7γ to 2$^+$; D gammas to 2$^-$ and 3$^-$.
1563.37 *3*	1		E	J^π: D 1563γ to 0$^+$; D+Q 1440.75γ to 2$^+$.
1607.52 *5*	(2$^+$,3,4$^+$)		E gh	J^π: gammas to 4$^+$ and 2$^+$.
1608.07 *10*	(2$^+$,3)		A gh	J^π: gammas to 2$^+$ and 2$^-$ and 4$^+$.
1628.27 *5*	(3$^-$,5$^-$)		E g	J^π: significantly mixed (M1+E2) 457γ to 4$^-$; possibly stretched Q γ to 3$^-$. E(level): see comment on 1628.4 level.
1628.40 *18*	(2$^+$,3,4$^+$)		A g	J^π: gammas to 2$^+$ and 4$^+$. E(level): assumed to differ from 1628.3 level excited in (n,n′γ) because three gammas which deexcite this level in β^- decay are absent in (n,n′γ).
1642.46 *5*	(3,4)		E GH	XREF: E(?). J^π: D+Q gammas to 3$^+$ and 4$^+$, γ to 4$^+$.
1652.76[b] *19*	7$^+$		I	
1661.39 *17*	(2$^-$,3$^-$)	4.92 ns *10*	A	$T_{1/2}$: from ^{186}Ta β^- decay (1975Ka11). J^π: 339γ to (2$^+$) 1322 level; 800γ to 3$^+$ 862 level; E1 γ to (2$^+$,3$^+$) 1463 level.
1672.4[e] *3*	6$^+$		I	
1678 *5*			G	
1709.74 *3*	3		E	J^π: D(+Q) gammas to 2$^+$ and 4$^+$.
1713.5[d] *4*	(7$^-$)		I	J^π: 391.4γ to 5$^-$, band assignment.
1722 *4*			GH	
1737.5[g] *10*	(8$^-$)		J	J^π: γ to (7$^-$); band assignment.
1829.4 *4*	(2$^+$,3,4$^+$)		A	J^π: 1093γ to 2$^+$; 823γ to 4$^+$ 1006 level.
1903.95[a] *22*	8$^+$		F I	J^π: band assignment in multiple Coulomb excitation.
1979.0[c] *5*	(8)$^-$		I	J^π: 464γ to (6)$^-$, band assignment.
1993 *4*			GH	
2001.9[&] *5*	10$^+$	0.49 ps *+14−5*	FG I	$T_{1/2}$: from B(E2) in Coulomb excitation. J^π: E2 to 8$^+$; Coulomb excited member of g.s. band.
2059 *4*			GH	
2116 *5*			H	
2117.8[h] *10*	(9$^-$)		J	J^π: gammas to (8$^-$) and (7$^-$); band assignment.
2142.7[e] *5*	8$^+$		I	
2166.5 *7*			A	1429γ to 2$^+$ 738; 1213γ to (2)$^-$ 952 level.
2212.0[d] *6*	(9$^-$)		I	J^π: 498.5γ to (7$^-$), band assignment.
2220.1[b] *4*	9$^+$		I	
2270.5 *5*			A GH	
2285.8[h] *15*	(10$^-$)		J	J^π: γ to (9$^-$); band assignment.
2339 *4*			GH	
2378 *9*			G	
2511.0[a] *4*	10$^+$		F I	J^π: 607.1 Q to 8$^+$, band assignment.
2522.8[h] *17*	(11$^-$)		J	J^π: γ to (10$^-$); band assignment.
2555.8[c] *7*	(10)$^-$		I	J^π: 576.8γ to (8)$^-$, band assignment.
2556.8 *7*	1[#]		C	
2588 *10*			G	
2672.8? *20*			J	J^π: (11$^+$) in (^{238}U,^{238}U′γ).
2707.1[e] *7*	10$^+$		I	
2750.4[&] *7*	(12$^+$)	0.20 ps *+6−2*	F I	$T_{1/2}$: from B(E2) in Coulomb excitation. J^π: band assignment in multiple Coulomb excitation.
2806.5[d] *7*	(11$^-$)		I	J^π: 594.5γ to (9$^-$), band assignment.
2837.8[h] *17*	(12$^-$)		J	J^π: gammas to (11$^-$) and (10$^-$); band assignment.

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Adopted Levels, Gammas (continued)

^{186}W Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
2863.8 *7*	1[#]		C	
2887.3[b] *6*	11$^+$		I	
3035.8 *7*	1[#]		C	
3055.8 *7*	(1)[#]		C	
3067.8 *7*	(1)[#]		C	
3143.8 *20*			J	J^π: (13$^+$) in (^{238}U,^{238}U$'\gamma$).
3171.8 *7*	1[#]		C	
3188.2[a] *5*	12$^+$		F I	J^π: band assignment in multiple Coulomb excitation.
3237.8[c] *8*	(12)$^-$		I	J^π: 682.0γ to (10)$^-$, band assignment.
3317.8 *7*	1[#]		C	
3362.8 *21*			J	J^π: (14$^+$) in (^{238}U,^{238}U$'\gamma$).
3363.8 *7*	1[#]		C	
3371.2[e] *8*	12$^+$		I	
3378.8 *7*	1[#]		C	
3393.8 *7*	1[#]		C	
3428.0 *10*	1[#]		C	
3477.0 *10*	1[#]		C	
3483.3[d] *8*	(13$^-$)		I	J^π: 676.8γ to (11$^-$), band assignment.
3533.8 *22*			J	J^π: (14$^+$) in (^{238}U,^{238}U$'\gamma$).
3542.8 *21*	(16$^+$)	7.5 s *+48−35*	J	E(level): Other: 3560 *59* − from measured mass difference between isomer and ground state in 2012Re19. J^π: possible configuration: (π 5/2[402])+(π 9/2[514])+(ν 7/2[503])+(ν 11/2[615]) (1998Wh02). $T_{1/2}$: From 2012Re19 − ^{9}Be(^{197}Au,x). Other: 3 ms < $T_{1/2}$ < 30 s (1998Wh02).
3561.9[&] *8*	(14$^+$)	0.183 ps *20*	F I	$T_{1/2}$: from B(E2) in Coulomb excitation. J^π: band assignment in multiple Coulomb excitation.
3913.3[a] *7*	14$^+$		I	
6417.3 *6*	1$^-$	0.0075 eV *9*	C	J^π: E1 6417γ to 0$^+$ g.s. $T_{1/2}$: from (γ,γ').

† From least-squares adjustment of adopted Eγ, allowing ΔE=1 keV for Eγ values to which authors did not assign an uncertainty.

‡ Existence of level is inconsistent with (n,n$'\gamma$) because the strongest gammas deexciting it were either absent or differently placed in an (n,n$'\gamma$) study which was expected to excite all levels below E≈1200 for which J=1 to 4 (1978Av05). This level has been proposed in β^- decay alone.

From γ correlations in (γ,γ').

@ From search for double β decay: 2ν2β- decay to g.s. of ^{186}Os: ≥2.3(2.8)×10^{19} y at 90%(68%) confidence limit (C.L.) (2009Be27,2010Be41,2011Be39), ≥2.6(4.1)×10^{18} y at 90%(68%) C.L. (2003Da09), ≥3.7(5.3)×10^{18} y at 90%(68%) C.L. (2003Da24), ≥1.4(2.5)×10^{18} y at 90%(68%) C.L. (2005Da47); 2ν2β- decay to 1st excited state at 137 of ^{186}Os: ≥1.8(3.6)×10^{20} y at 90%(68%) C.L. (2009Be27,2010Be41,2011Be39), ≥1.0(1.3)×10^{19} y at 90%(68%) C.L. (2003Da09,2003Da24); 0ν2β- decay to g.s. of ^{186}Os: ≥2.1(4.2)×10^{20} y at 90%(68%) C.L. (2009Be27,2010Be41), ≥1.0×10^{21} y (2011Be39), ≥1.1(1.6)×10^{21} y at 90%(68%) C.L. (2003Da09), ≥1.1(2.1)×10^{21} y at 90%(68%) C.L. (2003Da24), ≥1.1(1.7)×10^{19} y at 90%(68%) C.L. (2005Da47), ≥2.7×10^{20} y (1995Ge14); 0ν2β- decay to 1st excited state at 137 of ^{186}Os: ≥2.1(4.2)×10^{20} y at 90%(68%) C.L. (2009Be27,2010Be41), ≥9.0×10^{20} y (2011Be39), ≥1.1(1.6)×10^{21} y at 90%(68%) C.L. (2003Da09), ≥1.1(2.0)×10^{21} y at 90%(68%) C.L. (2003Da24), ≥2.4×10^{20} y (1995Ge14); 0ν2β- M1 decay to g.s. of ^{186}Os: ≥5.8(6.8)×10^{19} y at 90%(68%) C.L. (2009Be27,2010Be41,2011Be39), ≥1.2(1.4)×10^{20} y at 90%(68%) C.L. (2003Da09,2003Da24); 0ν2β- M2 decay to g.s. of ^{186}Os: ≥1.1×10^{19} y (2011Be39); 0ν2β- bM decay to g.s. of ^{186}Os:

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Adopted Levels, Gammas (continued)

^{186}W Levels (continued)

$\geq 1.1\times10^{19}$ y (2011Be39); From search for α decay: $\geq 2.82\times10^{21}$ y (2004Co26), $\geq 1.7\times10^{20}$ y (2003Da05,2003Bi13), $\geq 2.7\times10^{19}$ y (2003Ce01), $\geq 6.5\times10^{18}$ y (1995Ge17,1997Ge15), each at 90% C.L., $\geq 2.3\times10^{17}$ y (1960Be13). Other: $>6\times10^{15}$ y (from specific activity, 1952Ri01).

[&] Band(A): $K^{\pi}=0^{+}$ g.s. band (1989Ku04). Rotational parameters: A=20.3, B=−0.03.

[a] Band(B): $K^{\pi}=2^{+}$: α=0. γ band (1989Ku04). Rotational parameters: A=20, B=−0.03. The 1006 level is adopted as the J=4 member here, contrary to some earlier designations of the 1030 level (now assigned 2^{+}) as that member.

[b] Band(b): $K=2^{+}$ band: α=1. γ band (2021Pr11).

[c] Band(C): Possible $K^{\pi}=2^{-}$ band: α=0. Octupole band (2021Pr11). Rotational parameters: A=15, B=0.02.

[d] Band(c): $K=2^{-}$ band: α=1. Octupole band (2021Pr11).

[e] Band(D): Possible K=0 β band (1988GoZC). Rotational parameters: A=26, B=−0.03.

[f] Band(E): Possible $K^{\pi}=0^{+}$ band (1988GoZC). Rotational parameter: A=22.6.

[g] Band(F): $K^{\pi}=7^{-}$, (π 9/2[514])+(π 5/2[402]) (1998Wh02). Rotational parameter: A=13.8. An alternative (ν 3/2[512])+(ν 11/2[615]) configuration cannot be excluded (1998Wh02), but its calculated energy is somewhat high.

[h] Band(G): π=(−), high-K band (1998Wh02). Rotational parameters: A=6.2, B=−0.05.

Adopted Levels, Gammas (continued)

$\gamma(^{186}W)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[f]	δ[f]	α[h]	Comments
122.632	2^+	122.64[#] 2	100	0.0	0^+	E2		1.767	B(E2)(W.u.)=112.4 15 α(K)=0.584 9; α(L)=0.897 13; α(M)=0.226 4 α(N)=0.0533 8; α(O)=0.00734 11; α(P)=4.40×10^{-5} 7 E_γ: Other $E\gamma$: 122.3 1 from β^- decay. Mult.: from subshell ratios in ε decay.
396.551	4^+	273.93[#] 5	100	122.632	2^+	E2		0.1120	B(E2)(W.u.)=144 +11−10 α(K)=0.0725 11; α(L)=0.0301 5; α(M)=0.00738 11 α(N)=0.001751 25; α(O)=0.000253 4; α(P)=6.11×10^{-6} 9
737.960	2^+	341.0 10	≈0.9	396.551	4^+	[E2]		0.0584 10	α(K)=0.0409 7; α(L)=0.01341 24; α(M)=0.00325 6 α(N)=0.000772 14; α(O)=0.0001136 20; α(P)=3.58×10^{-6} 6 B(E2)(W.u.)=1.9 +12−10 Absent in (n,n′γ).
		615.31[#] 2	94[a] 3	122.632	2^+	M1+E2[g]	−11 +3−4	0.01293 24	B(M1)(W.u.)=8×10^{-5} +8−4; B(E2)(W.u.)=10.1 7 α(K)=0.01020 19; α(L)=0.00210 4; α(M)=0.000492 8 α(N)=0.0001177 19; α(O)=1.82×10^{-5} 3; α(P)=9.43×10^{-7} 19 Mult.,δ: from Coulomb excitation. Other δ: −4.1 5 from (n,n′γ).
		737.97[#] 8	100[#] 2	0.0	0^+	E2		0.00849	B(E2)(W.u.)=4.35 +28−26 α(K)=0.00682 10; α(L)=0.001288 18; α(M)=0.000299 5 α(N)=7.16×10^{-5} 10; α(O)=1.123×10^{-5} 16; α(P)=6.33×10^{-7} 9
809.26	6^+	412.69[#] 2	100	396.551	4^+	E2		0.0344	B(E2)(W.u.)=181 +15−13 α(K)=0.0253 4; α(L)=0.00697 10; α(M)=0.001672 24 α(N)=0.000398 6; α(O)=5.96×10^{-5} 9; α(P)=2.27×10^{-6} 4 E_γ: Other $E\gamma$: 412.0 2 in β^- decay.
862.286	3^+	465.70[#] 2	9.0[#] 7	396.551	4^+	D+Q[g]	−4.0 5		
		739.73[#] 8	100.0[#] 23	122.632	2^+	D+Q[g]	−7 2	0.0087 3	
883.597	(0^+)	760.96[#] 2	100	122.632	2^+				E_γ: Other $E\gamma$: 759.4 5 in β^- decay.
952.745	$(2)^-$	91.0 5	4.4 18	862.286	3^+	(E1)		0.478 10	B(E1)(W.u.)=5.5×10^{-5} +32−26 α(K)=0.388 8; α(L)=0.0694 15; α(M)=0.0158 4 α(N)=0.00374 8; α(O)=0.000561 12; α(P)=2.73×10^{-5} 6 Mult.: from intensity balance at the 952 level in ^{186}Ta β^- decay.
		214.75[#] 4	100 4	737.960	2^+	E1		0.0523	B(E1)(W.u.)=9.4×10^{-5} +11−10 α(K)=0.0434 6; α(L)=0.00687 10; α(M)=0.001560 22 α(N)=0.000371 6; α(O)=5.82×10^{-5} 9; α(P)=3.44×10^{-6} 5 Mult.: from α(K)exp, α(L)exp in ^{186}Ta β^- decay.
		830.11[#] 3	3.3[#] 3	122.632	2^+	(E1+M2)	+0.23 10	0.0044 18	B(E1)(W.u.)=5.1×10^{-8} +15−13; B(M2)(W.u.)=0.018 +26−13 α(K)=0.0037 15; α(L)=0.0006 3; α(M)=0.00013 6 α(N)=3.1×10^{-5} 14; α(O)=5.1×10^{-6} 23; α(P)=3.5×10^{-7} 16 I_γ: =3.5 6 in β^- decay, but 830γ may include a sum γ contribution there. Mult.: D+Q from $\gamma(\theta)$ in (n,n′γ); $\Delta\pi$ from decay scheme.

$^{186}_{74}W_{112}$-6

$\gamma(^{186}W)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[f]	δ[f]	α[h]	Comments
1006.734	4^+	144.5[b] 3	0.7[b] 1	862.286	3^+				
		268.85[#] 5	14.4[#] 10	737.960	2^+	Q			I_γ: Other: 24 9 from β^- decay.
		610.22[#] 2	100.0[#] 26	396.551	4^+	D+Q[g]	−1.21 10		
		884.08[#] 2	74[#] 6	122.632	2^+	E2		0.00579	α(K)=0.00472 7; α(L)=0.000827 12; α(M)=0.000191 3 α(N)=4.57×10^{-5} 7; α(O)=7.24×10^{-6} 11; α(P)=4.38×10^{-7} 7 Other Iγ: <12 from Coulomb excitation; 57 7 from β^- decay.
1014.97	$(2^+,3,4^+)$	277.0 1	100 20	737.960	2^+				E_γ: A γ with similar energy is placed between the 1322.1 and 1045 levels in (n,n′γ).
		618.3 3	40 20	396.551	4^+				E_γ: Absent in (n,n′γ).
		893.0 10	60 8	122.632	2^+				E_γ: Absent in (n,n′γ).
1030.234	2^+	146.6[b] 3	<3[b]	883.597	(0^+)				
		292.4[b] 6	14.4[b] 9	737.960	2^+				E_γ: Other: 292.97 multiply placed in (n,n′γ). I_γ: Other: 10.9 9 for triplet in (n,n′γ). Other: <400 for doublet in ^{186}Ta β^- decay.
		633.70[#] 2	61[#] 7	396.551	4^+	Q			E_γ: Other: 635.0 5 in β^- decay.
		907.58[#] 2	100[#] 9	122.632	2^+	(M1+E2)[g]	+7.1 3	0.00562	α(K)=0.00459 7; α(L)=0.000792 12; α(M)=0.000182 3 α(N)=4.37×10^{-5} 7; α(O)=6.95×10^{-6} 10; α(P)=4.28×10^{-7} 6 Mult.: D+Q from $\gamma(\theta)$ in (n,n′γ); δ implausibly large for $\Delta\pi$=yes.
		1030.23[#] 2	85[#] 7	0.0	0^+	E2		0.00425	α(K)=0.00349 5; α(L)=0.000582 9; α(M)=0.0001333 19 α(N)=3.20×10^{-5} 5; α(O)=5.11×10^{-6} 8; α(P)=3.24×10^{-7} 5 Absent in β^- decay.
1045.401	3^-	92.7 3	14.5 26	952.745	$(2)^-$	M1+E2	1.3 5	5.52 18	α(K)=2.4 10; α(L)=2.3 6; α(M)=0.58 16 α(N)=0.14 4; α(O)=0.019 5; α(P)=0.00024 10 Mult.,δ: from Coulomb excitation.
		183.08[#] 2	31 5	862.286	3^+	E1		0.0785	α(K)=0.0650 9; α(L)=0.01045 15; α(M)=0.00237 4 α(N)=0.000564 8; α(O)=8.79×10^{-5} 13; α(P)=5.04×10^{-6} 7 I_γ: Other: 48 3 in (n,n′γ). Mult.: from Coulomb excitation. δ(D+Q)=+0.02 2 from (n,n′γ).
		307.51[#] 6	100 5	737.960	2^+	E1		0.0216	α(K)=0.0180 3; α(L)=0.00276 4; α(M)=0.000626 9 α(N)=0.0001494 21; α(O)=2.37×10^{-5} 4; α(P)=1.482×10^{-6} 21 Mult.: from Coulomb excitation. δ(D+Q)=+0.02 3 from (n,n′γ). I_γ: other: 100 15 in (n,n′γ).
		649.5 5	≈0.3	396.551	4^+				E_γ: A comparable and more precise 650.25 11 γ unplaced in (n,n′γ). If considered, yields significant difference of the χ^2 compared to that of the χ^2 critical in the least squares fit.

$^{186}_{74}W_{112}$-7

Adopted Levels, Gammas (continued)

$\gamma(^{186}W)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[f]	δ[f]	α[h]	Comments
1045.401	3⁻	922.77[#] 2	12.5[#] 13	122.632	2⁺				I_γ: other: 11.9 26 (^{186}Ta β^- decay).
		(1045)		0.0	0⁺	[E3]			Mult.: 1045 level directly populated by E3 Coulomb excitation.
1171.63	(4)⁻	126.31[#] 20	8.3[#] 12	1045.401	3⁻				
		164.77[#] 7	15.9[#] 12	1006.734	4⁺				
		218.93[#] 6	41[#] 3	952.745	(2)⁻	Q			
		309.38[#] 8	100[#] 4	862.286	3⁺	D(+Q)	+0.02 2		
1197.30	5⁺	190.6[b] 3	<1[b]	1006.734	4⁺				
		335.04[#] 5	22.7[#] 17	862.286	3⁺	Q			
		388.17[#] 13	6.7[#] 7	809.26	6⁺				
		800.74[#] 2	100[#] 10	396.551	4⁺	D+Q	−8.0 8		
1279.19	(1,2,3)	327.2 5	100 33	952.745	(2)⁻				Absent in (n,n′γ).
		541.4 5	≈33	737.960	2⁺				Absent in (n,n′γ).
1285.419	2⁺	401.56[#] 17	5.8[#] 8	883.597	(0⁺)	[E2]			B(E2)(W.u.)=5.2 +10−9
		547.41[#] 3	40[#] 3	737.960	2⁺	D+Q			E_γ: Other: 546.3 5 in β^- decay. I_γ: Other: <24 in Coulomb excitation; ≈200 for poorly established 546.3γ in ^{186}Ta β^- decay (if the total I(547γ) is placed from this level).
		1162.81[#] 2	95[#] 9	122.632	2⁺	M1+E2[g]	+6 1	0.00344 7	B(M1)(W.u.)=3.7×10^{-5} +29−15; B(E2)(W.u.)=0.40 +10−8 α(K)=0.00284 6; α(L)=0.000457 8; α(M)=0.0001042 18 α(N)=2.50×10^{-5} 5; α(O)=4.02×10^{-6} 7; α(P)=2.64×10^{-7} 5; α(IPF)=1.88×10^{-6} 3 Mult.: from Coulomb excitation. δ: +13 +70−6 in Coulomb excitation, −0.25 5 or +6 1 in (n,n′γ). Other Iγ: 96 20 or 128 10 in Coulomb excitation.
		1285.40[#] 5	100[#] 10	0.0	0⁺	E2		0.00277	B(E2)(W.u.)=0.26 +6−5 α(K)=0.00229 4; α(L)=0.000361 5; α(M)=8.21×10^{-5} 12 α(N)=1.97×10^{-5} 3; α(O)=3.18×10^{-6} 5; α(P)=2.12×10^{-7} 3; α(IPF)=1.520×10^{-5} 22
1298.93	4⁺	268.5[b] 4	72[b] 3	1030.234	2⁺				
		292.2[b] 6	7.1[b] 6	1006.734	4⁺				E_γ,I_γ: Other: 292.97 and <44, respectively (n,n′γ).
		902.40[#] 3	51[#] 5	396.551	4⁺	D+Q[g]	+1.7 2		
		1176.27[#] 3	100[#] 10	122.632	2⁺	E2		0.00327	α(K)=0.00271 4; α(L)=0.000435 6; α(M)=9.93×10^{-5} 14 α(N)=2.38×10^{-5} 4; α(O)=3.83×10^{-6} 6; α(P)=2.51×10^{-7} 4; α(IPF)=2.66×10^{-6} 4
1322.137	5⁻	150.5[b] 3	9.9[b] 4	1171.63	(4)⁻				E_γ: Other: 150 (^{238}U,^{238}U′γ), absent in (n,n′γ).
		276.72[#] 2	100[#] 6	1045.401	3⁻	Q			

$^{186}_{74}W_{112}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{186}W)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[f]	δ[f]	α[h]	Comments
1322.137	5^-	315.44[#] *3*	50[#] *4*	1006.734	4^+	D(+Q)	−0.1 *3*	0.190 *16*	α(K)=0.158 *15*; α(L)=0.0248 *10*; α(M)=0.00564 *19* α(N)=0.00136 *5*; α(O)=0.000222 *10*; α(P)=1.58×10^{-5} *15*
1322.41	(2^+)	315.6 *2*	100 *17*	1006.734	4^+	[E2]		0.0731	α(K)=0.0499 *7*; α(L)=0.0177 *3*; α(M)=0.00431 *7* α(N)=0.001025 *15*; α(O)=0.0001496 *22*; α(P)=4.32×10^{-6} *6* I_γ: see comment on 315.44γ from 1322.1 level.
		440.0[&] *10*	53 *10*	883.597	(0^+)				
		460.0[j] *5*	≈17	862.286	3^+				Absent in (n,n′γ).
		1199.5[&] *10*	≈17	122.632	2^+				
		1322.0 *15*	≈20	0.0	0^+				Absent in (n,n′γ).
1349.0	8^+	540.0[a]	100	809.26	6^+	E2		0.01738	B(E2)(W.u.)=178 *+13−12* α(K)=0.01344 *19*; α(L)=0.00302 *5*; α(M)=0.000713 *10* α(N)=0.0001703 *24*; α(O)=2.61×10^{-5} *4*; α(P)=1.234×10^{-6} *18* Mult.: From Coulomb excitation.
1398.08	6^+	200.7[b] *3*	5.2[b] *2*	1197.30	5^+				
		391.46[#] *5*	100[#] *8*	1006.734	4^+	Q			
		588.70[#] *5*	54[#] *9*	809.26	6^+				
		1001.55[#] *6*	45[#] *4*	396.551	4^+	Q			
1453.449?		423.16[#j] *9*	11.5[#] *10*	1030.234	2^+				
		591.18[#j] *3*	31[#] *3*	862.286	3^+				
		715.45[#j] *3*	100[#] *9*	737.960	2^+				
		1330.84[#j] *3*	43[#] *5*	122.632	2^+				
1458.38?		720.42[#j] *9*	11.9[#] *16*	737.960	2^+				
		1335.74[#j] *3*	100[#] *11*	122.632	2^+				
1463.42	$(2^+,3^+)$	184.2 *3*	1.3 *7*	1279.19	(1,2,3)	[D,E2]		0.5 *4*	Absent in (n,n′γ).
		417.7 *2*	33 *3*	1045.401	3^-				γ in (n,n′γ) with similar Eγ (but inappropriate multipolarity for this placement) is placed from 1463.8 level.
		448.0 *11*	1.3 *7*	1014.97	$(2^+,3,4^+)$				Absent in (n,n′γ).
		457.0 *11*	5.7 *7*	1006.734	4^+				γ in (n,n′γ) with similar energy is placed from 1628 level.
		510.6 *5*	100 *7*	952.745	$(2)^-$	(E1)		0.00679	α(K)=0.00570 *8*; α(L)=0.000843 *12*; α(M)=0.000190 *3* α(N)=4.55×10^{-5} *7*; α(O)=7.32×10^{-6} *11*; α(P)=4.88×10^{-7} *7* Mult.: from α(K)exp in ^{186}Ta β^- decay. Absent in (n,n′γ).
		601.0 *5*	1.3 *7*	862.286	3^+				Absent in (n,n′γ).
		726.0 *5*	2.7[d] *7*	737.960	2^+				Absent in (n,n′γ).

$^{186}_{74}W_{112}$-9

$\gamma(^{186}W)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[f]	δ[f]	α[h]	Comments
1463.77	$(2^-,3^-,4^-)$	292.97[i#]	<35[#]	1171.63	$(4)^-$				
		418.37[#] *2*	100[#] *7*	1045.401	3^-	(M1+E2)	−4.7 *3*	0.0357 *6*	α(K)=0.0267 *5*; α(L)=0.00688 *10*; α(M)=0.001643 *24* α(N)=0.000391 *6*; α(O)=5.90×10^{-5} *9*; α(P)=2.43×10^{-6} *5* Mult.: D+Q from $\gamma(\theta)$ in (n,n′γ); δ implausibly large for $\Delta\pi$=yes.
1514.64	$(6)^-$	192.5[b] *3*	<5[b]	1322.137	5^-				
		343.0[b] *4*	100[b]	1171.63	$(4)^-$				
1517.2	(7^-)	119[‡]		1398.08	6^+				
		195[‡]	[e]	1322.137	5^-	[E2]		0.336	α(K)=0.181 *3*; α(L)=0.1178 *17*; α(M)=0.0293 *5* α(N)=0.00694 *10*; α(O)=0.000977 *14*; α(P)=1.423×10^{-5} *20* E_γ: possibly the unplaced 195.36 *5* transition of (n,n′γ).
		708[‡]		809.26	6^+				E_γ: possibly the unplaced 708.67 *8* transition of (n,n′γ); I(709γ):I(195γ)=0.25 *8*:1.00 *10* in (n,n′γ).
1521.32	(4^+)	488.0 *15*		1030.234	2^+				E_γ: Placed by 1973Gu02 from 1520 level. A comparable 486.93 *4* γ in (n,n′γ) is placed from a 1532 level.
		567.2 *3*		952.745	$(2)^-$				E_γ: Placement from 1973Gu02 (^{186}Ta β- decay). A comparable and more precise 567.10 *2* γ is unplaced in (n,n′γ). If considered, yields significant difference of the χ^2 compared to that of the χ^2 critical in the least squares fit.
		659.05[#] *5*	44[#] *4*	862.286	3^+				
		783.34[#] *3*	100[#] *13*	737.960	2^+	Q			
		1124.53[#] *16*	17.9[#] *18*	396.551	4^+				
		1399.26[#] *13*	≈0.8	122.632	2^+				E_γ: Other: 1398 *1* and placement from 1973Gu02 (^{186}Ta β- decay). Unplaced in (n,n′γ).
1532.32	$2^{(+)},3^{(+)}$	486.93[#] *4*	33[#] *3*	1045.401	3^-	D(+Q)	+0.04 *6*		
		579.57[#] *2*	100[#] *10*	952.745	$(2)^-$	D(+Q)	+0.01 *2*		
		1409.71[#] *4*	68[#] *6*	122.632	2^+	(M1+E2)	+8.5 *8*	0.00238	α(K)=0.00195 *3*; α(L)=0.000301 *5*; α(M)=6.83×10^{-5} *10* α(N)=1.641×10^{-5} *24*; α(O)=2.65×10^{-6} *4*; α(P)=1.81×10^{-7} *3*; α(IPF)=4.22×10^{-5} *6* Mult.: D+Q from $\gamma(\theta)$ in (n,n′γ); δ implausibly large for $\Delta\pi$=yes.
1563.37	1	1440.75[#] *3*	100[#] *9*	122.632	2^+	D+Q			δ: +0.05 *4* or −4.1 *6* from (n,n′γ).
		1563.34[#] *4*	69[#] *7*	0.0	0^+	D			
1607.52	$(2^+,3,4^+)$	561.96[#] *13*	13.4[#] *21*	1045.401	3^-				
		1210.98[#] *4*	100[#] *9*	396.551	4^+	Q(+D)			δ=+0.10 *5* or 1/δ=−0.01 *5* from (n,n′γ).
		1484.62[#]	<65[#]	122.632	2^+				E_γ,I_γ: for multiplet in (n,n′γ).
1608.07	$(2^+,3)$	309.2 *1*	100 *11*	1298.93	4^+				
		654.9 *5*	67 *22*	952.745	$(2)^-$				

γ(^{186}W) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[f]	δ[f]	α[h]	Comments
1608.07	(2$^+$,3)	745.0 *10*	≈11	862.286	3$^+$				
		869.5 *5*	≈11	737.960	2$^+$				
		1210.0[c] *15*	≈11[c]	396.551	4$^+$				
		1485.0[c] *15*	≈11[c]	122.632	2$^+$				
1628.27	(3$^-$,5$^-$)	456.63[#] *4*	100[#] *9*	1171.63	(4)$^-$	(M1+E2)	−8 *1*	0.0271 *5*	α(K)=0.0205 *4*; α(L)=0.00510 *8*; α(M)=0.001213 *18* α(N)=0.000289 *5*; α(O)=4.38×10^{-5} *7*; α(P)=1.86×10^{-6} *4* Mult.: D+Q from $\gamma(\theta)$ in (n,n′γ); δ implausibly large for E1+M2.
		582.84[#] *6*	76[#] *7*	1045.401	3$^-$	Q			
		621.71[#] *10*	43[#] *4*	1006.734	4$^+$				
1628.40	(2$^+$,3,4$^+$)	583.2 *2*	100 *14*	1045.401	3$^-$				Line with similar Eγ is placed from 1628.3 level in (n,n′γ).
		596.5 *5*	≈23	1030.234	2$^+$				Absent in (n,n′γ).
		622.0 *5*		1006.734	4$^+$				Line with similar Eγ is placed from 1628.3 level in (n,n′γ).
		1231.0 *15*	≈14	396.551	4$^+$				Absent in (n,n′γ).
		1507.0[j] *15*		122.632	2$^+$				Absent in (n,n′γ).
1642.46	(3,4)	780.08[#] *8*	100[#] *14*	862.286	3$^+$	D+Q	+0.25 *2*		
		1245.92[#] *5*	96[#] *9*	396.551	4$^+$	D+Q	+0.40 *10*		
		1520.2[#] *2*	21[#] *4*	122.632	2$^+$				
1652.76	7$^+$	254.6[b] *3*	<1[b]	1398.08	6$^+$				
		455.6[b] *4*	100[b]	1197.30	5$^+$	Q[b]			
		843.4[b] *4*	49.4[b] *23*	809.26	6$^+$	D[b]			
1661.39	(2$^-$,3$^-$)	197.9 *1*	100	1463.42	(2$^+$,3$^+$)	E1		0.0643	B(E1)(W.u.)=4.71×10^{-6} *+20−19* α(K)=0.0533 *8*; α(L)=0.00851 *12*; α(M)=0.00193 *3* α(N)=0.000460 *7*; α(O)=7.18×10^{-5} *11*; α(P)=4.18×10^{-6} *6* Mult.: from α(K)exp, α(L)exp in ^{186}Ta β^- decay.
		338.5 *10*	1.0 *5*	1322.41	(2$^+$)				
		383.2 *5*	1.0 *5*	1279.19	(1,2,3)				
		646.6 *10*	≈0.3	1014.97	(2$^+$,3,4$^+$)				
		709.0 *10*	2.0[d] *5*	952.745	(2)$^-$				
		799.8 *5*	4.8 *5*	862.286	3$^+$				
1672.4	6$^+$	373.6[b] *4*	100[b]	1298.93	4$^+$				
		1275.7[b] *4*	66[b] *3*	396.551	4$^+$				
1709.74	3	1313.16[#] *3*	87[#] *8*	396.551	4$^+$	D(+Q)	−0.02 *3*		
		1587.15[#] *4*	100[#] *10*	122.632	2$^+$	D(+Q)	−0.01 *2*		
1713.5	(7$^-$)	391.4 *4*	100	1322.137	5$^-$				

$^{186}_{74}W_{112}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{186}W)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[f]	α[h]	Comments
1737.5	(8^-)	220[‡]		1517.2	(7^-)			
1829.4	$(2^+,3,4^+)$	814.0 *5*	≈50[d]	1014.97	$(2^+,3,4^+)$			
		823.0 *5*	≈50	1006.734	4^+			
		1092.5 *10*	≈100	737.960	2^+			
1903.95	8^+	251.2 *3*	<1	1652.76	7^+			
		506.1 *4*	100	1398.08	6^+	Q		E_γ: Other: 509 *5* (Coulomb excitation).
		554.9 *4*	6.6 *2*	1349.0	8^+	D		E_γ: Other: 559 *5* (Coulomb excitation).
		1094.5 *4*	5.0 *2*	809.26	6^+	Q		
1979.0	$(8)^-$	464.4 *4*	100	1514.64	$(6)^-$			
2001.9	10^+	653.2[a]	100	1349.0	8^+	E2	0.01113	B(E2)(W.u.)=152 *+18−34* α(K)=0.00883 *13*; α(L)=0.001771 *25*; α(M)=0.000414 *6* α(N)=9.90×10^{-5} *14*; α(O)=1.539×10^{-5} *22*; α(P)=8.17×10^{-7} *12* Mult.: from Coulomb excitation.
2117.8	(9^-)	380[‡]	[e]	1737.5	(8^-)			
		601[‡]		1517.2	(7^-)			
2142.7	8^+	470.3[b] *4*	100[b]	1672.4	6^+			
2166.5		703.0 *10*	≈100	1463.42	$(2^+,3^+)$			
		1213.0 *15*	≈40	952.745	$(2)^-$			
		1429 *1*	≈50	737.960	2^+			
2212.0	(9^-)	498.5[b] *4*	100[b]	1713.5	(7^-)			
2220.1	9^+	567.3[b] *4*	100[b]	1652.76	7^+	Q[b]		
		871.2[b] *4*	15[b] *4*	1349.0	8^+			
2270.5		442.0 *10*	100 *19*	1829.4	$(2^+,3,4^+)$			
		641.6 *10*	≈44	1628.40	$(2^+,3,4^+)$			
		947.5 *10*	≈31	1322.41	(2^+)			
		1238.0 *15*	≈25	1030.234	2^+			
		1319.0 *15*	≈31	952.745	$(2)^-$			
		1409 *1*	≈63	862.286	3^+			
2285.8	(10^-)	168[‡]		2117.8	(9^-)			
2511.0	10^+	509.1[b] *4*	14.1[b] *18*	2001.9	10^+	D[b]		
		607.1[b] *4*	100[b]	1903.95	8^+	Q[b]		E_γ: Other: 608 *5* (Coulomb excitation).
		1161.9[b] *4*	<4[b]	1349.0	8^+			
2522.8	(11^-)	237[‡]		2285.8	(10^-)			
2555.8	$(10)^-$	576.8[b] *4*	100[b]	1979.0	$(8)^-$			
2556.8	1	2434[@]	37[@] *9*	122.632	2^+			
		2557[@] *1*	100[@]	0.0	0^+			
2672.8?		387[‡][j]		2285.8	(10^-)			
2707.1	10^+	564.4[b] *4*	100[b]	2142.7	8^+			
2750.4	(12^+)	748.5 *4*	100	2001.9	10^+	E2		B(E2)(W.u.)=191 *+22−45*

$\gamma(^{186}W)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Comments
						E_γ: Other: 748.5 (Coulomb excitation). Mult.: Q in (^{136}Xe,$^{136}Xe'\gamma$) and RUL.
2806.5	(11⁻)	594.5[b] *4*	100[b]	2212.0	(9⁻)	
2837.8	(12⁻)	165[‡]		2672.8?		
		315[‡]		2522.8	(11⁻)	
		552[‡]	[e]	2285.8	(10⁻)	
2863.8	1	2741[@]	102[@] *22*	122.632	2⁺	
		2864[@] *1*	100[@]	0.0	0⁺	
2887.3	11⁺	667.2[b] *4*	100[b]	2220.1	9⁺	
3035.8	1	2913[@]	65[@] *24*	122.632	2⁺	
		3036[@] *1*	100[@]	0.0	0⁺	
3055.8	(1)	2933[@]	100[@] *24*	122.632	2⁺	
		3056[@] *1*	54[@]	0.0	0⁺	
3067.8	(1)	2945[@]	100[@] *43*	122.632	2⁺	
		3068[@] *1*	83[@]	0.0	0⁺	
3143.8		306[‡]		2837.8	(12⁻)	
3171.8	1	3049[@]	57[@] *10*	122.632	2⁺	
		3172[@] *1*	100[@]	0.0	0⁺	
3188.2	12⁺	677.1[b] *4*	100[b]	2511.0	10⁺	E_γ: Other: 677 *5* (Coul. excitation).
		1186.3[b] *4*	<20[b]	2001.9	10⁺	
3237.8	(12)⁻	682.0[b] *4*	100[b]	2555.8	(10)⁻	
3317.8	1	3195[@]	100[@] *20*	122.632	2⁺	
		3318[@] *1*	79[@]	0.0	0⁺	
3362.8		219[‡]		3143.8		
3363.8	1	3241[@]	100[@] *18*	122.632	2⁺	
		3364[@] *1*	60[@]	0.0	0⁺	
3371.2	12⁺	664.1[b] *4*	100[b]	2707.1	10⁺	
3378.8	1	3256[@]	47[@] *8*	122.632	2⁺	
		3379[@] *1*	100[@]	0.0	0⁺	
3393.8	1	3271[@]	55[@] *24*	122.632	2⁺	
		3394[@] *1*	100[@]	0.0	0⁺	
3428.0	1	3428 *1*		0.0	0⁺	E_γ: from (γ,γ').
3477.0	1	3477 *1*		0.0	0⁺	E_γ: from (γ,γ').
3483.3	(13⁻)	676.8[b] *4*	100[b]	2806.5	(11⁻)	
3533.8		390[‡]		3143.8		

$\gamma(^{186}W)$ (continued)

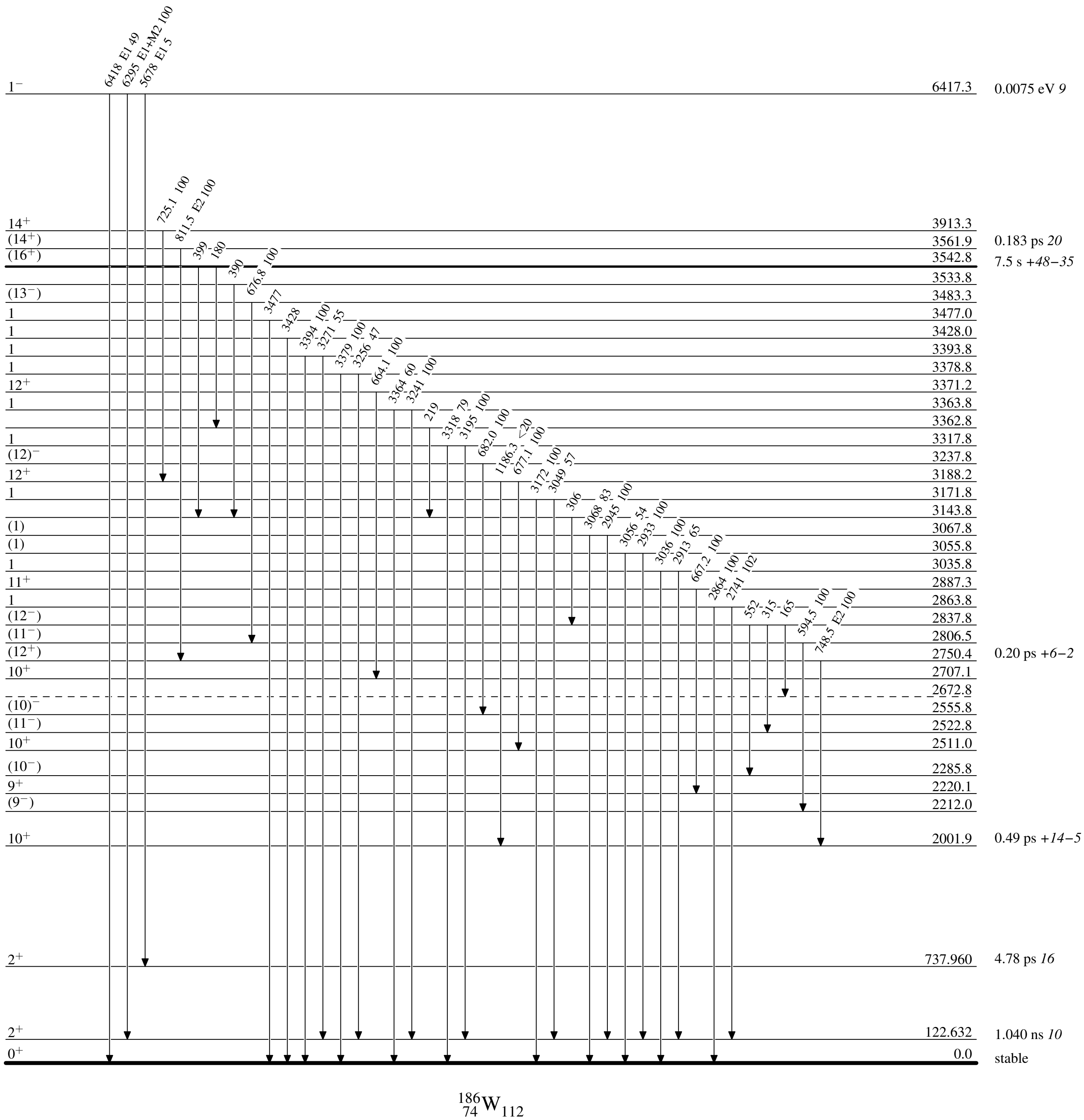
E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[f]	δ[f]	Comments
3542.8	(16^+)	180[‡]		3362.8				
		399[‡]	[e]	3143.8				
3561.9	(14^+)	811.5[b] *4*	100[b]	2750.4	(12^+)	E2[b]		B(E2)(W.u.)=139 +*18*−*14* E_γ: Other: 811.5 (Coul. Excitation) R. Mult.: Q in (^{136}Xe,^{136}Xe′γ) and RUL.
3913.3	14^+	725.1[b] *4*	100[b]	3188.2	12^+			
6417.3	1^-	5678[@]	5[@] *3*	737.960	2^+	E1		B(E1)(W.u.)=6.0×10^{-7} *36*
		6295[@]	100[@] *19*	122.632	2^+	E1+M2	−0.095 *23*	B(E1)(W.u.)=8.80×10^{-6} *11*; B(M2)(W.u.)=0.009 *5* Mult.,δ: from $\gamma(\theta)$ and linear polarization in (γ,γ').
		6418[@]	49[@]	0.0	0^+	E1		B(E1)(W.u.)=4.1×10^{-6} *5* Mult.: from $\gamma(\theta)$ and linear polarization in (γ,γ').

[†] From ^{186}Ta β^- decay, unless noted otherwise.
[‡] From (^{238}U,^{238}U′γ); uncertainty unstated by authors.
[#] From (n,n′γ).
[@] From (γ,γ').
[&] An unplaced γ of similar energy exists in (n,n′γ), but Eγ does not fit this placement.
[a] From Coulomb excitation.
[b] From (^{136}Xe,^{136}Xe′γ).
[c] The 1210.98 *4* and 1484.62 gammas with I(1211γ):I(1485γ)=0.97 *9*:0.57 *6* reported in (n,n′γ) are assumed by the evaluators to differ from the 1210.0 *15* and 1485.0 *15* gammas seen in ^{186}Ta β^- decay; the 745.0 and 869.5 gammas of comparable strength and the relatively strong 654.9γ, placed from the same level as the 1210γ and 1485γ in decay, are absent in (n,n′γ).
[d] Iγ may be overestimated; possible sum-γ contribution.
[e] Based on line widths in level scheme drawing (fig. 3 of 1998Wh02), this is the strongest γ deexciting the parent level.
[f] From (n,n′γ), unless noted otherwise.
[g] For a theoretical estimate of δ for this transition, see 1996Na08 and/or 1994Mo07. Note that 1994Mo07 indicate that the 884γ is the [third 2^+]-level to [first 2^+]-level transition; however, the 907.6γ constitutes that transition, as adopted here and assumed by 1996Na08.
[h] Additional information 1.
[i] Multiply placed.
[j] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

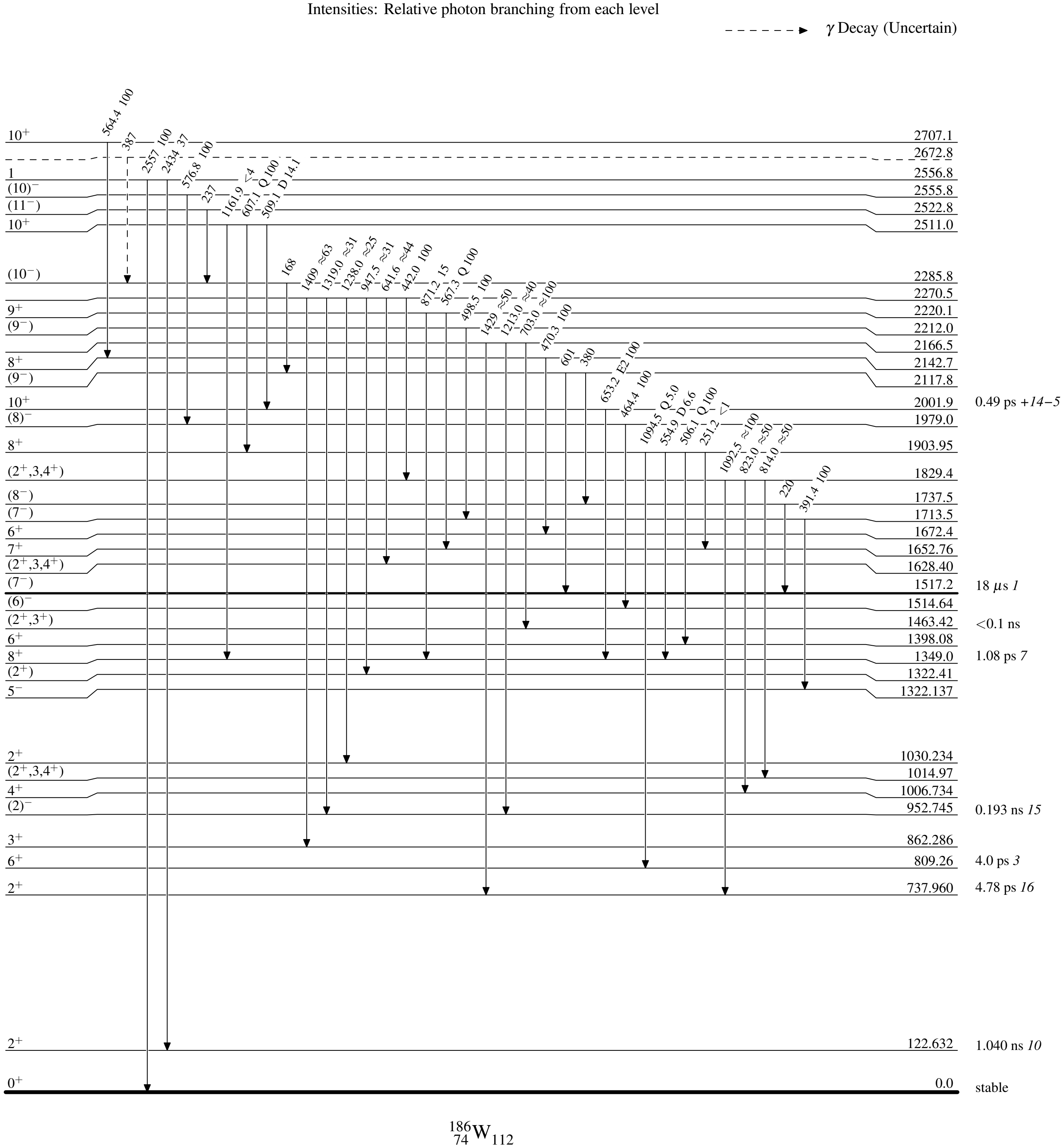
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

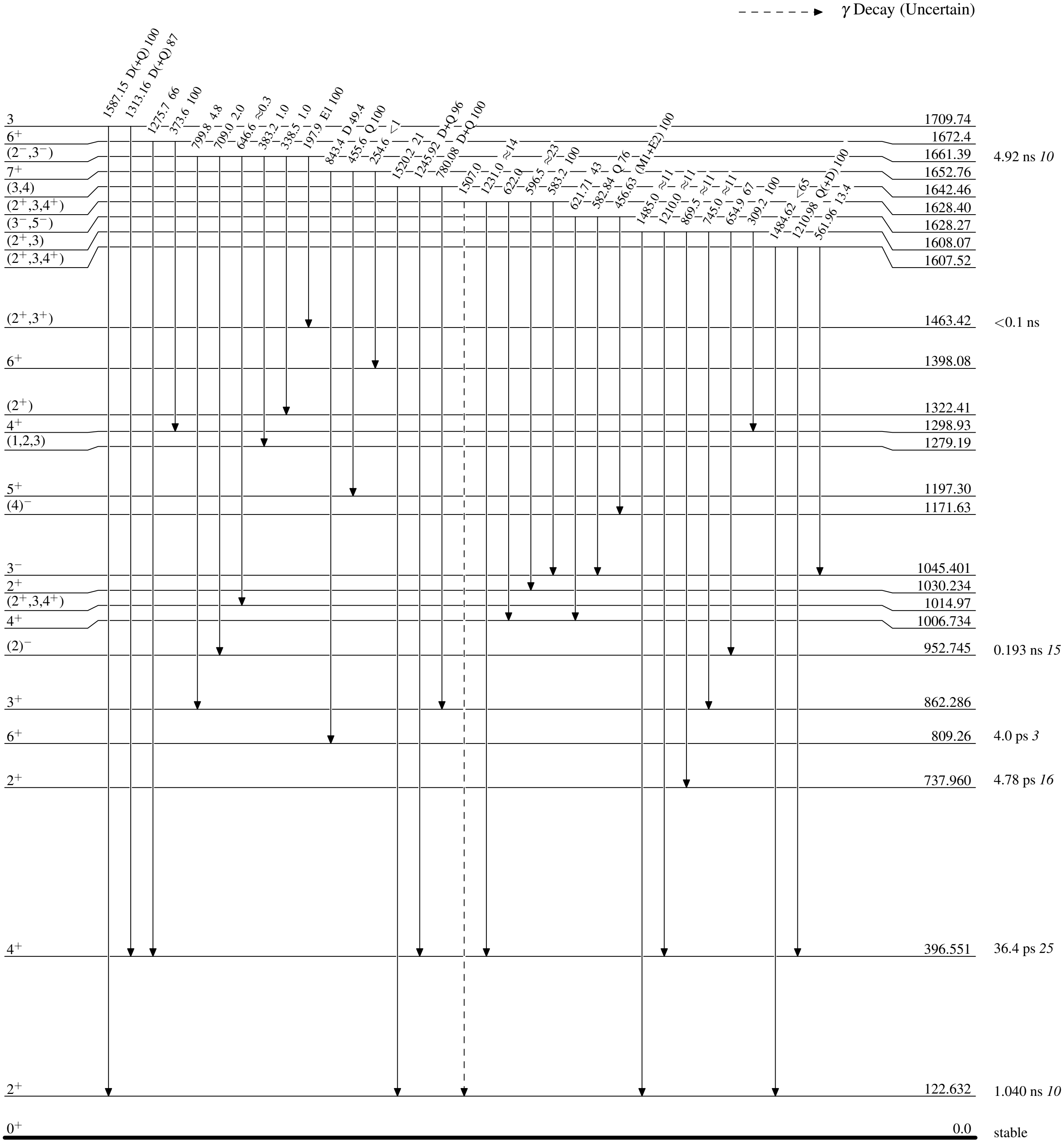
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

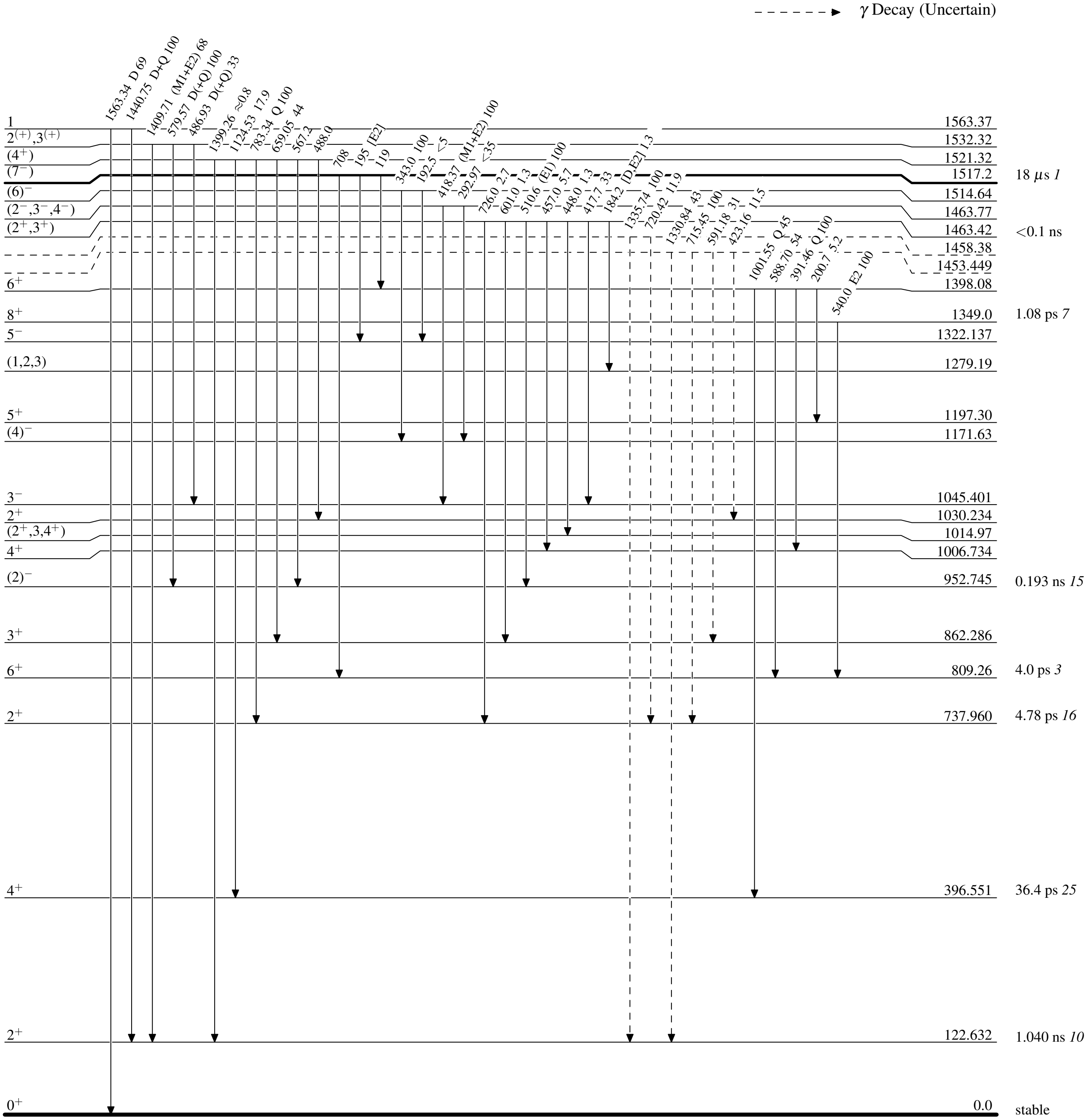


$^{186}_{74}W_{112}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{186}_{74}W_{112}$

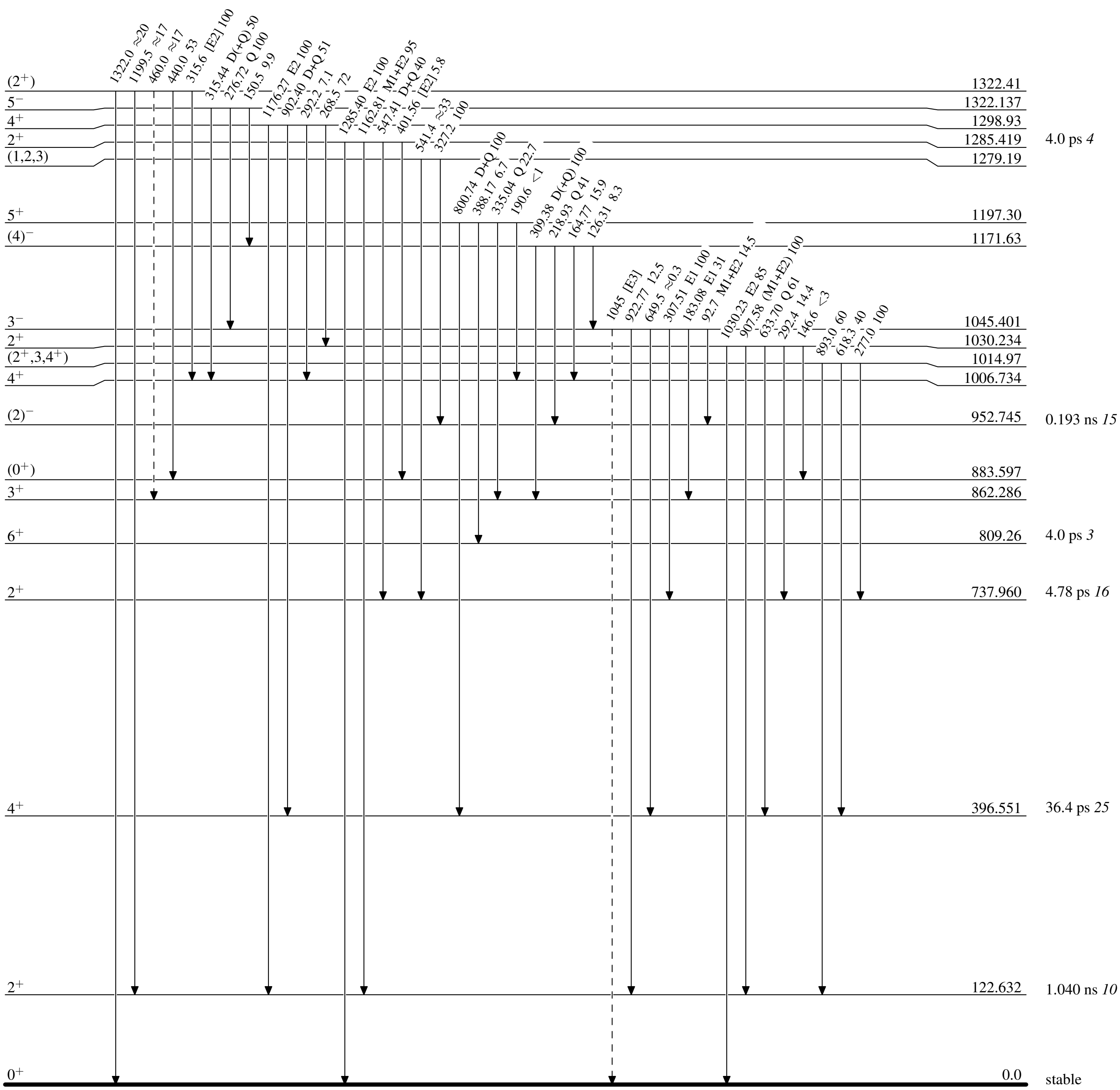
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

Legend

γ Decay (Uncertain)

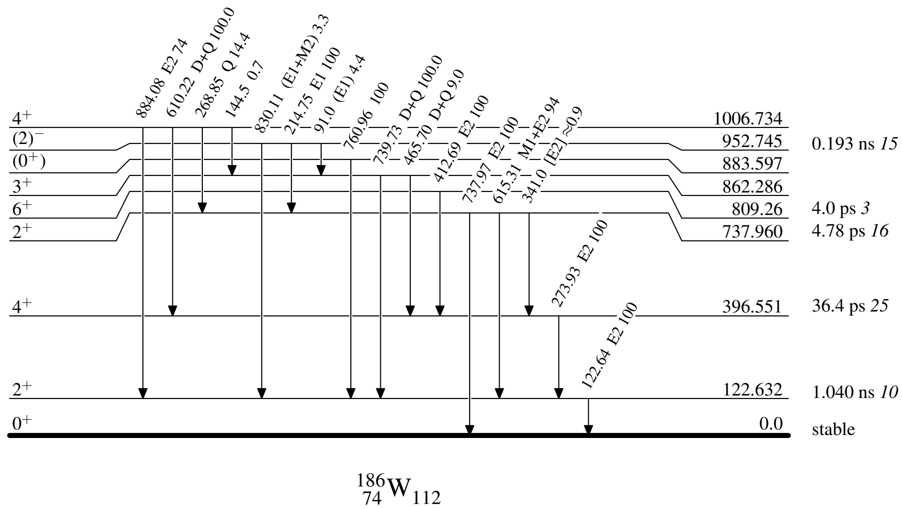


$^{186}_{74}W_{112}$

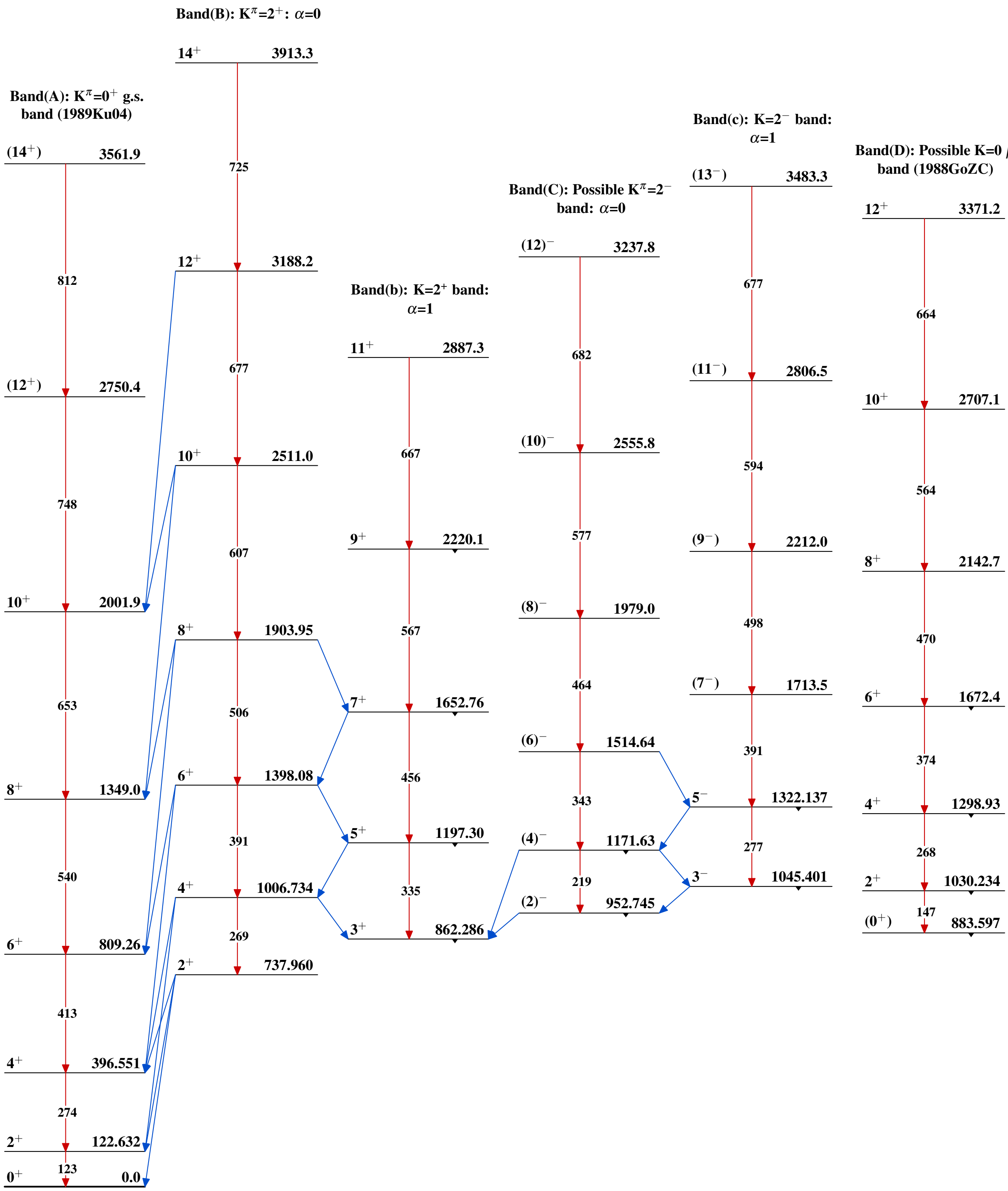
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

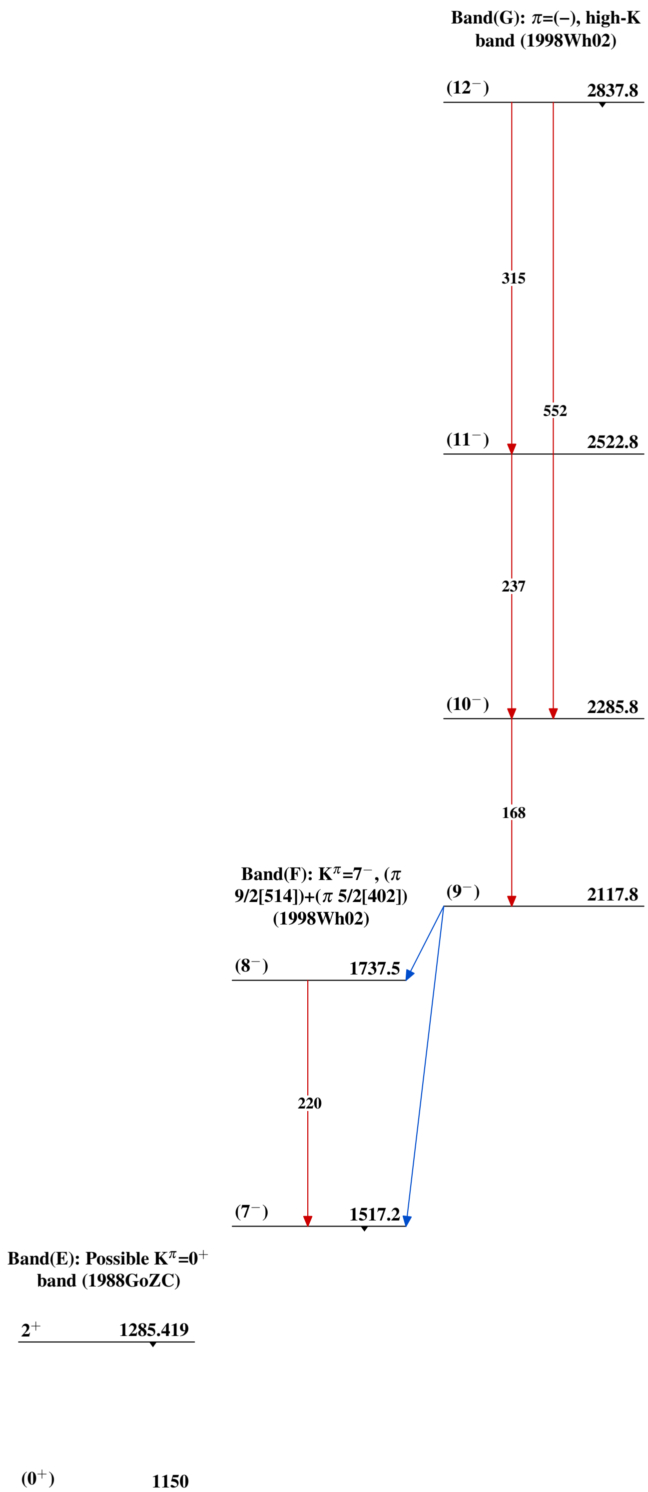


Adopted Levels, Gammas



$^{186}_{74}W_{112}$

Adopted Levels, Gammas (continued)



$^{186}_{74}W_{112}$