^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111, 1807 (2010)	15-Jun-2010

Parent: ^{168}Lu: E=202.81 *12*; J$^\pi$=3$^+$; T$_{1/2}$=6.7 min *4*; Q(ε)=4510 *50*; %ε+%β^+ decay=99.6 *4*

Others: 1960Wi09, 1961Me05, 1969Wi08, 1966Ha23, 1972Ch44, 1973Ch28, 2005Du23 (observed 15 transitions; not details given).

1999Ba65: chemically-separated sources from ^{156}Gd(^{16}O,4n), E<100 MeV; >99% ^{156}Gd target; He jet transfer for on-line chemical separation; reaction products dissolved In HF and separated using three resin separation columns to produce high purity ^{168}Lu(J$^\pi$=3$^+$) source; three HPGe detectors (one planar, FWHM=0.5 keV At 122 keV, and two coaxial); measured Eγ, Iγ, $\gamma\gamma$ coin; placed 162 of the 177 transitions observed.

1970Ar16: source from the decay of spallation-produced ^{168}Hf (J$^\pi$=0$^+$) should contain mainly ^{168}Lu(6.7 min) (J$^\pi$=3$^+$); measured Eβ, Iβ (mag spect), Eγ, Iγ (Ge(Li)).

1970Ch28: sources from ^{169}Tm(α,5n), E(α)=54 MeV contain both isomers; measured Eγ, Iγ (Ge(Li)), Eβ, Iβ, E(ce), Ice (Si(Li), FWHM=4), $\gamma\gamma$ coin, $\beta\gamma$ coin.

The adopted decay scheme is that of 1999Ba65. Strong coincidences only are indicated; please see 1999Ba65 for weak coincidence data. This scheme for the 6.7-min isomer is reasonably complete.

^{168}Yb Levels

E(level)†	J$^\pi$‡	T$_{1/2}$#	Comments
0.0	0$^+$	stable	
87.765 *25*	2$^+$	1.49 ns *4*	T$_{1/2}$: adopted value; T$_{1/2}$=1.4 ns *5* ($\gamma\gamma$(t), 1970Ch28).
286.60 *3*	4$^+$		
585.35 *5*	6$^+$		
984.00 *3*	2$^+$		
1067.15 *3*	(3)$^+$		
1155.2? *7*	(0$^+$)		
1159.4? *6*	(1$^-$)		
1171.38 *3*	(4)$^+$		
1231.5? *3*	(1$^-$)		
1233.1 *3*	2$^+$		
1279.0 *4*	(2$^+$)		
1302.40 *6*	(5)$^+$		
1390.12 *13*	(4$^+$)		
1407.86? *17*	(2$^-$)		
1451.76 *4*	(3)$^+$		
1472.6 *5*	(4$^+$)		
1479.99 *9*	3$^-$		
1551.33 *4*	(4)$^+$		
1597.89 *7*	($^-$)		
1604.5 *6*	(2$^+$)		
1650.66 *21*	(2,3,4)$^-$		
1674.20 *5*	(5$^+$)		
1730.48 *25*	(1,2$^+$)		
1917.8? *4*			
1972.8 *3*	(2$^+$)		
2011.39 *7*	(2$^+$,3,4$^+$)		
2055.88 *4*	(2$^+$,3$^+$,4$^+$)		
2065.08 *22*	(2$^+$,3,4$^+$)		
2135.34 *12*	(3$^+$,4$^+$)		
2158.56 *5*	(4$^+$)		
2180.28 *19*	4$^+$		
2204.00 *4*	(4)$^+$	<0.14 ns	
2256.03 *15*	(3$^+$,4$^+$)		
2364.5 *3*	(4$^+$)		
2404.87 *4*	(3)$^+$		

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^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28 (continued)

^{168}Yb Levels (continued)

E(level)†	Jπ‡
2415.3 *4*	(3,4,5)
2427.96 *6*	(2^+,3^+,4^+)
2475.19 *19*	(2^+,3,4^+)
2645.0? *8*	

† From least-squares fit to Eγ.
‡ From Adopted Levels.
# From γγ(t) or γX(t) (1973Ch28), except as noted.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I(ε+β^+)†‡	Comments
(2.07×10^{3}# *5*)	2645.0?	≤0.002	≤0.09	≥7.4	≤0.09	av Eβ=481 *22*; εK=0.805 *4*; εL=0.1288 *8*; εM+=0.03888 *23*
(2.24×10^{3} *5*)	2475.19	0.023 *6*	0.50 *11*	6.74 *10*	0.52 *11*	av Eβ=556 *22*; εK=0.792 *5*; εL=0.1261 *10*; εM+=0.0380 *3*
(2.28×10^{3} *5*)	2427.96	≥0.33	≥6.3	≤5.7	≥6.6	av Eβ=577 *22*; εK=0.787 *6*; εL=0.1253 *10*; εM+=0.0378 *3* Iε,log *ft* limit based on Iε=6.6 *12* if mult(24γ)=E1. Iε rises to 13 *5* if mult(24γ) is pure M1.
(2.30×10^{3} *5*)	2415.3	0.016 *5*	0.29 *8*	6.99 *12*	0.31 *8*	av Eβ=583 *22*; εK=0.786 *6*; εL=0.1250 *10*; εM+=0.0377 *3*
(2.31×10^{3} *5*)	2404.87	≤2.1	≤38	≥4.9	≤40	av Eβ=587 *22*; εK=0.784 *6*; εL=0.1248 *10*; εM+=0.0376 *3* Iε,log *ft* limit based on Iε=30 *5* if mult(24γ)=E1 from 2428 level. Iε falls to 24 *6* if mult(24γ) is pure M1.
(2.35×10^{3} *5*)	2364.5	0.029 *7*	0.46 *10*	6.82 *11*	0.49 *11*	av Eβ=605 *22*; εK=0.780 *6*; εL=0.1240 *11*; εM+=0.0374 *4*
(2.46×10^{3} *5*)	2256.03	0.15 *5*	1.9 *6*	6.26 *14*	2.0 *6*	av Eβ=653 *23*; εK=0.767 *7*; εL=0.1217 *12*; εM+=0.0367 *4*
2.49×10^{3} *10*	2204.00	3.4 *7*	38 *6*	4.97 *9*	41 *7*	av Eβ=676 *23*; εK=0.760 *7*; εL=0.1205 *12*; εM+=0.0363 *4* E(decay): from Eβ+=1.47×10^{3} *10* (βγ coin, 1972Ch44). Other: 1.5×10^{3} *3* (mag spect, 1970Ar16).
(2.53×10^{3} *5*)	2180.28	0.037 *13*	0.38 *13*	6.97 *15*	0.42 *14*	av Eβ=686 *23*; εK=0.757 *8*; εL=0.1200 *13*; εM+=0.0361 *4*
(2.55×10^{3} *5*)	2158.56	0.35 *7*	3.5 *6*	6.01 *9*	3.9 *7*	av Eβ=696 *23*; εK=0.754 *8*; εL=0.1194 *13*; εM+=0.0360 *4*
(2.58×10^{3} *5*)	2135.34	0.19 *4*	1.8 *4*	6.31 *10*	2.0 *4*	av Eβ=706 *23*; εK=0.750 *8*; εL=0.1188 *13*; εM+=0.0358 *4*
(2.65×10^{3} *5*)	2065.08	0.028 *16*	0.23 *13*	7.2 *3*	0.26 *15*	av Eβ=737 *23*; εK=0.740 *8*; εL=0.1170 *14*; εM+=0.0353 *4*
(2.74×10^{3}# *5*)	1972.8	0.014 *8*	0.10 *5*	7.64 *24*	0.11 *6*	av Eβ=778 *23*; εK=0.725 *9*; εL=0.1145 *15*; εM+=0.0345 *5*
(3.06×10^{3} *5*)	1650.66	0.064 *18*	0.26 *7*	7.31 *13*	0.32 *9*	av Eβ=922 *23*; εK=0.665 *11*; εL=0.1046 *17*; εM+=0.0315 *5*
(3.11×10^{3}# *5*)	1604.5	0.036 *11*	0.13 *4*	7.60 *14*	0.17 *5*	av Eβ=943 *23*; εK=0.656 *11*; εL=0.1031 *17*; εM+=0.0310 *5*

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^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28 (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(3.23×10^3 *5*)	1479.99	0.2 *1*	0.7 *3*	6.93 *20*	0.9 *4*	av Eβ=999 *23*; εK=0.630 *11*; εL=0.0989 *18*; εM+=0.0298 *6*
(3.24×10^3 *5*)	1472.6	0.054 *20*	0.17 *6*	7.55 *17*	0.22 *8*	av Eβ=1002 *23*; εK=0.628 *11*; εL=0.0987 *18*; εM+=0.0297 *6*
(3.26×10^3 *5*)	1451.76	0.50 *25*	1.5 *8*	6.60 *22*	2.0 *10*	av Eβ=1012 *23*; εK=0.624 *11*; εL=0.0980 *18*; εM+=0.0295 *6*
(3.32×10^3# *5*)	1390.12	0.11 *4*	0.30 *12*	7.31 *18*	0.41 *16*	av Eβ=1040 *23*; εK=0.611 *11*; εL=0.0958 *18*; εM+=0.0288 *6*
(3.43×10^3 *5*)	1279.0	0.09 *3*	0.22 *7*	7.48 *15*	0.31 *10*	av Eβ=1090 *23*; εK=0.587 *11*; εL=0.0920 *18*; εM+=0.0277 *6*
(3.54×10^3# *5*)	1171.38	1 *1*	3 *2*	6.4 *4*	4 *3*	av Eβ=1138 *23*; εK=0.563 *11*; εL=0.0882 *18*; εM+=0.0265 *6*
(3.65×10^3# *5*)	1067.15	1 *2*	2 *3*	6.6 *8*	3 *5*	av Eβ=1186 *23*; εK=0.541 *11*; εL=0.0846 *18*; εM+=0.0255 *6*
3.72×10^3# *30*	984.00	1 *1*	2 *3*	6.6 *6*	3 *4*	av Eβ=1223 *23*; εK=0.523 *11*; εL=0.0818 *18*; εM+=0.0246 *6* E(decay): from Eβ+=2.70×10^3 *30* (mag spect, 1970Ar16).

† ε feedings are from intensity imbalance at each level and the assumption that Iε=0 for g.s. feeding (ΔJ=3, $\Delta\pi$=No transition); I$\gamma\pm0.5$Iγ was assigned to uncertainly-placed or doubly-placed transitions with undivided intensity. Agreement with β^+ data (1961Me05,1970Ar16,1972Ch44) is poor.

‡ For absolute intensity per 100 decays, multiply by 0.996 *4*.

Existence of this branch is questionable.

γ(^{168}Yb)

Iγ normalization: From total I(γ+ce) to g.s.=100%; ε+β$^+$ feeding of 0$^+$ g.s. from 3$^+$ parent is expected to Be insignificant.

Eγ[†]	Iγ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ	α[b]	Comments
[x]17.7 *5*	0.50 *25*								
24.0 *5*	1.2 *6*	2427.96	(2$^+$,3$^+$,4$^+$)	2404.87	(3)$^+$	[M1(+E2)]	<0.38	1.8×10^2 *14*	α(L)=1.4×10^2 *11*; α(M)=3.E1 3; α(N+..)=8 *7* α(N)=7 *6*; α(O)=0.9 *7*; α(P)=0.0109 *9* δ: from intensity balance At 2405 level, Ti(24γ)≤192 *13*, so α(exp)(24γ)≤319 At 68% confidence level; this implies δ(M1,E2)<0.39. [α(M1)=36.6, α(E2)=2242, α(E1)=3.11.].
27.1 *5*	0.50 *25*	1479.99	3$^-$	1451.76	(3)$^+$	[E1]		2.23 *13*	α(L)=1.73 *10*; α(M)=0.396 *22*; α(N+..)=0.099 *6* α(N)=0.088 *5*; α(O)=0.0099 *5*; α(P)=0.000260 *12*
53.2[e] *5*	<1	2065.08	(2$^+$,3,4$^+$)	2011.39	(2$^+$,3,4$^+$)				
68.0[e] *5*	<0.3	2204.00	(4)$^+$	2135.34	(3$^+$,4$^+$)				
74.0[e] *5*	<0.4	1233.1	2$^+$	1159.4?	(1$^-$)				other Iγ: 7 *3* In 1970Ar16.
84.0 *6*	0.24 *14*	1067.15	(3)$^+$	984.00	2$^+$	[M1,E2]		6.0 *5*	α(K)=3.0 *17*; α(L)=2.2 *16*; α(M)=0.5 *4*; α(N+..)=0.14 *10* α(N)=0.13 *9*; α(O)=0.015 *10*; α(P)=0.00017 *11* other Iγ: 4 *2* In 1970Ar16.
87.77 *3*	82 *12*	87.765	2$^+$	0.0	0$^+$	E2		5.34	α(K)=1.315 *19*; α(L)=3.07 *5*; α(M)=0.758 *11*; α(N+..)=0.193 *3* α(N)=0.1728 *25*; α(O)=0.0197 *3*; α(P)=5.81×10^{-5} *9* Mult.: from K:L2:L3:M:N= 140:210:230:110:30 (1966Ha23). %Iγ=13.5 *5* assuming adopted normalization.
89.6 *4*	0.46 *16*	1479.99	3$^-$	1390.12	(4$^+$)	[E1]		0.456 *9*	α(K)=0.375 *7*; α(L)=0.0630 *12*; α(M)=0.0141 *3*; α(N+..)=0.00368 *7* α(N)=0.00324 *6*; α(O)=0.000422 *8*; α(P)=1.63×10^{-5} *3*
99.60 *3*	3.1 *5*	1551.33	(4)$^+$	1451.76	(3)$^+$	[M1,E2]		3.34 *10*	α(K)=1.9 *10*; α(L)=1.1 *7*; α(M)=0.26 *17*; α(N+..)=0.07 *4* α(N)=0.06 *4*; α(O)=0.007 *4*; α(P)=0.00011 *7*
104.8 *9*	0.08 *7*	1171.38	(4)$^+$	1067.15	(3)$^+$	[M1,E2]		2.82 *17*	α(K)=1.7 *8*; α(L)=0.9 *5*; α(M)=0.21 *13*; α(N+..)=0.05 *3* α(N)=0.05 *3*; α(O)=0.006 *3*; α(P)=9.E−5 *6*
[x]114[@] *2*	5[@] *2*								
122.95 *6*	1.25 *21*	1674.20	(5$^+$)	1551.33	(4)$^+$	[M1,E2]		1.67 *20*	α(K)=1.1 *5*; α(L)=0.44 *21*; α(M)=0.11 *6*; α(N+..)=0.028 *14* α(N)=0.025 *12*; α(O)=0.0030 *13*; α(P)=6.E−5 *4*
[x]126[@] *2*	4[@] *2*								
130.90 *6*	1.30 *23*	1302.40	(5)$^+$	1171.38	(4)$^+$	[M1,E2]		1.37 *20*	α(K)=0.9 *4*; α(L)=0.35 *15*; α(M)=0.08 *4*; α(N+..)=0.021 *10* α(N)=0.019 *9*; α(O)=0.0024 *9*; α(P)=5.E−5 *3*
[x]135.7[&]									

From ENSDF

γ(^{168}Yb) (continued)

E_γ [†]	I_γ [‡a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	α [b]	Comments
147.08 [c] 8	0.61 [c] 25	2065.08	(2+,3,4+)	1917.8?				
147.08 [c] 8	0.61 [c] 25	2158.56	(4+)	2011.39	(2+,3,4+)			
148.16 4	4.2 7	2204.00	(4)+	2055.88	(2+,3+,4+)	[M1,E2]	0.93 18	α(K)=0.7 3; α(L)=0.21 8; α(M)=0.050 19; α(N+..)=0.013 5 α(N)=0.012 5; α(O)=0.0015 4; α(P)=3.6×10^{-5} 20 Mult.: 5<α(K)exp<16 for 145γ+148γ (1970Ch28).
166.3 5	0.22 9	1233.1	2+	1067.15	(3)+			
176.3 [e] 3	0.22 10	1407.86?	(2−)	1231.5?	(1−)			
187.34 19	0.43 11	1171.38	(4)+	984.00	2+	[E2]	0.335	α(K)=0.199 3; α(L)=0.1042 16; α(M)=0.0253 4; α(N+..)=0.00650 10 α(N)=0.00579 9; α(O)=0.000694 11; α(P)=9.14×10^{-6} 13
191.24 23	0.49 14	2256.03	(3+,4+)	2065.08	(2+,3,4+)			
198.90 3	190 30	286.60	4+	87.765	2+	E2	0.274	α(K)=0.1676 24; α(L)=0.0813 12; α(M)=0.0197 3; α(N+..)=0.00506 7 α(N)=0.00451 7; α(O)=0.000543 8; α(P)=7.82×10^{-6} 11 Mult.: from K:L2:L3:M=62:21:12:11 (1966Ha23).
200.2 [e] 8	3.4 12	2256.03	(3+,4+)	2055.88	(2+,3+,4+)	[M1,E2]	0.37 11	α(K)=0.28 12; α(L)=0.070 10; α(M)=0.016 3; α(N+..)=0.0043 7 α(N)=0.0038 7; α(O)=0.00049 4; α(P)=1.6×10^{-5} 9
201.01 15	11.2 20	2404.87	(3)+	2204.00	(4)+	[M1,E2]	0.37 11	α(K)=0.28 12; α(L)=0.069 10; α(M)=0.016 3; α(N+..)=0.0042 7 α(N)=0.0037 6; α(O)=0.00048 4; α(P)=1.6×10^{-5} 9
222.55 17	0.90 19	1674.20	(5+)	1451.76	(3)+	[E2]	0.189	α(K)=0.1218 18; α(L)=0.0515 8; α(M)=0.01239 18; α(N+..)=0.00320 5 α(N)=0.00285 4; α(O)=0.000347 5; α(P)=5.84×10^{-6} 9
224.15 17	0.89 18	2427.96	(2+,3+,4+)	2204.00	(4)+	[M1,E2]	0.27 9	α(K)=0.21 9; α(L)=0.047 3; α(M)=0.0109 12; α(N+..)=0.00288 23 α(N)=0.00254 23; α(O)=0.000334 6; α(P)=1.2×10^{-5} 6
[x]227 [@] 1	3 [@]							
231.3 5	0.17 9	2204.00	(4)+	1972.8	(2+)			
235.6 5	0.23 16	1302.40	(5)+	1067.15	(3)+	[E2]	0.1571 25	α(K)=0.1036 16; α(L)=0.0410 7; α(M)=0.00985 17; α(N+..)=0.00255 5 α(N)=0.00226 4; α(O)=0.000277 5; α(P)=5.03×10^{-6} 8
246.33 4	5.2 8	2404.87	(3)+	2158.56	(4+)	[M1,E2]	0.20 7	α(K)=0.16 7; α(L)=0.0342 6; α(M)=0.0079 4; α(N+..)=0.00209 6 α(N)=0.00184 7; α(O)=0.000244 12; α(P)=9.E−6 5 placement from 1999Ba65; previously placed, instead, from 1480 level (see 1972Ch44).
248.7 3	0.47 15	1551.33	(4)+	1302.40	(5)+			
[x]268.0 [&] 4	7 [@] 2							
269.48 [c] 11	1.21 [c] 23	2404.87	(3)+	2135.34	(3+,4+)			
269.48 [c] 11	1.21 [c] 23	2427.96	(2+,3+,4+)	2158.56	(4+)			
271.4 3	0.25 11	2475.19	(2+,3,4+)	2204.00	(4)+	[M1,E2]	0.15 6	α(K)=0.12 6; α(L)=0.0248 12; α(M)=0.00573 12;

From ENSDF

γ(^{168}Yb) (continued)

E_γ[†]	I_γ[‡a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[b]	Comments
								α(N+..)=0.00152 *6* α(N)=0.00133 *4*; α(O)=0.000179 *17*; α(P)=7.E−6 *4*
280.5 *3*	0.39 *10*	1451.76	(3)$^+$	1171.38	(4)$^+$	[M1,E2]	0.14 *5*	α(K)=0.11 *5*; α(L)=0.0223 *15*; α(M)=0.00515 *18*; α(N+..)=0.00137 *8* α(N)=0.00120 *6*; α(O)=0.000161 *18*; α(P)=6.E−6 *4* other Iγ: 8 *3* for uncertain γ In 1970Ar16.
283.5 *5*	0.21 *11*	2256.03	(3$^+$,4$^+$)	1972.8	(2$^+$)			
[x]286.6[&]								
294.90 *9*	2.0 *4*	2475.19	(2$^+$,3,4$^+$)	2180.28	4$^+$			
298.77 *4*	12.6 *20*	585.35	6$^+$	286.60	4$^+$	E2	0.0748	α(K)=0.0533 *8*; α(L)=0.01655 *24*; α(M)=0.00393 *6*; α(N+..)=0.001023 *15* α(N)=0.000906 *13*; α(O)=0.0001138 *16*; α(P)=2.72×10^{-6} *4* Mult.: from Adopted Gammas.
300.2 *8*	0.26 *14*	1472.6	(4$^+$)	1171.38	(4)$^+$			
[x]310.5[&]	4[@] *2*							
[x]313.5 *6*	0.19 *10*							
[x]331.80 *13*	1.4 *3*							
339.2 *4*	0.49 *18*	2404.87	(3)$^+$	2065.08	(2$^+$,3,4$^+$)			
[x]347.1 *3*	0.45 *20*							
348.99 *4*	9.5 *15*	2404.87	(3)$^+$	2055.88	(2$^+$,3$^+$,4$^+$)	[E2]	0.0473	α(K)=0.0350 *5*; α(L)=0.00948 *14*; α(M)=0.00223 *4*; α(N+..)=0.000584 *9* α(N)=0.000516 *8*; α(O)=6.59×10^{-5} *10*; α(P)=1.84×10^{-6} *3*
372.17 *18*	1.3 *3*	2427.96	(2$^+$,3$^+$,4$^+$)	2055.88	(2$^+$,3$^+$,4$^+$)			
375.0 *4*	0.53 *19*	1972.8	(2$^+$)	1597.89	($^-$)			
380.11 *6*	4.5 *7*	1551.33	(4)$^+$	1171.38	(4)$^+$	[M1,E2]	0.060 *24*	α(K)=0.049 *22*; α(L)=0.0088 *17*; α(M)=0.0020 *4*; α(N+..)=0.00053 *10* α(N)=0.00047 *9*; α(O)=6.4×10^{-5} *15*; α(P)=2.9×10^{-6} *14*
384.80 *7*	6.9 *11*	1451.76	(3)$^+$	1067.15	(3)$^+$	E2	0.0359	α(K)=0.0271 *4*; α(L)=0.00679 *10*; α(M)=0.001591 *23*; α(N+..)=0.000417 *6* α(N)=0.000368 *6*; α(O)=4.75×10^{-5} *7*; α(P)=1.441×10^{-6} *21* Mult.: from Adopted Gammas; α(K)exp=0.0029 *9* (1970Ch28) for doubly-placed G.
393.50 *7*	5.1 *8*	2404.87	(3)$^+$	2011.39	(2$^+$,3,4$^+$)	[M1,E2]	0.055 *22*	α(K)=0.045 *20*; α(L)=0.0079 *17*; α(M)=0.0018 *4*; α(N+..)=0.00048 *10* α(N)=0.00042 *8*; α(O)=5.8×10^{-5} *14*; α(P)=2.6×10^{-6} *13*
405.9[c] *5*	0.34[c] *15*	1390.12	(4$^+$)	984.00	2$^+$			
405.9[c] *5*	0.34[c] *15*	1472.6	(4$^+$)	1067.15	(3)$^+$			
449.7 *4*	0.65 *22*	2180.28	4$^+$	1730.48	(1,2$^+$)			
467.90 *5*	6.4 *11*	1451.76	(3)$^+$	984.00	2$^+$	M1,E2	0.035 *14*	α(K)=0.029 *13*; α(L)=0.0048 *13*; α(M)=0.0011 *3*; α(N+..)=0.00029 *8* α(N)=0.00026 *7*; α(O)=3.6×10^{-5} *10*; α(P)=1.7×10^{-6} *8* Mult.: α(K)exp=0.028 *11* (1970Ch28).

γ(^{168}Yb) (continued)

Eγ[†]	Iγ[‡a]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[#]	α[b]	Comments
473.6 *4*	0.73 *24*	2204.00	(4)$^+$	1730.48	(1,2$^+$)			
479.3 *8*	0.31 *16*	1650.66	(2,3,4)$^-$	1171.38	(4)$^+$			
484.32[c] *18*	1.6[c] *3*	1551.33	(4)$^+$	1067.15	(3)$^+$			
484.32[c] *18*	1.6[c] *3*	2158.56	(4$^+$)	1674.20	(5$^+$)			
497.40 *20*	0.8 *4*	1730.48	(1,2$^+$)	1233.1	2$^+$			
521.7 *7*	0.30 *17*	1972.8	(2$^+$)	1451.76	(3)$^+$			
530.1[c] *7*	1.2[c] *5*	1597.89	($^-$)	1067.15	(3)$^+$			
530.1[c] *7*	1.2[c] *5*	2204.00	(4)$^+$	1674.20	(5$^+$)			
[x]550.67 *23*	1.3 *3*							
560.0 *5*	0.46 *22*	2158.56	(4$^+$)	1597.89	($^-$)			
567.41 *15*	2.3 *5*	1551.33	(4)$^+$	984.00	2$^+$			
583.50 *21*	1.6 *4*	1650.66	(2,3,4)$^-$	1067.15	(3)$^+$	E1	0.00435	α(K)=0.00368 *6*; α(L)=0.000520 *8*; α(M)=0.0001152 *17*; α(N+..)=3.09×10^{-5} *5* α(N)=2.69×10^{-5} *4*; α(O)=3.80×10^{-6} *6*; α(P)=1.95×10^{-7} *3* Mult.: α(K)exp<0.005 (1970Ch28).
586.4 *9*	0.34 *20*	1171.38	(4)$^+$	585.35	6$^+$			
605.8 *3*	1.7 *5*	2204.00	(4)$^+$	1597.89	($^-$)			other data: Eγ=606.9 *3* (1970Ch28); Iγ=8 *2* (1970Ar16).
607.22 *9*	8.5 *14*	2158.56	(4$^+$)	1551.33	(4)$^+$			
621.6 *8*	0.4 *2*	2011.39	(2$^+$,3,4$^+$)	1390.12	(4$^+$)			
[x]624[@] *2*	9[@] *2*							
652.75 *9*	5.2 *9*	2204.00	(4)$^+$	1551.33	(4)$^+$			other Iγ: 11 *2* (1970Ch28).
659.0 *5*	0.46 *25*	2256.03	(3$^+$,4$^+$)	1597.89	($^-$)			
674.6[c] *5*	0.9[c] *4*	2065.08	(2$^+$,3,4$^+$)	1390.12	(4$^+$)			
674.6[c] *5*	0.9[c] *4*	2404.87	(3)$^+$	1730.48	(1,2$^+$)			
683.4 *6*	0.63 *20*	2135.34	(3$^+$,4$^+$)	1451.76	(3)$^+$			
697.6 *4*	0.93 *25*	984.00	2$^+$	286.60	4$^+$			
706.83 *17*	3.1 *6*	2158.56	(4$^+$)	1451.76	(3)$^+$			
717.28 *20*	2.5 *5*	1302.40	(5)$^+$	585.35	6$^+$			Mult.: α(K)exp<0.008 (1970Ch28).
723.4 *7*	0.49 *23*	2204.00	(4)$^+$	1479.99	3$^-$			
730.73 *7*	9.5 *15*	2404.87	(3)$^+$	1674.20	(5$^+$)	(E2)	0.00723	α(K)=0.00590 *9*; α(L)=0.001030 *15*; α(M)=0.000234 *4*; α(N+..)=6.24×10^{-5} *9* α(N)=5.46×10^{-5} *8*; α(O)=7.49×10^{-6} *11*; α(P)=3.31×10^{-7} *5* Mult.: α(K)exp=0.013 *6* implies M1 admixture (α(K)(M1)=0.014, α(K)(E2)=0.0059); however, M1 is not consistent with level scheme.
752.33 *8*	8.2 *13*	2204.00	(4)$^+$	1451.76	(3)$^+$			
768.4 *7*	0.62 *23*	2158.56	(4$^+$)	1390.12	(4$^+$)			
780.61 *5*	26 *4*	1067.15	(3)$^+$	286.60	4$^+$	E2	0.00625	α(K)=0.00513 *8*; α(L)=0.000872 *13*; α(M)=0.000198 *3*; α(N+..)=5.28×10^{-5} *8* α(N)=4.61×10^{-5} *7*; α(O)=6.36×10^{-6} *9*; α(P)=2.88×10^{-7} *4* Mult.: α(K)exp=0.0048 *14* (1970Ch28).
804.90 *16*	0.94 *25*	1390.12	(4$^+$)	585.35	6$^+$			
806.95 *11*	4.8 *11*	2404.87	(3)$^+$	1597.89	($^-$)			other Eγ: 806.1 *4* (1970Ch28).

$^{168}_{70}$Yb$_{98}$-7

γ(^{168}Yb) (continued)

Eγ[†]	Iγ[‡a]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[#]	α[b]	Comments
830.3 4	1.7 4	2427.96	(2+,3+,4+)	1597.89	(−)			
832.1 3	1.2 4	2135.34	(3+,4+)	1302.40	(5)+			
853.57 4	27 4	2404.87	(3)+	1551.33	(4)+	E2(+M1)	0.008 3	α(K)=0.0066 24; α(L)=0.0010 3; α(M)=0.00022 7; α(N+..)=6.0×10^{-5} 18 α(N)=5.2×10^{-5} 16; α(O)=7.4×10^{-6} 23; α(P)=3.8×10^{-7} 15 Mult.: α(K)exp=0.0052 22 (1970Ch28).
856.3 10	0.8 3	2158.56	(4+)	1302.40	(5)+			
884.8 5	1.0 5	2055.88	(2+,3+,4+)	1171.38	(4)+			
884.807 24	84 13	1171.38	(4)+	286.60	4+	E2	0.00478	α(K)=0.00395 6; α(L)=0.000645 9; α(M)=0.0001455 21; α(N+..)=3.89×10^{-5} 6 α(N)=3.40×10^{-5} 5; α(O)=4.72×10^{-6} 7; α(P)=2.22×10^{-7} 4 Mult.: α(K)exp=0.0038 7 (1970Ch28).
887.6 5	0.9 4	1472.6	(4+)	585.35	6+			
896.261 24	100	984.00	2+	87.765	2+	E2	0.00465	α(K)=0.00385 6; α(L)=0.000625 9; α(M)=0.0001411 20; α(N+..)=3.78×10^{-5} 6 α(N)=3.30×10^{-5} 5; α(O)=4.58×10^{-6} 7; α(P)=2.16×10^{-7} 3 Mult.: α(K)exp=0.0037 7 (1970Ch28).
901.6 10	7.6 13	2204.00	(4)+	1302.40	(5)+			
924.93 24	2.3 5	2404.87	(3)+	1479.99	3−			
944.42 25	1.8 6	2011.39	(2+,3,4+)	1067.15	(3)+			
947.85 12	2.4 10	2427.96	(2+,3+,4+)	1479.99	3−			other Iγ: 10 2 In 1970Ar16.
953.3[c] 3	2.0[c] 5	2256.03	(3+,4+)	1302.40	(5)+			
953.3[c] 3	2.0[c] 5	2404.87	(3)+	1451.76	(3)+			
[x]960.7[&]								
964.19 15	4.7 8	2135.34	(3+,4+)	1171.38	(4)+			
979.379 24	128 20	1067.15	(3)+	87.765	2+	(E2)	0.00387	α(K)=0.00321 5; α(L)=0.000510 8; α(M)=0.0001146 16; α(N+..)=3.07×10^{-5} 5 α(N)=2.68×10^{-5} 4; α(O)=3.74×10^{-6} 6; α(P)=1.81×10^{-7} 3 Mult.: α(K)exp=0.0030 5 (1970Ch28) for 984γ+979γ.
983.99 4	78 13	984.00	2+	0.0	0+	(E2)	0.00383	α(K)=0.00318 5; α(L)=0.000504 7; α(M)=0.0001134 16; α(N+..)=3.04×10^{-5} 5 α(N)=2.65×10^{-5} 4; α(O)=3.70×10^{-6} 6; α(P)=1.79×10^{-7} 3 Mult.: α(K)exp=0.0030 5 (1970Ch28) for 984γ+979γ. %Iγ=12.9 25 assuming adopted normalization.
987.34 15	8.2 14	2158.56	(4+)	1171.38	(4)+			
988.96 18	6.3 11	2055.88	(2+,3+,4+)	1067.15	(3)+			
998.7 7	0.6 3	2065.08	(2+,3,4+)	1067.15	(3)+			
1012.9 3	0.58 22	1597.89	(−)	585.35	6+	(M2)	0.01728	α(K)=0.01438 21; α(L)=0.00225 4; α(M)=0.000506 7; α(N+..)=0.0001369 20 α(N)=0.0001190 17; α(O)=1.702×10^{-5} 24; α(P)=9.07×10^{-7} 13 Mult.: α(K)exp≈0.011 (1970Ch28). Eγ: weighted average of 1012.9 3 (1970Ch28) and 1013.0 6 (1999Ba65).

γ(^{168}Yb) (continued)

Eγ[†]	Iγ[‡a]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[#]	δ	α[b]	Comments
1015.86 *7*	11.4 *17*	1302.40	(5)$^+$	286.60	4$^+$	E2		0.00359	α(K)=0.00299 *5*; α(L)=0.000469 *7*; α(M)=0.0001055 *15*; α(N+..)=2.83×10^{-5} *4* α(N)=2.47×10^{-5} *4*; α(O)=3.45×10^{-6} *5*; α(P)=1.682×10^{-7} *24* Mult.: α(K)exp=0.0026 *9* (1970Ch28).
[x]1025.7[&] *4*									
1027.44 *20*	2.8 *6*	2011.39	(2$^+$,3,4$^+$)	984.00	2$^+$				
1032.61 *4*	57 *8*	2204.00	(4)$^+$	1171.38	(4)$^+$	M1,E2		0.0050 *16*	α(K)=0.0042 *14*; α(L)=0.00063 *18*; α(M)=0.00014 *4*; α(N+..)=3.8×10^{-5} *11* α(N)=3.3×10^{-5} *10*; α(O)=4.7×10^{-6} *14*; α(P)=2.5×10^{-7} *9* Mult.: α(K)exp=0.0038 *14* (1970Ch28).
1066.8[e] *9*	<0.2	1155.2?	(0$^+$)	87.765	2$^+$				
1068.0 *9*	1.3 *8*	2135.34	(3$^+$,4$^+$)	1067.15	(3)$^+$				
1071.9[e] *10*	<1	1159.4?	(1$^-$)	87.765	2$^+$				
1071.94 *5*	15.7 *25*	2055.88	(2$^+$,3$^+$,4$^+$)	984.00	2$^+$	(M1,E2)		0.0046 *15*	α(K)=0.0039 *12*; α(L)=0.00057 *16*; α(M)=0.00013 *4*; α(N+..)=3.5×10^{-5} *10* α(N)=3.0×10^{-5} *9*; α(O)=4.3×10^{-6} *13*; α(P)=2.3×10^{-7} *8* Mult.: α(K)exp≈0.0035 (1970Ch28).
1083.58 *3*	41 *7*	1171.38	(4)$^+$	87.765	2$^+$	(E2)		0.00315	α(K)=0.00263 *4*; α(L)=0.000407 *6*; α(M)=9.12×10^{-5} *13*; α(N+..)=2.45×10^{-5} *4* α(N)=2.13×10^{-5} *3*; α(O)=3.00×10^{-6} *5*; α(P)=1.481×10^{-7} *21* Mult.: α(K)exp≈0.0020 (1970Ch28).
1084.9 *4*	0.8 *4*	2256.03	(3$^+$,4$^+$)	1171.38	(4)$^+$				
1089.0 *10*	0.3 *3*	1674.20	(5$^+$)	585.35	6$^+$				Eγ: from 1999Ba65. other Eγ: 1089.3 *4* In 1970Ch28 (by whom nearby 1091.6γ was not reported).
1091.58 *19*	3.0 *7*	2158.56	(4$^+$)	1067.15	(3)$^+$				
1102.9 *3*	1.9 *4*	1390.12	(4$^+$)	286.60	4$^+$	(E0+E2)			Mult.: α(K)exp≈0.04 (1970Ch28). Contribution to I(γ+ce) from E0 component insignificant (Ice(K)≈0.08 cf. Iγ≈2 In 1970Ch28).
1113.6[c] *8*	0.5[c] *4*	2180.28	4$^+$	1067.15	(3)$^+$				
1113.6[c] *8*	0.5[c] *4*	2415.3	(3,4,5)	1302.40	(5)$^+$				
1136.83 *4*	84 *13*	2204.00	(4)$^+$	1067.15	(3)$^+$	E2(+M1)	≥1.0	0.0035 *6*	α=0.0035 *6*; α(K)=0.0029 *5*; α(L)=0.00043 *7*; α(M)=9.7×10^{-5} *15*; α(N+..)=2.7×10^{-5} *5* α(N)=2.3×10^{-5} *4*; α(O)=3.2×10^{-6} *6*; α(P)=1.7×10^{-7} *4*; α(IPF)=1.00×10^{-6} *7* Mult.,δ: from α(K)exp=0.0027 *7* (1970Ch28).
1144.9 *6*	0.6 *3*	1233.1	2$^+$	87.765	2$^+$	(E0+E2)			Mult.: α(K)exp≈0.03 (1970Ch28). Contribution to I(γ+ce) from E0 portion insignificant (Ice(K)≈0.06 cf. Iγ≈2 In 1970Ch28). E=1146.0 In 1970Ch28.
1151.0 *9*	0.49 *20*	2135.34	(3$^+$,4$^+$)	984.00	2$^+$				
1156[&]		1155.2?	(0$^+$)	0.0	0$^+$	E0			α(K)exp>0.075 deduced from Ice(K)≈0.03 and detection limit

γ(^{168}Yb) (continued)

E_γ[†]	I_γ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[b]	Comments
								(=0.4) for 1156-keV photons (1970Ch28); Ti(1156γ) is insignificant.
1159.2[e] *7*	<0.2	1159.4?	(1$^-$)	0.0	0$^+$			
1165.21 *16*	4.4 *7*	1451.76	(3)$^+$	286.60	4$^+$			
1188.31 *21*	0.8 *7*	2256.03	(3$^+$,4$^+$)	1067.15	(3)$^+$			other Iγ: 5 *2* In 1970Ar16.
1191.2 *8*	1.3 *4*	1279.0	(2$^+$)	87.765	2$^+$			other Iγ: 5 *2* In 1970Ar16.
1193.4 *3*	3.2 *6*	1479.99	3$^-$	286.60	4$^+$			
^{x}1215.4[&] *4*								
1219.94 *5*	69 *11*	2204.00	(4)$^+$	984.00	2$^+$	E2	0.00250	α(K)=0.00209 *3*; α(L)=0.000315 *5*; α(M)=7.04×10^{-5} *10*; α(N+..)=2.60×10^{-5} *4* α(N)=1.648×10^{-5} *23*; α(O)=2.33×10^{-6} *4*; α(P)=1.176×10^{-7} *17*; α(IPF)=7.08×10^{-6} *10* Mult.: α(K)exp=0.0017 *5* (1970Ch28).
1231.3[e] *4*	1.0 *6*	1231.5?	(1$^-$)	0.0	0$^+$			
1233.46[d] *7*	3[d] *3*	1233.1	2$^+$	0.0	0$^+$	[E2]	0.00245	α(K)=0.00205 *3*; α(L)=0.000308 *5*; α(M)=6.88×10^{-5} *10*; α(N+..)=2.72×10^{-5} *4* α(N)=1.610×10^{-5} *23*; α(O)=2.27×10^{-6} *4*; α(P)=1.151×10^{-7} *17*; α(IPF)=8.72×10^{-6} *13* I$_\gamma$: 21 *2* (1970Ch28) for doublet.
1233.46[d] *7*	17[d] *3*	2404.87	(3)$^+$	1171.38	(4)$^+$	(M1,E2)	0.0034 *10*	α(K)=0.0028 *8*; α(L)=0.00041 *11*; α(M)=9.2×10^{-5} *24*; α(N+..)=3.5×10^{-5} *8* α(N)=2.2×10^{-5} *6*; α(O)=3.1×10^{-6} *9*; α(P)=1.6×10^{-7} *5*; α(IPF)=9.9×10^{-6} *12* Mult.: α(K)exp=0.0027 *9* (1970Ch28) for triplet dominated by this transition.
1256.36 *12*	4.9 *8*	2427.96	(2$^+$,3$^+$,4$^+$)	1171.38	(4)$^+$	[M1,E2]	0.0032 *9*	α(K)=0.0027 *8*; α(L)=0.00040 *10*; α(M)=8.8×10^{-5} *23*; α(N+..)=3.7×10^{-5} *8* α(N)=2.1×10^{-5} *6*; α(O)=3.0×10^{-6} *8*; α(P)=1.6×10^{-7} *5*; α(IPF)=1.33×10^{-5} *16* Mult.: α(K)exp=0.0020 *9* (1970Ch28) for 1257γ+1265γ (where I(1257γ):I(1265γ)=15 *2*:32 *3*); this favors mult=M1,E2 but does not rule out E1 for one of the transitions. other Iγ: 9 *2* (1970Ch28).
1264.68 *5*	14.6 *23*	1551.33	(4)$^+$	286.60	4$^+$			Mult.: α(K)exp=0.0020 *9* (1970Ch28) for 1257γ+1265γ (where I(1257γ):I(1265γ)=15 *2*:32 *3*); this favors mult=M1,E2 but does not rule out E1 for one of the transitions.
1279.0 *4*	0.6 *3*	1279.0	(2$^+$)	0.0	0$^+$			
^{x}1289[@] *2*	2[@] *2*							
1302.4 *3*	1.6 *4*	1390.12	(4$^+$)	87.765	2$^+$			
1311.27 *11*	5.9 *9*	1597.89	($^-$)	286.60	4$^+$	(E1)	9.91×10^{-4}	α(K)=0.000784 *11*; α(L)=0.0001063 *15*; α(M)=2.34×10^{-5} *4*; α(N+..)=7.72×10^{-5} *11*

γ(^{168}Yb) (continued)

Eγ[†]	Iγ[‡a]	Ei(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[b]	Comments
								α(N)=5.49×10^{-6} 8; α(O)=7.85×10^{-7} 11; α(P)=4.25×10^{-8} 6; α(IPF)=7.09×10^{-5} 10 Mult.: α(K)exp<0.0014 (1970Ch28).
1320.12[e] 18	3.0 6	1407.86?	(2$^-$)	87.765	2$^+$			
1337.65 5	25 4	2404.87	(3)$^+$	1067.15	(3)$^+$	E2	0.00211	α(K)=0.001752 25; α(L)=0.000260 4; α(M)=5.80×10^{-5} 9; α(N+..)=4.14×10^{-5} 6 α(N)=1.357×10^{-5} 19; α(O)=1.92×10^{-6} 3; α(P)=9.86×10^{-8} 14; α(IPF)=2.58×10^{-5} 4 Mult.: α(K)exp=0.0017 5 (1970Ch28).
1360.7 6	1.3 3	2427.96	(2$^+$,3$^+$,4$^+$)	1067.15	(3)$^+$			
1363.90 4	23 4	1451.76	(3)$^+$	87.765	2$^+$			Mult.: α(K)exp≈0.0012 (1970Ch28).
1380.0 6	0.8 3	2364.5	(4$^+$)	984.00	2$^+$			
1387.43 12	6.8 11	1674.20	(5$^+$)	286.60	4$^+$			Mult.: α(K)exp<0.0016 (1970Ch28) for doublet.
1392.19 13	5.0 9	1479.99	3$^-$	87.765	2$^+$			
1420.79 5	62 10	2404.87	(3)$^+$	984.00	2$^+$	M1+E2	0.0025 6	α(K)=0.0021 6; α(L)=0.00030 7; α(M)=6.6×10^{-5} 16; α(N+..)=7.1×10^{-5} 11 α(N)=1.6×10^{-5} 4; α(O)=2.2×10^{-6} 6; α(P)=1.2×10^{-7} 4; α(IPF)=5.3×10^{-5} 7 Mult.: α(K)exp=0.0020 5 (1970Ch28).
^{x}1434.4 3	1.7 3							
^{x}1439.1 5	0.8 3							
1445.5[e] 6	0.8 3	2427.96	(2$^+$,3$^+$,4$^+$)	984.00	2$^+$			
^{x}1449.6[&] 5								
1463.47 10	12.4 20	1551.33	(4)$^+$	87.765	2$^+$			Mult.: α(K)exp<0.0018 (1970Ch28).
1510.00 13	5.4 9	1597.89	($^-$)	87.765	2$^+$			other Iγ: 12 4 (1970Ch28).
1516.7 6	0.83 25	1604.5	(2$^+$)	87.765	2$^+$			
^{x}1521.1 6	0.76 22							
^{x}1529[@] 2	2[@] 2							
1573.0 20	0.5 5	2158.56	(4$^+$)	585.35	6$^+$			
1594.2 4	1.4 3	2180.28	4$^+$	585.35	6$^+$			
1605.2 20	0.2 1	1604.5	(2$^+$)	0.0	0$^+$			
1619.0 10	<0.4	2204.00	(4)$^+$	585.35	6$^+$			
^{x}1622.2 7	0.69 20							
1631.2[e] 4	1.9 4	1917.8?		286.60	4$^+$			
1642.1 12	0.44 17	1730.48	(1,2$^+$)	87.765	2$^+$			
^{x}1669.2[&] 10								
1686.3[e] 3	0.2 2	1972.8	(2$^+$)	286.60	4$^+$			evaluator assigns placement As uncertain because γ is very weak and a 1686γ appears to deexcite a separate level In 5.5-min ε decay.
^{x}1711.8 18	0.31 18							
1724.6 7	0.84 22	2011.39	(2$^+$,3,4$^+$)	286.60	4$^+$			
1730.8[e] 6	0.6 3	1730.48	(1,2$^+$)	0.0	0$^+$			
1779.5 8	0.44 19	2364.5	(4$^+$)	585.35	6$^+$			

$^{168}_{70}$Yb$_{98}$-11

γ(^{168}Yb) (continued)

E_γ[†]	I_γ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Comments
[x]1793.5 *8*	0.52 *24*					
1848.74 *25*	2.9 *5*	2135.34	$(3^+,4^+)$	286.60	4^+	
[x]1853.7 *8*	0.78 *23*					
1871.8 *4*	1.9 *4*	2158.56	(4^+)	286.60	4^+	
1894.1 *10*	0.36 *21*	2180.28	4^+	286.60	4^+	
[x]1897.6[&] *10*						
[x]1902.5[&]						
1917.28 *10*	10.1 *16*	2204.00	$(4)^+$	286.60	4^+	
[x]1956.5[&] *10*						
1967.7 *14*	0.6 *3*	2055.88	$(2^+,3^+,4^+)$	87.765	2^+	
1969.5 *5*	5.3 *11*	2256.03	$(3^+,4^+)$	286.60	4^+	
1977.6 *9*	0.69 *21*	2065.08	$(2^+,3,4^+)$	87.765	2^+	
[x]2031.5[&] *12*						
[x]2042.3[&] *15*						
2047.6 *4*	1.9 *4*	2135.34	$(3^+,4^+)$	87.765	2^+	
[x]2054.0[&] *15*						
2070.9 *4*	2.0 *4*	2158.56	(4^+)	87.765	2^+	
2093.1 *4*	1.9 *4*	2180.28	4^+	87.765	2^+	
2116.24 *20*	11.7 *22*	2204.00	$(4)^+$	87.765	2^+	
2118.1 *10*	1.4 *8*	2404.87	$(3)^+$	286.60	4^+	
2128.7 *4*	1.6 *3*	2415.3	(3,4,5)	286.60	4^+	
2141.39 *8*	21 *3*	2427.96	$(2^+,3^+,4^+)$	286.60	4^+	
2168.4 *5*	1.0 *3*	2256.03	$(3^+,4^+)$	87.765	2^+	
2187.9 *7*	0.86 *23*	2475.19	$(2^+,3,4^+)$	286.60	4^+	
2276.8 *4*	1.7 *4*	2364.5	(4^+)	87.765	2^+	
2317.18 *24*	2.7 *6*	2404.87	$(3)^+$	87.765	2^+	
[x]2336.5 *11*	0.9 *3*					
2340.6 *11*	0.6 *3*	2427.96	$(2^+,3^+,4^+)$	87.765	2^+	other Iγ: 7 *3* (1970Ar16).
[x]2355[@] *2*	7[@] *3*					
2358.4[e] *8*	0.51 *16*	2645.0?		286.60	4^+	

† From 1999Ba65, except as noted.

‡ From 1999Ba65; authors employed a high-purity source for this study. Iγ for the strongest lines are In satisfactory agreement with those from 1970Ar16; In that study, contamination from ^{168}Lu(5.5 min) appears to be very low, as evidenced by absence of or low Iγ for γ rays peculiar to ^{168}Lu ε decay (5.5 min).

From α(K)exp values based on Ice(K) data In 1970Ch28, except As noted. 1970Ch28 normalized their γ and ce intensity scales by assuming pure E2 for the following transitions: 87.7γ, 198.8γ, 298.8γ, 884.6γ, 896.1γ, 979.2γ+983.8γ. However, the 885γ, 896γ and 979γ are not ΔJ=2 transitions, so May have a D admixture. 1999Ba65 recommend using only the 299γ for normalization; this would give α(K)exp values 24% higher than deduced In 1970Ch28. if, instead, only the 199γ were used, No adjustment of α(K)exp from 1970Ch28 would Be called for. 1970Ch28 do not give Ice(K) for the 88γ. both the 199γ and 299γ

$^{168}_{70}$Yb$_{98}$-12

$\gamma(^{168}$Yb) (continued)

have weak transitions from 6.7-min ^{168}Lu decay nearby; these might not have been resolved by 1970Ch28, but their impact on α(K)exp values whose uncertainties are At least 20% probably is not important. The evaluator quotes α(K)exp from 1970Ch28 below but, when making multipolarity assignments, takes into account the possibility that α(K)exp May Be systematically low by about 10%.

[@] From 1970Ar16.

[&] Unplaced γ from 1970Ch28. Parent isomer unknown, but absence of γ In ^{168}Lu ε decay (6.7 min) study In 1999Ba65 favors assignment to ^{168}Lu ε decay (5.5 min).

[a] For absolute intensity per 100 decays, multiply by 0.165 *22*.

[b] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[c] Multiply placed with undivided intensity.

[d] Multiply placed with intensity suitably divided.

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

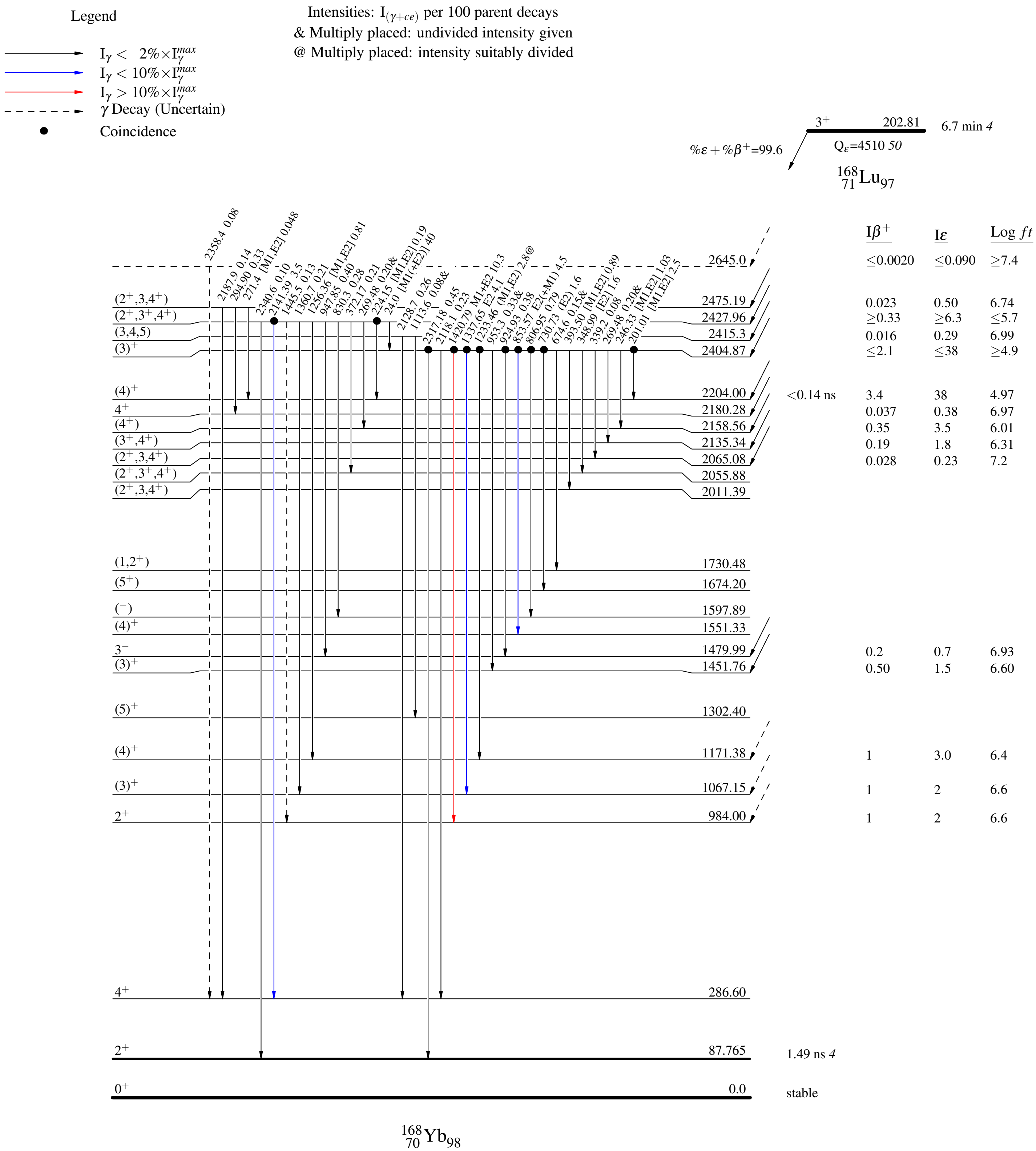
[x] γ ray not placed in level scheme.

$^{168}_{70}$Yb$_{98}$-13

^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28

Decay Scheme

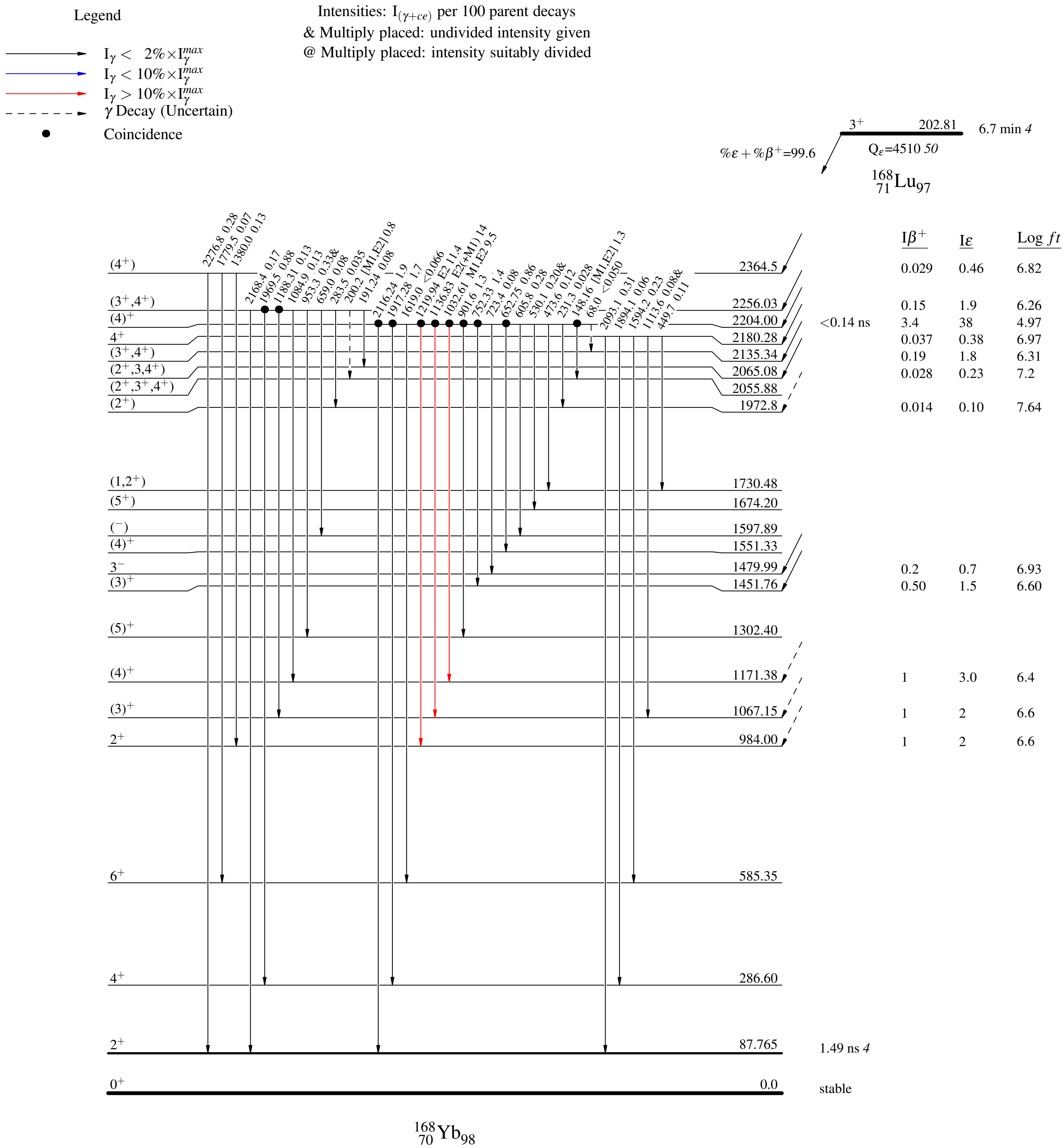
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28

Decay Scheme (continued)

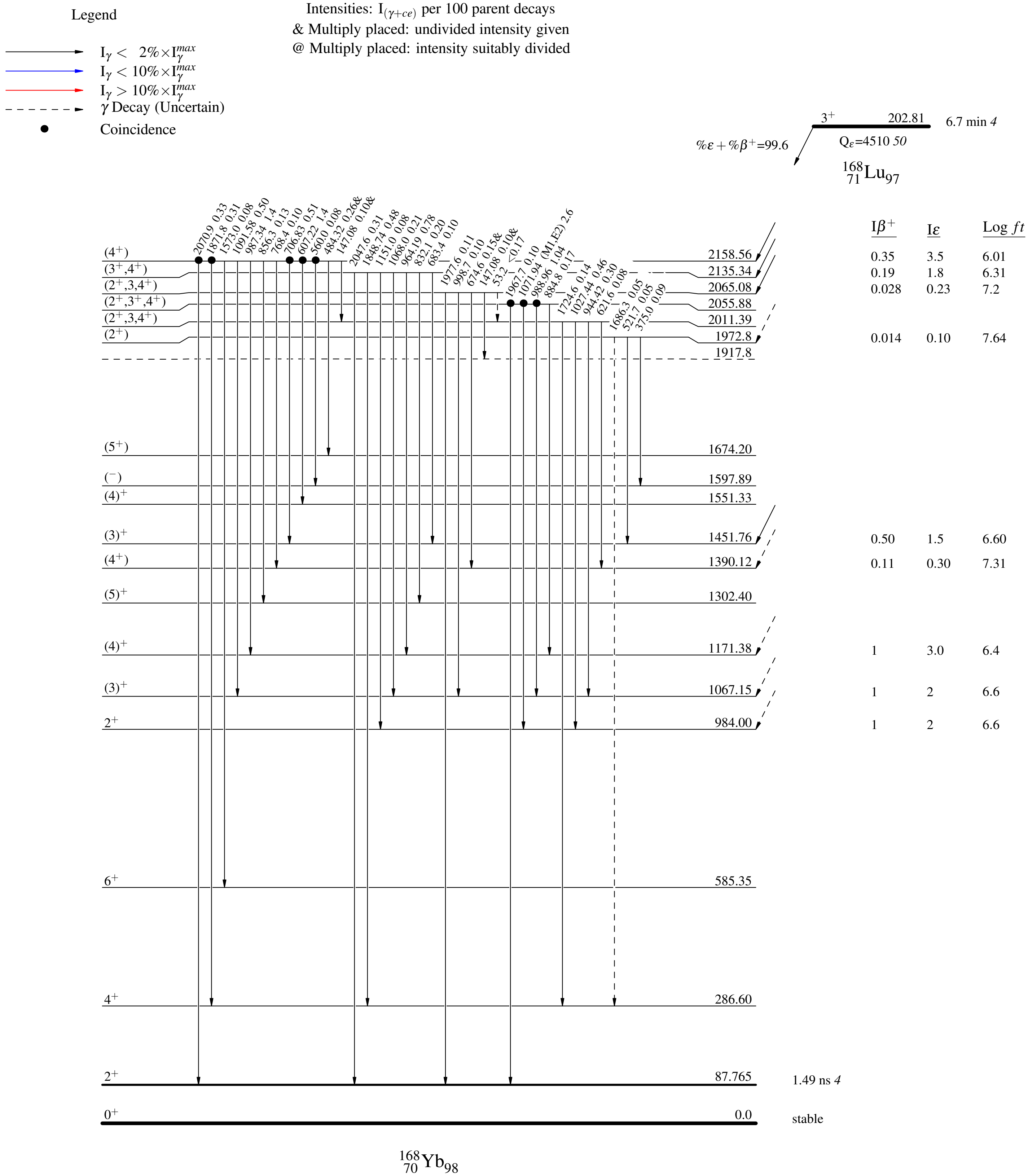
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28

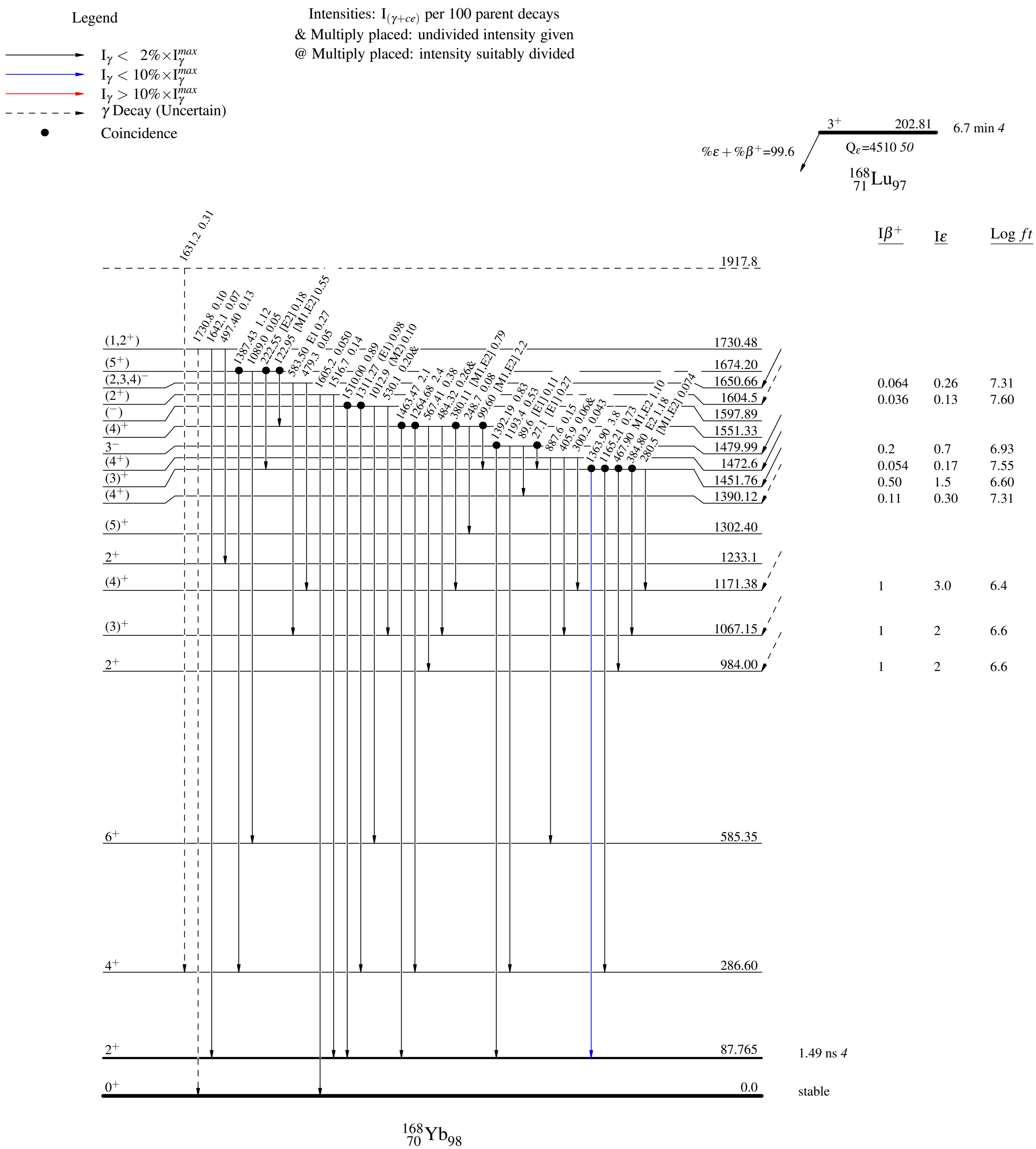
Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28

Decay Scheme (continued)



^{168}Lu ε decay (6.7 min) 1999Ba65,1970Ar16,1970Ch28

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided