^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 110, 2257 (2009)	1-May-2008

Parent: ^{154}Tb: E=0+x; J$^{\pi}$=3^{-}; T$_{1/2}$=9.4 h *4*; Q(ε)=3550 *50*; %ε+%β^{+} decay=78.2 *7*

^{154}Tb-E: Additional information 1.

^{154}Tb-J$^{\pi}$: Additional information 2.

^{154}Tb-T$_{1/2}$: Additional information 3.

^{154}Tb-Q(ε): Additional information 4.

^{154}Tb-%ε+%β^{+} decay: See ^{154}Tb Adopted data set. From IT decay intensity of 21.8% 7 (1973La20), the intensity of the β^{-} decay to ^{154}Dy is estimated to be<0.1%.

Additional information 5.

Three ^{154}Tb isomers (21.5, 9.4, and 22.7 h) have been observed. The most complete decomposition of the γ data among these isomers is from 1975So03, so these data are used to place the G.

A study of the ^{154}Tb isomers is reported as a part of the thesis which constitutes 2001KuZS. With the exception of information relating to the 1701 level, these data are not included here, since further analysis appears to be required. The data regarding the 1701 level is taken from the study of 2003Ku19, together with information from a private communication from J.L. Wood, one of the authors of this study.

^{154}Gd Levels

Additional information 6.

E(level)[†]	J$^{\pi}$[‡]	E(level)[†]	J$^{\pi}$[‡]	E(level)[†]	J$^{\pi}$[‡]	E(level)[†]	J$^{\pi}$[‡]
0.0[@]	0^{+}	1263.72[a] *5*	4^{+}	1770.09[g] *6*	5^{+}	2405.92 *10*	2^{+}
123.06[@] *3*	2^{+}	1397.53[d] *6*	2^{-}	1796.44[f] *17*	3^{-}	2416.16 *9*	4^{+}
371.00[@] *4*	4^{+}	1418.23[c] *12*	2^{+}	2024.8 *3*	1,2^{+}	2495.96 *9*	1,2^{+}
680.64[&] *4*	0^{+}	1432.34[a] *9*	5^{+}	2080.81 *8*	3^{-},4^{+}[#]	2654.62 *13*	2^{+}
717.70[@] *5*	6^{+}	1531.28[e] *4*	2^{+}	2185.98 *6*	4^{-}	2934.3 *6*	1^{+}
815.48[&] *4*	2^{+}	1560.10[d] *13*	(4^{-})	2230.04 *18*	(2^{+})	3363.6 *4*	(2^{+})
996.31[a] *4*	2^{+}	1617.2[d] *3*	3^{-}	2266.10 *18*	2^{+},3,4^{+}	3517.10 *16*	(3^{+},4^{+})
1047.58[&] *5*	4^{+}	1645.81[g] *4*	4^{+}	2277.11 *9*	3	3550.2 *4*	2^{+},3,4^{+}
1127.76[a] *4*	3^{+}	1660.91[e] *4*	3^{+}	2305.66 *8*	3^{+}		
1241.19[b] *13*	1^{-}	1701.30[c] *8*	4^{+}	2336.01 *6*	3^{-}		
1251.81[b] *10*	3^{-}	1719.7[f] *5*	2^{-}	2368.76 *18*	2^{+},3,4^{+}		

[†] From least-squares fit to γ energies.

[‡] From ^{154}Gd Adopted Levels.

[#] There are Adopted Levels of 4^{+} at 2080.2 and 3^{-} at 2080.8.

[@] Band(A): K$^{\pi}$=0^{+} ground-state band.

[&] Band(B): K$^{\pi}$=0^{+} band. Probable β^{-}vibrational band.

[a] Band(C): K$^{\pi}$=2^{+} γ-vibrational band.

[b] Band(D): K$^{\pi}$=0^{-} octupole-vibrational band.

[c] Band(E): Second excited K$^{\pi}$=0^{+} band. Proposed as a "pairing isomer" by 2003Ku19. The 1182.1 level is identified as the bandhead. It is apparently not populated in this decay.

[d] Band(F): K$^{\pi}$=1^{-} octupole-vibrational band.

[e] Band(G): Second excited K$^{\pi}$=2^{+} band.

[f] Band(H): K$^{\pi}$=2^{-} octupole-vibrational band.

[g] Band(I): K$^{\pi}$= 4^{+} band. Probable hexadecapole vibration.

^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20 (continued)

ε,β^+ radiations

E(decay)	E(level)	Log *ft*	I($\varepsilon+\beta^+$)[†‡#@]
(1.13×10^3 *5*)	2416.16	6.8	6.0 *11*
(1.21×10^3 *5*)	2336.01	6.7	8.0 *13*
(1.24×10^3 *5*)	2305.66	6.9	5.6 *10*
(1.27×10^3 *5*)	2277.11	7.1	3.8 *7*
(1.36×10^3 *5*)	2185.98	6.3	29 *5*
(2.42×10^3 *5*)	1127.76	7.9	2.6 *13*
(2.55×10^3 *5*)	996.31	7.6	6 *2*
(3.18×10^3 *5*)	371.00	7.7 *2*	9 *4*
(3.43×10^3 *5*)	123.06	≥7.2	11 *12*

† Values are from γ-transition-intensity balances. Due to the incompleteness of the decay scheme, values less than 2% are considered unreliable and are not given. For the same reason, uncertainties are not given for values less than 5%.

‡ As a check of the normalization, it is noted that Σ I($\varepsilon+\beta^+$) is 81% 14 for the values given, 100% 14 for all positive values computed, and 97% 14 for all values computed including three small negative ones.

The total-absorption γ spectrum of 1980By03 indicates that for a ^{154}Tb source of unstated isomer content, the feeding is primarily to levels near 2.0 MeV. This measured feeding appears compatible with any combination of the three ^{154}Tb isomers.

@ Absolute intensity per 100 decays.

γ(^{154}Gd)

Iγ normalization: Calculated to give 100% ε+β^+ decay including I(ε+β^+) values computed for all levels. This normalization gives a g.s. feeding of 98% 12.

Iγ values are not given for several γ's by 1975So03. These γ's are known from other studies to deexcite levels observed in this decay, but for various reasons are not seen in this decay (1975So03).

E$_\gamma$[†‡]	I$_\gamma$[a]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[&]	α[b]	I$_{(\gamma+ce)}$[a]	Comments
123.07 *3*	155 *21*	123.06	2$^+$	0.0	0$^+$	E2	1.187		α(K)=0.656 *10*; α(L)=0.411 *6*; α(M)=0.0963 *14*; α(N+..)=0.0244 *4* α(N)=0.0215 *3*; α(O)=0.00286 *4*; α(P)=3.36×10^{-5} *5*
124.4		1770.09	5$^+$	1645.81	4$^+$	[M1,E2]	1.11 *4*	2.5 *7*	ce(K)/(γ+ce)=0.37 *5*; ce(L)/(γ+ce)=0.12 *6*; ce(M)/(γ+ce)=0.028 *15*; ce(N+)/(γ+ce)=0.007 *4* ce(N)/(γ+ce)=0.006 *4*; ce(O)/(γ+ce)=0.0009 *4*; ce(P)/(γ+ce)=2.4×10^{-5} *9*
232.10 *4*	2.4 *2*	1047.58	4$^+$	815.48	2$^+$	E2	0.1359		α(K)=0.0986 *14*; α(L)=0.0290 *4*; α(M)=0.00663 *10*; α(N+..)=0.001708 *24* α(N)=0.001494 *21*; α(O)=0.000208 *3*; α(P)=5.86×10^{-6} *9*
247.94 *3*	113 *10*	371.00	4$^+$	123.06	2$^+$	E2	0.1098		α(K)=0.0809 *12*; α(L)=0.0224 *4*; α(M)=0.00513 *8*; α(N+..)=0.001322 *19* α(N)=0.001156 *17*; α(O)=0.0001616 *23*; α(P)=4.87×10^{-6} *7*
283.0[#] *2*	0.11[@]	1701.30	4$^+$	1418.23	2$^+$	[E2]	0.0722		α(K)=0.0547 *8*; α(L)=0.01365 *20*; α(M)=0.00310 *5*; α(N+..)=0.000803 *12* α(N)=0.000701 *10*; α(O)=9.90×10^{-5} *14*; α(P)=3.38×10^{-6} *5*
330.00 *16*	1.0 *1*	1047.58	4$^+$	717.70	6$^+$	E2	0.0451		α(K)=0.0350 *5*; α(L)=0.00786 *11*; α(M)=0.00177 *3*; α(N+..)=0.000461 *7* α(N)=0.000401 *6*; α(O)=5.75×10^{-5} *9*; α(P)=2.22×10^{-6} *4*
337.9 *2*	1.6 *5*	1770.09	5$^+$	1432.34	5$^+$	(E0+M1+E2)	0.12		α(K)=0.046 *14*; α(L)=0.0078 *6*; α(M)=0.00172 *9*; α(N+..)=0.00045 *3* α(N)=0.000392 *24*; α(O)=5.9×10^{-5} *6*; α(P)=3.2×10^{-6} *12* α: From the adopted values. The listed subshell coefficients do not include a contribution from the E0 component.
346.70 *4*	8.0 *10*	717.70	6$^+$	371.00	4$^+$	E2	0.0389		α(K)=0.0304 *5*; α(L)=0.00662 *10*; α(M)=0.001490 *21*; α(N+..)=0.000388 *6* α(N)=0.000338 *5*; α(O)=4.86×10^{-5} *7*; α(P)=1.95×10^{-6} *3*
382.12 *4*	5.3 *4*	1645.81	4$^+$	1263.72	4$^+$	E2+M1	0.040 *11*		α(K)=0.033 *10*; α(L)=0.0054 *7*; α(M)=0.00118 *12*; α(N+..)=0.00031 *4* α(N)=0.00027 *3*; α(O)=4.1×10^{-5} *6*; α(P)=2.3×10^{-6} *9*
415.85 *6*	10.8 *7*	2185.98	4$^-$	1770.09	5$^+$	E1	0.00720		α(K)=0.00613 *9*; α(L)=0.000835 *12*; α(M)=0.000180 *3*; α(N+..)=4.79×10^{-5} *7* α(N)=4.12×10^{-5} *6*; α(O)=6.31×10^{-6} *9*; α(P)=4.00×10^{-7} *6*
444.54 *7*	5.4 *3*	815.48	2$^+$	371.00	4$^+$	E2	0.0191		α(K)=0.01540 *22*; α(L)=0.00292 *4*; α(M)=0.000650 *10*; α(N+..)=0.0001706 *24* α(N)=0.0001479 *21*; α(O)=2.17×10^{-5} *3*; α(P)=1.020×10^{-6} *15*

$^{154}_{64}$Gd$_{90}$-3

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	δ [&]	α [b]	Comments
[x]461.61 *15*	1.3 *1*								
484.74 *21*	0.8 *1*	2185.98	4$^-$	1701.30	4$^+$	[E1]		0.00505	α(K)=0.00431 *6*; α(L)=0.000583 *9*; α(M)=0.0001255 *18*; α(N+..)=3.34×10^{-5} *5* α(N)=2.87×10^{-5} *4*; α(O)=4.41×10^{-6} *7*; α(P)=2.83×10^{-7} *4* E_γ: Placement is that of 2003Ku19. This γ was placed from α 3517 level by 1975So03, but the implied final level at 3032 was not assigned to this activity.
[x]492.10 *24*	0.7 *1*								
506.43 *11*	3.1 *6*	1770.09	5$^+$	1263.72	4$^+$	E2		0.01349	α(K)=0.01098 *16*; α(L)=0.00196 *3*; α(M)=0.000434 *6*; α(N+..)=0.0001143 *16* α(N)=9.89×10^{-5} *14*; α(O)=1.464×10^{-5} *21*; α(P)=7.37×10^{-7} *11*
518.04 *6*	31.2 *16*	1645.81	4$^+$	1127.76	3$^+$	E2+M1	−7 *3*	0.0129 *5*	α(K)=0.0106 *4*; α(L)=0.00185 *5*; α(M)=0.000409 *10*; α(N+..)=0.000108 *3* α(N)=9.33×10^{-5} *22*; α(O)=1.39×10^{-5} *4*; α(P)=7.1×10^{-7} *3*
540.18 *6*	100	2185.98	4$^-$	1645.81	4$^+$	E1		0.00397	α(K)=0.00339 *5*; α(L)=0.000455 *7*; α(M)=9.80×10^{-5} *14*; α(N+..)=2.61×10^{-5} *4* α(N)=2.25×10^{-5} *4*; α(O)=3.45×10^{-6} *5*; α(P)=2.24×10^{-7} *4*
545.5 *4*	0.5 *2*	1263.72	4$^+$	717.70	6$^+$	[E2]		0.01113	α(K)=0.00912 *13*; α(L)=0.001575 *23*; α(M)=0.000348 *5*; α(N+..)=9.19×10^{-5} *13* α(N)=7.94×10^{-5} *12*; α(O)=1.181×10^{-5} *17*; α(P)=6.16×10^{-7} *9*
557.60 *6*	1.6 *3*	680.64	0$^+$	123.06	2$^+$	E2		0.01053	α(K)=0.00863 *12*; α(L)=0.001479 *21*; α(M)=0.000327 *5*; α(N+..)=8.62×10^{-5} *12* α(N)=7.46×10^{-5} *11*; α(O)=1.110×10^{-5} *16*; α(P)=5.84×10^{-7} *9*
564.9	0.1	2266.10	2$^+$,3,4$^+$	1701.30	4$^+$				E_γ: Value is from 2001KuZS. Placement and Iγ value are from J.L. Wood (private communication, April, 2008).
573.5[#] *2*	0.081[@]	1701.30	4$^+$	1127.76	3$^+$				
591.9 *5*	0.6 *3*	1719.7	2$^-$	1127.76	3$^+$	E1(+M2)	+0.02 *3*	0.00327 *11*	α(K)=0.00279 *9*; α(L)=0.000374 *14*; α(M)=8.1×10^{-5} *3*; α(N+..)=2.15×10^{-5} *8* α(N)=1.85×10^{-5} *7*; α(O)=2.84×10^{-6} *11*; α(P)=1.85×10^{-7} *7* δ: From ^{154}Eu β^- decay.
598.19 *6*	7.2 *7*	1645.81	4$^+$	1047.58	4$^+$	M1+E2	0.65 *20*	0.0139 *10*	α(K)=0.0118 *9*; α(L)=0.00169 *9*; α(M)=0.000366 *19*; α(N+..)=9.8×10^{-5} *6* α(N)=8.4×10^{-5} *5*; α(O)=1.30×10^{-5} *8*; α(P)=8.5×10^{-7} *7*
602.67 *24*	0.4 *2*	1418.23	2$^+$	815.48	2$^+$	E0+M1+E2		0.038 *8*	α(K)=0.010 *4*; α(L)=0.0015 *4*; α(M)=0.00033 *7*; α(N+..)=8.8×10^{-5} *20* α(N)=7.6×10^{-5} *17*; α(O)=1.2×10^{-5} *3*; α(P)=7.3×10^{-7} *25* α: From the adopted values. The listed subshell coefficients do not include a contribution from the E0 component.
625.19 *22*	1.2 *2*	996.31	2$^+$	371.00	4$^+$	E2		0.00792	α(K)=0.00655 *10*; α(L)=0.001075 *15*; α(M)=0.000237 *4*;

$^{154}_{64}$Gd$_{90}$-4

$\gamma(^{154}$Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	δ [&]	α [b]	$I_{(\gamma+ce)}$ [a]	Comments
										α(N+..)=6.26×10^{-5} *9* α(N)=5.41×10^{-5} *8*; α(O)=8.11×10^{-6} *12*; α(P)=4.47×10^{-7} *7*
642.18 *9*	3.5 *7*	1770.09	5$^+$	1127.76	3$^+$	M1,E2		0.010 *3*		α(K)=0.009 *3*; α(L)=0.0013 *3*; α(M)=0.00028 *6*; α(N+..)=7.5×10^{-5} *17* α(N)=6.4×10^{-5} *15*; α(O)=9.9×10^{-6} *24*; α(P)=6.3×10^{-7} *21*
649.44 *6*	56 *3*	1645.81	4$^+$	996.31	2$^+$	E2		0.00723		α(K)=0.00599 *9*; α(L)=0.000970 *14*; α(M)=0.000213 *3*; α(N+..)=5.65×10^{-5} *8* α(N)=4.87×10^{-5} *7*; α(O)=7.32×10^{-6} *11*; α(P)=4.09×10^{-7} *6*
653.7 [#] *2*	0.65 [@]	1701.30	4$^+$	1047.58	4$^+$					
^{x}660.35 *35*	0.6 *2*									
669.1 *3*	0.6 *2*	1796.44	3$^-$	1127.76	3$^+$	E1		0.00251		α(K)=0.00215 *3*; α(L)=0.000285 *4*; α(M)=6.14×10^{-5} *9*; α(N+..)=1.639×10^{-5} *23* α(N)=1.407×10^{-5} *20*; α(O)=2.17×10^{-6} *3*; α(P)=1.428×10^{-7} *20*
676.55 *7*	16.6 *15*	1047.58	4$^+$	371.00	4$^+$	E0+M1+E2	+2.9 *4*	0.053 *3*		α: Deduced from α(K)exp=0.044 *3*. See the Adopted Gammas data set. δ: From ^{154}Eu β^- decay.
680.7 *1*		680.64	0$^+$	0.0	0$^+$	E0			0.02 *1*	$I_{(\gamma+ce)}$: From I(ce(K) 680)/I(ce(K) 557)=1.5 *7* from several measurements and I(ce(K) 557)=0.014.
692.41 *4*	16.9 *15*	815.48	2$^+$	123.06	2$^+$	E0+M1+E2	7.5 *4*	0.046 *3*		α(K)=0.00524 *8*; α(L)=0.000828 *12*; α(M)=0.000182 *3*; α(N+..)=4.81×10^{-5} *7* α(N)=4.15×10^{-5} *6*; α(O)=6.27×10^{-6} *9*; α(P)=3.60×10^{-7} *5* α: From the adopted values. The listed subshell coefficients do not include a contribution from the E0 component.
705.1 [#] *2*	<0.014 [@]	1701.30	4$^+$	996.31	2$^+$	[E2]				
(714.6)		1432.34	5$^+$	717.70	6$^+$	E2,M1		0.0081 *23*		α(K)=0.0068 *20*; α(L)=0.00098 *23*; α(M)=0.00021 *5*; α(N+..)=5.7×10^{-5} *14* α(N)=4.9×10^{-5} *12*; α(O)=7.5×10^{-6} *19*; α(P)=4.8×10^{-7} *16*
715.786 *18*	2.9 *4*	1531.28	2$^+$	815.48	2$^+$	E0,M1,E2		0.013 *4*		α(K)=0.0068 *20*; α(L)=0.00098 *23*; α(M)=0.00021 *5*; α(N+..)=5.7×10^{-5} *13* α(N)=4.9×10^{-5} *11*; α(O)=7.5×10^{-6} *19*; α(P)=4.8×10^{-7} *16* α: From the adopted values. The listed subshell coefficients do not include a contribution from the E0 component.
722.5	1.9 *5*	1770.09	5$^+$	1047.58	4$^+$	[M1,E2]		0.0078 *23*		α(K)=0.0066 *20*; α(L)=0.00095 *22*; α(M)=0.00021 *5*; α(N+..)=5.5×10^{-5} *13* α(N)=4.8×10^{-5} *11*; α(O)=7.3×10^{-6} *18*; α(P)=4.7×10^{-7} *15*

$^{154}_{64}$Gd$_{90}$-5

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	δ [&]	α [b]	Comments
723.6 *9*	1.2 *4*	1719.7	2^-	996.31	2^+	E1+M2	+0.022 *13*	0.00215 *4*	α(K)=0.00184 *3*; α(L)=0.000244 *5*; α(M)=5.24×10^{-5} *10*; α(N+..)=1.400×10^{-5} *25* α(N)=1.202×10^{-5} *21*; α(O)=1.86×10^{-6} *4*; α(P)=1.228×10^{-7} *22* δ: From ^{154}Eu β^- decay.
^{x}749.4 *8*	<1								
753.1 *9*	1.2 *6*	2185.98	4^-	1432.34	5^+	[E1]		0.00197	α(K)=0.001686 *24*; α(L)=0.000223 *4*; α(M)=4.79×10^{-5} *7*; α(N+..)=1.280×10^{-5} *19* α(N)=1.099×10^{-5} *16*; α(O)=1.698×10^{-6} *25*; α(P)=1.126×10^{-7} *16*
756.71 *6*	13.6 *8*	1127.76	3^+	371.00	4^+	E2+M1	−6.1 *3*	0.00516	α(K)=0.00431 *7*; α(L)=0.000663 *10*; α(M)=0.0001450 *21*; α(N+..)=3.85×10^{-5} *6* α(N)=3.32×10^{-5} *5*; α(O)=5.03×10^{-6} *7*; α(P)=2.97×10^{-7} *5* δ: From ^{154}Eu β^- decay.
^{x}796.29 *22*	1.3 *1*								
800.7 *10*	0.5 *1*	1796.44	3^-	996.31	2^+	E1		1.74×10^{-3}	α(K)=0.001492 *22*; α(L)=0.000197 *3*; α(M)=4.23×10^{-5} *6*; α(N+..)=1.130×10^{-5} *16* α(N)=9.70×10^{-6} *14*; α(O)=1.499×10^{-6} *22*; α(P)=9.98×10^{-8} *15*
815.49 *7*	4.8 *5*	815.48	2^+	0.0	0^+	E2		0.00427	α(K)=0.00358 *5*; α(L)=0.000542 *8*; α(M)=0.0001185 *17*; α(N+..)=3.15×10^{-5} *5* α(N)=2.71×10^{-5} *4*; α(O)=4.12×10^{-6} *6*; α(P)=2.47×10^{-7} *4*
^{x}826.29 *21*	0.7 *1*								
830.49 *9*	3.5 *3*	1645.81	4^+	815.48	2^+	M1,E2		0.0056 *16*	α(K)=0.0048 *14*; α(L)=0.00068 *16*; α(M)=0.00015 *4*; α(N+..)=3.9×10^{-5} *9* α(N)=3.4×10^{-5} *8*; α(O)=5.2×10^{-6} *13*; α(P)=3.4×10^{-7} *11*
845.423 *8*	1.3 *1*	1660.91	3^+	815.48	2^+	E2		0.00395	α(K)=0.00331 *5*; α(L)=0.000497 *7*; α(M)=0.0001085 *16*; α(N+..)=2.89×10^{-5} *4* α(N)=2.48×10^{-5} *4*; α(O)=3.78×10^{-6} *6*; α(P)=2.29×10^{-7} *4*
850.643 *12*	0.8 *2*	1531.28	2^+	680.64	0^+	E2		0.00389	α(K)=0.00327 *5*; α(L)=0.000490 *7*; α(M)=0.0001069 *15*; α(N+..)=2.84×10^{-5} *4* α(N)=2.45×10^{-5} *4*; α(O)=3.73×10^{-6} *6*; α(P)=2.26×10^{-7} *4*
^{x}857.2 *15*	0.5 *1*								
873.21 *4*	47 *3*	996.31	2^+	123.06	2^+	E0+M1+E2	−9.4 *4*	0.00371	α(K)=0.00311 *5*; α(L)=0.000463 *7*; α(M)=0.0001010 *15*; α(N+..)=2.69×10^{-5} *4* α(N)=2.31×10^{-5} *4*; α(O)=3.53×10^{-6} *5*; α(P)=2.15×10^{-7} *3* δ: From ^{154}Eu β^- decay.
880.6 *6*	1.6 *2*	1251.81	3^-	371.00	4^+	E1+M2	+0.07 *3*	0.00152 *8*	α(K)=0.00130 *7*; α(L)=0.000172 *10*; α(M)=3.69×10^{-5} *21*; α(N+..)=9.9×10^{-6} *6* α(N)=8.5×10^{-6} *5*; α(O)=1.31×10^{-6} *8*; α(P)=8.8×10^{-8} *5*
885.8[#] *2*	0.058[@]	1701.30	4^+	815.48	2^+	[E2]		0.00356	α(K)=0.00300 *5*; α(L)=0.000445 *7*; α(M)=9.70×10^{-5} *14*;

$^{154}_{64}$Gd$_{90}$-6

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	δ [&]	α [b]	Comments
									α(N+..)=2.58×10^{-5} *4* α(N)=2.22×10^{-5} *4*; α(O)=3.39×10^{-6} *5*; α(P)=2.07×10^{-7} *3*
892.76 *6*	16.1 *11*	1263.72	4$^+$	371.00	4$^+$	E0+M1+E2	−3.8 *3*	0.00367	α(K)=0.00309 *5*; α(L)=0.000454 *7*; α(M)=9.88×10^{-5} *15*; α(N+..)=2.63×10^{-5} *4* α(N)=2.26×10^{-5} *4*; α(O)=3.46×10^{-6} *6*; α(P)=2.14×10^{-7} *4* δ: From ^{154}Eu β^- decay. α: Theoretical value since α(K)exp indicates negligible E0 component.
922.1 [c] *9*	2.0 [c] *6*	2185.98	4$^-$	1263.72	4$^+$	[E1]		1.32×10^{-3}	α(K)=0.001135 *16*; α(L)=0.0001487 *21*; α(M)=3.19×10^{-5} *5*; α(N+..)=8.54×10^{-6} *12* α(N)=7.33×10^{-6} *11*; α(O)=1.135×10^{-6} *16*; α(P)=7.62×10^{-8} *11*
922.1 [cd] *9*	2.6 [c] *6*	2336.01	3$^-$	1418.23	2$^+$	[E1]		1.32×10^{-3}	α(K)=0.001135 *16*; α(L)=0.0001487 *21*; α(M)=3.19×10^{-5} *5*; α(N+..)=8.54×10^{-6} *12* α(N)=7.33×10^{-6} *11*; α(O)=1.135×10^{-6} *16*; α(P)=7.62×10^{-8} *11* E_γ: Poor energy fit.
924.6 *3*	7.2 *7*	1047.58	4$^+$	123.06	2$^+$	E2		0.00325	α(K)=0.00274 *4*; α(L)=0.000402 *6*; α(M)=8.76×10^{-5} *13*; α(N+..)=2.33×10^{-5} *4* α(N)=2.01×10^{-5} *3*; α(O)=3.07×10^{-6} *5*; α(P)=1.89×10^{-7} *3*
927.5 *4*	1.8 *6*	1645.81	4$^+$	717.70	6$^+$	[E2]		0.00323	α(K)=0.00272 *4*; α(L)=0.000400 *6*; α(M)=8.70×10^{-5} *13*; α(N+..)=2.32×10^{-5} *4* α(N)=1.99×10^{-5} *3*; α(O)=3.05×10^{-6} *5*; α(P)=1.88×10^{-7} *3*
953.18 *13*	2.9 *2*	2080.81	3$^-$,4$^+$	1127.76	3$^+$	M1,E2		0.0041 *11*	
964.9 *3*	1.7 *2*	2495.96	1,2$^+$	1531.28	2$^+$				
^{x}982.0 *4*	1.6 *3*								
983.7 [#] *2*	0.6 [@]	1701.30	4$^+$	717.70	6$^+$				
984.3 *4*	2.3 *3*	2416.16	4$^+$	1432.34	5$^+$	[M1,E2]		0.0038 *10*	α(K)=0.0032 *9*; α(L)=0.00045 *10*; α(M)=9.7×10^{-5} *22*; α(N+..)=2.6×10^{-5} *6* α(N)=2.2×10^{-5} *5*; α(O)=3.5×10^{-6} *8*; α(P)=2.3×10^{-7} *7*
996.24 *6*	44 *4*	996.31	2$^+$	0.0	0$^+$	E2		0.00277	α(K)=0.00234 *4*; α(L)=0.000339 *5*; α(M)=7.37×10^{-5} *11*; α(N+..)=1.97×10^{-5} *3* α(N)=1.690×10^{-5} *24*; α(O)=2.59×10^{-6} *4*; α(P)=1.621×10^{-7} *23*
1004.73 *5*	56 *4*	1127.76	3$^+$	123.06	2$^+$	E2+M1	−7.4 *4*	0.00276	α(K)=0.00233 *4*; α(L)=0.000336 *5*; α(M)=7.30×10^{-5} *11*; α(N+..)=1.95×10^{-5} *3* α(N)=1.675×10^{-5} *24*; α(O)=2.57×10^{-6} *4*; α(P)=1.615×10^{-7} *23* δ: From ^{154}Eu β^- decay.
1012.9 *3*	0.5 *1*	2277.11	3	1263.72	4$^+$	[E1]		1.11×10^{-3}	α(K)=0.000951 *14*; α(L)=0.0001241 *18*; α(M)=2.66×10^{-5}

$^{154}_{64}$Gd$_{90}$-7

γ(^{154}Gd) (continued)

Eγ[†‡]	Iγ[a]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[&]	δ[&]	α[b]	Comments
									4; α(N+..)=7.13×10^{-6} *10* α(N)=6.12×10^{-6} *9*; α(O)=9.48×10^{-7} *14*; α(P)=6.39×10^{-8} *9*
[x]1020.4 *4*	1.5 *2*								Placed from the 3363 level by 1975So03, but they do not report that the final level implied by this placement is populated in this decay (although it is populated in the decay of one of the other ^{154}Tb activities).
1033.30 *9*	2.4 *2*	2080.81	3$^-$,4$^+$	1047.58	4$^+$				
1041.9 *2*	1.1 *1*	2305.66	3$^+$	1263.72	4$^+$	[M1,E2]		0.0033 *8*	α(K)=0.0028 *7*; α(L)=0.00039 *9*; α(M)=8.5×10^{-5} *19*; α(N+..)=2.3×10^{-5} *5* α(N)=2.0×10^{-5} *5*; α(O)=3.0×10^{-6} *7*; α(P)=2.0×10^{-7} *6*
1047.22 *15*	0.7 *1*	1418.23	2$^+$	371.00	4$^+$	E2		0.00250	α(K)=0.00211 *3*; α(L)=0.000303 *5*; α(M)=6.59×10^{-5} *10*; α(N+..)=1.757×10^{-5} *25* α(N)=1.510×10^{-5} *22*; α(O)=2.32×10^{-6} *4*; α(P)=1.465×10^{-7} *21*
1053.9 *7*	1.1 *3*	2305.66	3$^+$	1251.81	3$^-$	[E1]		1.03×10^{-3}	α(K)=0.000884 *13*; α(L)=0.0001152 *17*; α(M)=2.47×10^{-5} *4*; α(N+..)=6.61×10^{-6} *10* α(N)=5.68×10^{-6} *8*; α(O)=8.80×10^{-7} *13*; α(P)=5.94×10^{-8} *9*
1058.34 *18*	1.4 *2*	2185.98	4$^-$	1127.76	3$^+$	[E1]		1.02×10^{-3}	α(K)=0.000877 *13*; α(L)=0.0001142 *16*; α(M)=2.45×10^{-5} *4*; α(N+..)=6.56×10^{-6} *10* α(N)=5.63×10^{-6} *8*; α(O)=8.73×10^{-7} *13*; α(P)=5.90×10^{-8} *9*
1061.39 *9*	0.7 *1*	1432.34	5$^+$	371.00	4$^+$	E2+M1	−4.3 *+12−26*	0.00251 *8*	α(K)=0.00212 *7*; α(L)=0.000303 *9*; α(M)=6.57×10^{-5} *18*; α(N+..)=1.75×10^{-5} *5* α(N)=1.51×10^{-5} *4*; α(O)=2.32×10^{-6} *7*; α(P)=1.48×10^{-7} *5*
1072.37 *13*	1.8 *2*	2336.01	3$^-$	1263.72	4$^+$	[E1]		9.98×10^{-4}	α(K)=0.000856 *12*; α(L)=0.0001115 *16*; α(M)=2.39×10^{-5} *4*; α(N+..)=6.40×10^{-6} *9* α(N)=5.49×10^{-6} *8*; α(O)=8.52×10^{-7} *12*; α(P)=5.76×10^{-8} *8*
1084.21[c] *14*	1.9[c] *2*	2080.81	3$^-$,4$^+$	996.31	2$^+$				
1084.21[c] *14*	1.9[c] *2*	2336.01	3$^-$	1251.81	3$^-$	[M1,E2]		0.0030 *8*	α(K)=0.0026 *7*; α(L)=0.00036 *8*; α(M)=7.7×10^{-5} *17*; α(N+..)=2.1×10^{-5} *5* α(N)=1.8×10^{-5} *4*; α(O)=2.8×10^{-6} *7*; α(P)=1.8×10^{-7} *5*
1102.43 *20*	1.4 *2*	2230.04	(2$^+$)	1127.76	3$^+$	[M1,E2]		0.0029 *7*	α(K)=0.0025 *6*; α(L)=0.00034 *8*; α(M)=7.4×10^{-5} *16*; α(N+..)=2.0×10^{-5} *5* α(N)=1.7×10^{-5} *4*; α(O)=2.7×10^{-6} *6*; α(P)=1.8×10^{-7} *5*; α(IPF)=3.43×10^{-7} *20*
1105.8 *8*	0.3 *2*	2368.76	2$^+$,3,4$^+$	1263.72	4$^+$				

$\gamma(^{154}Gd)$ (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	α [b]	Comments
1118.03 *22*	2.7 *6*	1241.19	1^-	123.06	2^+	E1	9.28×10^{-4}	α(K)=0.000793 *12*; α(L)=0.0001031 *15*; α(M)=2.21×10^{-5} *3*; α(N+..)=9.37×10^{-6} *14* α(N)=5.08×10^{-6} *8*; α(O)=7.88×10^{-7} *11*; α(P)=5.34×10^{-8} *8*; α(IPF)=3.45×10^{-6} *6*
(1123.09 *16*)		2654.62	2^+	1531.28	2^+	[M1,E2]	0.0028 *7*	α(K)=0.0024 *6*; α(L)=0.00033 *7*; α(M)=7.1×10^{-5} *15*; α(N+..)=2.0×10^{-5} *5* α(N)=1.6×10^{-5} *4*; α(O)=2.5×10^{-6} *6*; α(P)=1.7×10^{-7} *5*; α(IPF)=7.4×10^{-7} *5*
1128.77 *13*	8.1 *6*	1251.81	3^-	123.06	2^+	E1	9.14×10^{-4}	α(K)=0.000780 *11*; α(L)=0.0001013 *15*; α(M)=2.17×10^{-5} *3*; α(N+..)=1.063×10^{-5} *15* α(N)=4.99×10^{-6} *7*; α(O)=7.75×10^{-7} *11*; α(P)=5.25×10^{-8} *8*; α(IPF)=4.81×10^{-6} *7*
1140.75 *8*	7.1 *6*	1263.72	4^+	123.06	2^+	E2	0.00210	α(K)=0.001779 *25*; α(L)=0.000251 *4*; α(M)=5.45×10^{-5} *8*; α(N+..)=1.581×10^{-5} *23* α(N)=1.251×10^{-5} *18*; α(O)=1.92×10^{-6} *3*; α(P)=1.233×10^{-7} *18*; α(IPF)=1.253×10^{-6} *18*
1149.66 *13*	5.0 *8*	2277.11	3	1127.76	3^+	[E1]	8.88×10^{-4}	α(K)=0.000754 *11*; α(L)=9.80×10^{-5} *14*; α(M)=2.10×10^{-5} *3*; α(N+..)=1.422×10^{-5} *20* α(N)=4.83×10^{-6} *7*; α(O)=7.49×10^{-7} *11*; α(P)=5.08×10^{-8} *8*; α(IPF)=8.59×10^{-6} *13*
1152.42 *9*	11.1 *15*	2416.16	4^+	1263.72	4^+	[M1,E2]	0.0027 *6*	α(K)=0.0023 *6*; α(L)=0.00031 *7*; α(M)=6.7×10^{-5} *14*; α(N+..)=2.0×10^{-5} *4* α(N)=1.5×10^{-5} *4*; α(O)=2.4×10^{-6} *6*; α(P)=1.6×10^{-7} *4*; α(IPF)=1.87×10^{-6} *11*
1177.71 *19*	1.5 *2*	2305.66	3^+	1127.76	3^+	[M1,E2]	0.0025 *6*	α(K)=0.0022 *5*; α(L)=0.00030 *7*; α(M)=6.4×10^{-5} *13*; α(N+..)=2.1×10^{-5} *4* α(N)=1.5×10^{-5} *3*; α(O)=2.3×10^{-6} *5*; α(P)=1.5×10^{-7} *4*; α(IPF)=3.62×10^{-6} *20*
1189.10 *12*	3.1 *10*	1560.10	(4^-)	371.00	4^+	[E1]	8.48×10^{-4}	α(K)=0.000710 *10*; α(L)=9.21×10^{-5} *13*; α(M)=1.98×10^{-5} *3*; α(N+..)=2.58×10^{-5} *4* α(N)=4.54×10^{-6} *7*; α(O)=7.04×10^{-7} *10*; α(P)=4.78×10^{-8} *7*; α(IPF)=2.05×10^{-5} *3*
1208.06 *14*	2.6 *2*	2336.01	3^-	1127.76	3^+	[E1]	8.32×10^{-4}	α(K)=0.000690 *10*; α(L)=8.95×10^{-5} *13*; α(M)=1.92×10^{-5} *3*; α(N+..)=3.33×10^{-5} *5* α(N)=4.41×10^{-6} *7*; α(O)=6.84×10^{-7} *10*; α(P)=4.65×10^{-8} *7*; α(IPF)=2.81×10^{-5} *4*
[x]1214.3 *4*	0.54 *7*							
1229.42 *20*	3.0 *5*	2277.11	3	1047.58	4^+	[E1]	8.17×10^{-4}	α(K)=0.000669 *10*; α(L)=8.67×10^{-5} *13*; α(M)=1.86×10^{-5} *3*; α(N+..)=4.27×10^{-5} *6* α(N)=4.27×10^{-6} *6*; α(O)=6.63×10^{-7} *10*; α(P)=4.51×10^{-8} *7*; α(IPF)=3.77×10^{-5} *6*
1234.0 *9*	0.6 *3*	2230.04	(2^+)	996.31	2^+	[M1,E2]	0.0023 *5*	α(K)=0.0019 *5*; α(L)=0.00027 *6*; α(M)=5.7×10^{-5} *12*; α(N+..)=2.6×10^{-5} *4* α(N)=1.3×10^{-5} *3*; α(O)=2.0×10^{-6} *5*; α(P)=1.4×10^{-7} *4*; α(IPF)=1.02×10^{-5} *6*
[x]1237.5 *8*	0.8 *4*							

$^{154}_{64}Gd_{90}$-9

$\gamma(^{154}Gd)$ (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	δ [&]	α [b]	Comments
1241.23 *16*	1.4 *2*	1241.19	1^-	0.0	0^+	E1		8.10×10^{-4}	α(K)=0.000658 *10*; α(L)=8.52×10^{-5} *12*; α(M)=1.83×10^{-5} *3*; α(N+..)=4.81×10^{-5} *7* α(N)=4.20×10^{-6} *6*; α(O)=6.52×10^{-7} *10*; α(P)=4.44×10^{-8} *7*; α(IPF)=4.32×10^{-5} *6*
1246.2 *6*	1.4 *3*	1617.2	3^-	371.00	4^+	E1		8.07×10^{-4}	α(K)=0.000653 *10*; α(L)=8.46×10^{-5} *12*; α(M)=1.81×10^{-5} *3*; α(N+..)=5.04×10^{-5} *8* α(N)=4.17×10^{-6} *6*; α(O)=6.47×10^{-7} *9*; α(P)=4.40×10^{-8} *7*; α(IPF)=4.55×10^{-5} *7*
1258.17 *14*	8.3 *6*	2305.66	3^+	1047.58	4^+	[M1,E2]		0.0022 *5*	α(K)=0.0019 *4*; α(L)=0.00025 *5*; α(M)=5.5×10^{-5} *11*; α(N+..)=2.9×10^{-5} *4* α(N)=1.3×10^{-5} *3*; α(O)=2.0×10^{-6} *4*; α(P)=1.3×10^{-7} *3*; α(IPF)=1.38×10^{-5} *8*
1265.0 *4*	0.4 *2*	2080.81	3^-,4^+	815.48	2^+				
1274.46 *5*	4.0 *7*	1397.53	2^-	123.06	2^+	E1+M2	+0.035 *9*	7.97×10^{-4}	α(K)=0.000634 *10*; α(L)=8.21×10^{-5} *13*; α(M)=1.76×10^{-5} *3*; α(N+..)=6.38×10^{-5} *9* α(N)=4.04×10^{-6} *7*; α(O)=6.28×10^{-7} *10*; α(P)=4.28×10^{-8} *7*; α(IPF)=5.91×10^{-5} *9* δ: From ^{154}Eu β^- decay.
1274.7	1.6 *6*	1645.81	4^+	371.00	4^+	[M1,E2]		0.0021 *5*	α(K)=0.0018 *4*; α(L)=0.00025 *5*; α(M)=5.3×10^{-5} *11*; α(N+..)=3.1×10^{-5} *4* α(N)=1.23×10^{-5} *24*; α(O)=1.9×10^{-6} *4*; α(P)=1.3×10^{-7} *3*; α(IPF)=1.65×10^{-5} *9*
1280.8 *5*	0.9 *5*	2277.11	3	996.31	2^+	[E1]		7.87×10^{-4}	α(K)=0.000623 *9*; α(L)=8.05×10^{-5} *12*; α(M)=1.727×10^{-5} *25*; α(N+..)=6.70×10^{-5} *10* α(N)=3.97×10^{-6} *6*; α(O)=6.16×10^{-7} *9*; α(P)=4.20×10^{-8} *6*; α(IPF)=6.23×10^{-5} *9*
1288.39[c] *14*	7.1[c] *6*	2336.01	3^-	1047.58	4^+	[E1]		7.84×10^{-4}	α(K)=0.000616 *9*; α(L)=7.97×10^{-5} *12*; α(M)=1.709×10^{-5} *24*; α(N+..)=7.07×10^{-5} *10* α(N)=3.93×10^{-6} *6*; α(O)=6.10×10^{-7} *9*; α(P)=4.16×10^{-8} *6*; α(IPF)=6.62×10^{-5} *10*
1288.39[c] *14*	7.1[c] *6*	2416.16	4^+	1127.76	3^+	[M1,E2]		0.0021 *5*	α(K)=0.0018 *4*; α(L)=0.00024 *5*; α(M)=5.2×10^{-5} *10*; α(N+..)=3.3×10^{-5} *4* α(N)=1.20×10^{-5} *24*; α(O)=1.9×10^{-6} *4*; α(P)=1.3×10^{-7} *3*; α(IPF)=1.89×10^{-5} *11*
1309.05 *22*	0.6 *1*	2305.66	3^+	996.31	2^+	[M1,E2]		0.0020 *5*	α(K)=0.0017 *4*; α(L)=0.00023 *5*; α(M)=5.0×10^{-5} *10*; α(N+..)=3.6×10^{-5} *4* α(N)=1.16×10^{-5} *23*; α(O)=1.8×10^{-6} *4*; α(P)=1.2×10^{-7} *3*; α(IPF)=2.29×10^{-5} *13*
1330.3[#] *2*	0.49[@]	1701.30	4^+	371.00	4^+				
1330.8 *6*	0.3 *1*	3517.10	$(3^+,4^+)$	2185.98	4^-	[E1]		7.67×10^{-4}	α(K)=0.000582 *9*; α(L)=7.52×10^{-5} *11*; α(M)=1.613×10^{-5} *23*; α(N+..)=9.38×10^{-5} *14*

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	α [b]	Comments
								α(N)=3.71×10^{-6} *6*; α(O)=5.76×10^{-7} *8*; α(P)=3.93×10^{-8} *6*; α(IPF)=8.94×10^{-5} *13*
1339.53 *23*	1.5 *2*	2336.01	3$^-$	996.31	2$^+$	[E1]	7.65×10^{-4}	α(K)=0.000576 *8*; α(L)=7.44×10^{-5} *11*; α(M)=1.595×10^{-5} *23*; α(N+..)=9.89×10^{-5} *14* α(N)=3.66×10^{-6} *6*; α(O)=5.69×10^{-7} *8*; α(P)=3.88×10^{-8} *6*; α(IPF)=9.47×10^{-5} *14*
^{x}1346.0 *6*	0.2 *1*							
^{x}1360.3 *6*	0.2 *1*							
^{x}1370.2 *10*	0.4 *2*							
^{x}1377.6[d] *9*	0.31 *16*							
^{x}1387.76 *22*	1.5 *1*							
(1391.2 *3*)		2654.62	2$^+$	1263.72	4$^+$	[E2]	1.46×10^{-3}	α(K)=0.001206 *17*; α(L)=0.0001657 *24*; α(M)=3.58×10^{-5} *5*; α(N+..)=5.05×10^{-5} *8* α(N)=8.22×10^{-6} *12*; α(O)=1.271×10^{-6} *18*; α(P)=8.37×10^{-8} *12*; α(IPF)=4.10×10^{-5} *6*
1399.2 *3*	0.3 *1*	1770.09	5$^+$	371.00	4$^+$	[M1,E2]	0.0018 *4*	α(K)=0.0015 *3*; α(L)=0.00020 *4*; α(M)=4.3×10^{-5} *8*; α(N+..)=5.7×10^{-5} *5* α(N)=9.9×10^{-6} *19*; α(O)=1.5×10^{-6} *3*; α(P)=1.05×10^{-7} *23*; α(IPF)=4.6×10^{-5} *3*
(1408.34 *20*)		1531.28	2$^+$	123.06	2$^+$	E0,M1,E2	0.0037 *14*	α(K)=0.0015 *3*; α(L)=0.00020 *4*; α(M)=4.3×10^{-5} *8*; α(N+..)=6.0×10^{-5} *5* α(N)=9.8×10^{-6} *18*; α(O)=1.5×10^{-6} *3*; α(P)=1.03×10^{-7} *22*; α(IPF)=4.8×10^{-5} *3* α: From the adopted values. The listed subshell coefficients do not include a contribution from the E0 component.
1419.4 *7*	3.7 *7*	2416.16	4$^+$	996.31	2$^+$	[E2]	1.41×10^{-3}	α(K)=0.001160 *17*; α(L)=0.0001591 *23*; α(M)=3.44×10^{-5} *5*; α(N+..)=5.81×10^{-5} *9* α(N)=7.89×10^{-6} *11*; α(O)=1.220×10^{-6} *18*; α(P)=8.05×10^{-8} *12*; α(IPF)=4.89×10^{-5} *8*
1451.1 *3*	0.70 *8*	2266.10	2$^+$,3,4$^+$	815.48	2$^+$			
1490.37 *22*	5.3 *4*	2305.66	3$^+$	815.48	2$^+$	[M1,E2]	0.0016 *3*	α(K)=0.00129 *24*; α(L)=0.00017 *3*; α(M)=3.8×10^{-5} *7*; α(N+..)=8.6×10^{-5} *7* α(N)=8.7×10^{-6} *15*; α(O)=1.35×10^{-6} *24*; α(P)=9.2×10^{-8} *19*; α(IPF)=7.5×10^{-5} *5*
1494.1 *3*	1.4 *2*	1617.2	3$^-$	123.06	2$^+$	E1	7.56×10^{-4}	α(K)=0.000478 *7*; α(L)=6.15×10^{-5} *9*; α(M)=1.317×10^{-5} *19*; α(N+..)=0.000204 *3* α(N)=3.03×10^{-6} *5*; α(O)=4.71×10^{-7} *7*; α(P)=3.23×10^{-8} *5*; α(IPF)=0.000200 *3*
^{x}1515.8 *3*	1.6 *2*							
1520.69 *19*	2.9 *2*	2336.01	3$^-$	815.48	2$^+$	[E1]	7.59×10^{-4}	α(K)=0.000464 *7*; α(L)=5.96×10^{-5} *9*; α(M)=1.278×10^{-5} *18*; α(N+..)=0.000223 *4*

From ENSDF

$^{154}_{64}$Gd$_{90}$-11

γ(^{154}Gd) (continued)

E_γ[†‡]	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[b]	Comments
								α(N)=2.94×10^{-6} 5; α(O)=4.57×10^{-7} 7; α(P)=3.13×10^{-8} 5; α(IPF)=0.000220 3
1522.8	1.7 8	1645.81	4$^+$	123.06	2$^+$	[E2]	1.27×10^{-3}	α(K)=0.001016 15; α(L)=0.0001381 20; α(M)=2.98×10^{-5} 5; α(N+..)=9.00×10^{-5} 13 α(N)=6.85×10^{-6} 10; α(O)=1.060×10^{-6} 15; α(P)=7.05×10^{-8} 10; α(IPF)=8.20×10^{-5} 12
(1527.2 4)		2654.62	2$^+$	1127.76	3$^+$	[M1,E2]	0.0015 3	α(K)=0.00123 22; α(L)=0.00017 3; α(M)=3.6×10^{-5} 6; α(N+..)=9.8×10^{-5} 8 α(N)=8.2×10^{-6} 14; α(O)=1.28×10^{-6} 23; α(P)=8.7×10^{-8} 17; α(IPF)=8.9×10^{-5} 6
1553.0 4	1.2 2	2368.76	2$^+$,3,4$^+$	815.48	2$^+$			
1578.2[#] 2	0.06[@]	1701.30	4$^+$	123.06	2$^+$	[E2]	1.22×10^{-3}	α(K)=0.000950 14; α(L)=0.0001286 18; α(M)=2.78×10^{-5} 4; α(N+..)=0.0001094 16 α(N)=6.38×10^{-6} 9; α(O)=9.87×10^{-7} 14; α(P)=6.59×10^{-8} 10; α(IPF)=0.0001020 15
(1607 1)		2654.62	2$^+$	1047.58	4$^+$	[E2]	1.19×10^{-3}	α(K)=0.000918 13; α(L)=0.0001241 18; α(M)=2.68×10^{-5} 4; α(N+..)=0.0001202 18 α(N)=6.15×10^{-6} 9; α(O)=9.53×10^{-7} 14; α(P)=6.37×10^{-8} 9; α(IPF)=0.0001130 17
^{x}1618.9 3	2.0 2							
^{x}1651.8 4	0.6 2							
1673.15 20	2.3 2	1796.44	3$^-$	123.06	2$^+$	[E1]	7.93×10^{-4}	α(K)=0.000395 6; α(L)=5.07×10^{-5} 7; α(M)=1.086×10^{-5} 16; α(N+..)=0.000336 5 α(N)=2.50×10^{-6} 4; α(O)=3.88×10^{-7} 6; α(P)=2.67×10^{-8} 4; α(IPF)=0.000333 5
^{x}1715 1	0.2 1							
^{x}1721 2	0.7 4							
1814.9 3	0.7 2	2185.98	4$^-$	371.00	4$^+$	[E1]	8.41×10^{-4}	α(K)=0.000346 5; α(L)=4.43×10^{-5} 7; α(M)=9.48×10^{-6} 14; α(N+..)=0.000442 7 α(N)=2.18×10^{-6} 3; α(O)=3.39×10^{-7} 5; α(P)=2.34×10^{-8} 4; α(IPF)=0.000439 7
1858.4 4	1.1 1	2230.04	(2$^+$)	371.00	4$^+$	[E2]	1.04×10^{-3}	α(K)=0.000701 10; α(L)=9.35×10^{-5} 13; α(M)=2.01×10^{-5} 3; α(N+..)=0.000227 4 α(N)=4.63×10^{-6} 7; α(O)=7.19×10^{-7} 10; α(P)=4.86×10^{-8} 7; α(IPF)=0.000221 4
^{x}1887 1	0.2 1							
1894.7 3	0.85 12	2266.10	2$^+$,3,4$^+$	371.00	4$^+$			
1901.5 5	0.35 16	2024.8	1,2$^+$	123.06	2$^+$			
1905.0 12	0.8 1	2277.11	3	371.00	4$^+$	[E1]	8.78×10^{-4}	α(K)=0.000320 5; α(L)=4.09×10^{-5} 6; α(M)=8.75×10^{-6} 13; α(N+..)=0.000508 8 α(N)=2.01×10^{-6} 3; α(O)=3.13×10^{-7} 5; α(P)=2.16×10^{-8} 3; α(IPF)=0.000506 8

From ENSDF

$^{154}_{64}Gd_{90}$-12

γ(^{154}Gd) (continued)

E_γ[†‡]	I_γ[a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	α[b]	Comments
[x]1931.0 5	0.6 1							
1934.71 14	3.7 3	2305.66	3^+	371.00	4^+	[M1,E2]	0.00115 14	α(K)=0.00075 10; α(L)=9.9×10^{-5} 13; α(M)=2.1×10^{-5} 3; α(N+..)=0.000280 20 α(N)=4.9×10^{-6} 7; α(O)=7.7×10^{-7} 11; α(P)=5.3×10^{-8} 8; α(IPF)=0.000275 19
[x]1949 1	0.2 1							
1965.03 7	9.9 7	2336.01	3^-	371.00	4^+	[E1]	9.03×10^{-4}	α(K)=0.000304 5; α(L)=3.89×10^{-5} 6; α(M)=8.32×10^{-6} 12; α(N+..)=0.000552 8 α(N)=1.91×10^{-6} 3; α(O)=2.98×10^{-7} 5; α(P)=2.06×10^{-8} 3; α(IPF)=0.000550 8
(1974.3)		2654.62	2^+	680.64	0^+	[E2]	1.01×10^{-3}	α(K)=0.000627 9; α(L)=8.33×10^{-5} 12; α(M)=1.79×10^{-5} 3; α(N+..)=0.000280 4 α(N)=4.12×10^{-6} 6; α(O)=6.41×10^{-7} 9; α(P)=4.35×10^{-8} 6; α(IPF)=0.000275 4
1997.6	1.9 5	2368.76	2^+,3,4^+	371.00	4^+			
[x]2014.9 7	0.3 1							
2024.9 3	1.0 1	2024.8	1,2^+	0.0	0^+			
2035.5 4	0.2 1	2405.92	2^+	371.00	4^+	[E2]		
[x]2054.2 4	0.45 6							
2084.7 3	0.63 6	3517.10	(3^+,4^+)	1432.34	5^+	[E2]	9.91×10^{-4}	α(K)=0.000568 8; α(L)=7.52×10^{-5} 11; α(M)=1.618×10^{-5} 23; α(N+..)=0.000331 5 α(N)=3.72×10^{-6} 6; α(O)=5.78×10^{-7} 8; α(P)=3.94×10^{-8} 6; α(IPF)=0.000327 5
[x]2101.6 7	0.2 1							
2106.9	0.8 1	2230.04	(2^+)	123.06	2^+	[M1,E2]	0.00110 11	α(K)=0.00063 7; α(L)=8.3×10^{-5} 10; α(M)=1.79×10^{-5} 21; α(N+..)=0.00037 3 α(N)=4.1×10^{-6} 5; α(O)=6.4×10^{-7} 8; α(P)=4.4×10^{-8} 6; α(IPF)=0.00036 3
[x]2126.3 6	0.2 1							
2142.9 3	1.1 1	2266.10	2^+,3,4^+	123.06	2^+			
2153.81 15	5.1 3	2277.11	3	123.06	2^+	[E1]	9.87×10^{-4}	α(K)=0.000263 4; α(L)=3.35×10^{-5} 5; α(M)=7.18×10^{-6} 10; α(N+..)=0.000683 10 α(N)=1.650×10^{-6} 23; α(O)=2.57×10^{-7} 4; α(P)=1.780×10^{-8} 25; α(IPF)=0.000682 10
2182.6 5	0.9 2	2305.66	3^+	123.06	2^+	[M1,E2]	0.00108 10	α(K)=0.00058 7; α(L)=7.7×10^{-5} 9; α(M)=1.66×10^{-5} 18; α(N+..)=0.00041 3 α(N)=3.8×10^{-6} 5; α(O)=6.0×10^{-7} 7; α(P)=4.1×10^{-8} 5; α(IPF)=0.00040 3
2212.92 15	4.2 3	2336.01	3^-	123.06	2^+	[E1]	1.01×10^{-3}	α(K)=0.000252 4; α(L)=3.21×10^{-5} 5; α(M)=6.87×10^{-6} 10; α(N+..)=0.000723 11 α(N)=1.580×10^{-6} 23; α(O)=2.46×10^{-7} 4; α(P)=1.706×10^{-8} 24; α(IPF)=0.000721 10
2245.7 2	2.3 2	2368.76	2^+,3,4^+	123.06	2^+			

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	α [b]	Comments
2251.8 *7*	0.4 *2*	3517.10	(3+,4+)	1263.72	4+	[M1,E2]	0.00108 *10*	α(K)=0.00055 *6*; α(L)=7.2×10^{-5} *8*; α(M)=1.56×10^{-5} *16*; α(N+..)=0.00044 *4* α(N)=3.6×10^{-6} *4*; α(O)=5.6×10^{-7} *6*; α(P)=3.9×10^{-8} *5*; α(IPF)=0.00044 *4*
2282.8 *1*	1.1 *1*	2405.92	2+	123.06	2+	[M1,E2]		
x2295.9 *3*	1.6 *1*							
x2358.3 *3*	1.0 *1*							
2372.4 *4*	0.67 *7*	2495.96	1,2+	123.06	2+			
2389.5 *2*	1.0 *1*	3517.10	(3+,4+)	1127.76	3+	[M1,E2]	0.00108 *9*	α(K)=0.00049 *5*; α(L)=6.4×10^{-5} *6*; α(M)=1.38×10^{-5} *13*; α(N+..)=0.00051 *4* α(N)=3.2×10^{-6} *3*; α(O)=4.9×10^{-7} *5*; α(P)=3.4×10^{-8} *4*; α(IPF)=0.00051 *4*
x2411.1 *4*	0.5 *2*							
2422.2 *5*	0.15 *5*	3550.2	2+,3,4+	1127.76	3+			
x2473 *1*	0.3 *1*							
2496.3 *8*	0.5 *2*	2495.96	1,2+	0.0	0+			
2520.8 *10*	0.10 *5*	3517.10	(3+,4+)	996.31	2+	[M1,E2]	0.00108 *8*	α(K)=0.00044 *4*; α(L)=5.7×10^{-5} *5*; α(M)=1.23×10^{-5} *10*; α(N+..)=0.00058 *5* α(N)=2.84×10^{-6} *23*; α(O)=4.4×10^{-7} *4*; α(P)=3.1×10^{-8} *3*; α(IPF)=0.00057 *5*
x2525.1 *7*	0.2 *1*							
2532.3 *7*	0.11 *5*	2654.62	2+	123.06	2+	[M1,E2]	0.00109 *8*	α(K)=0.00043 *4*; α(L)=5.7×10^{-5} *5*; α(M)=1.22×10^{-5} *10*; α(N+..)=0.00058 *5* α(N)=2.81×10^{-6} *23*; α(O)=4.4×10^{-7} *4*; α(P)=3.0×10^{-8} *3*; α(IPF)=0.00058 *5*
x2540 *1*	0.09 *4*							
2546.9 *8*	0.14 *7*	3363.6	(2+)	815.48	2+	[M1,E2]	0.00109 *8*	α(K)=0.00043 *4*; α(L)=5.6×10^{-5} *5*; α(M)=1.21×10^{-5} *10*; α(N+..)=0.00059 *5* α(N)=2.78×10^{-6} *22*; α(O)=4.3×10^{-7} *4*; α(P)=3.0×10^{-8} *3*; α(IPF)=0.00059 *5*
2554.1 *5*	0.28 *3*	3550.2	2+,3,4+	996.31	2+			
x2559.6 *4*	0.73 *5*							
x2575.1 *5*	0.55 *6*							
x2630.5 *8*	0.25 *6*							
x2634.3 *8*	0.25 *6*							
x2643 *1*	0.4 *2*							
x2652 *1*	0.4 *2*							
(2655.8 *8*)		2654.62	2+	0.0	0+	[E2]	1.03×10^{-3}	α(K)=0.000369 *6*; α(L)=4.81×10^{-5} *7*; α(M)=1.033×10^{-5} *15*; α(N+..)=0.000599 *9* α(N)=2.38×10^{-6} *4*; α(O)=3.70×10^{-7} *6*; α(P)=2.55×10^{-8} *4*; α(IPF)=0.000596 *9*
2683.4 *5*	0.32 *3*	3363.6	(2+)	680.64	0+	[E2]	1.03×10^{-3}	α(K)=0.000362 *5*; α(L)=4.72×10^{-5} *7*; α(M)=1.014×10^{-5} *15*; α(N+..)=0.000612 *9*

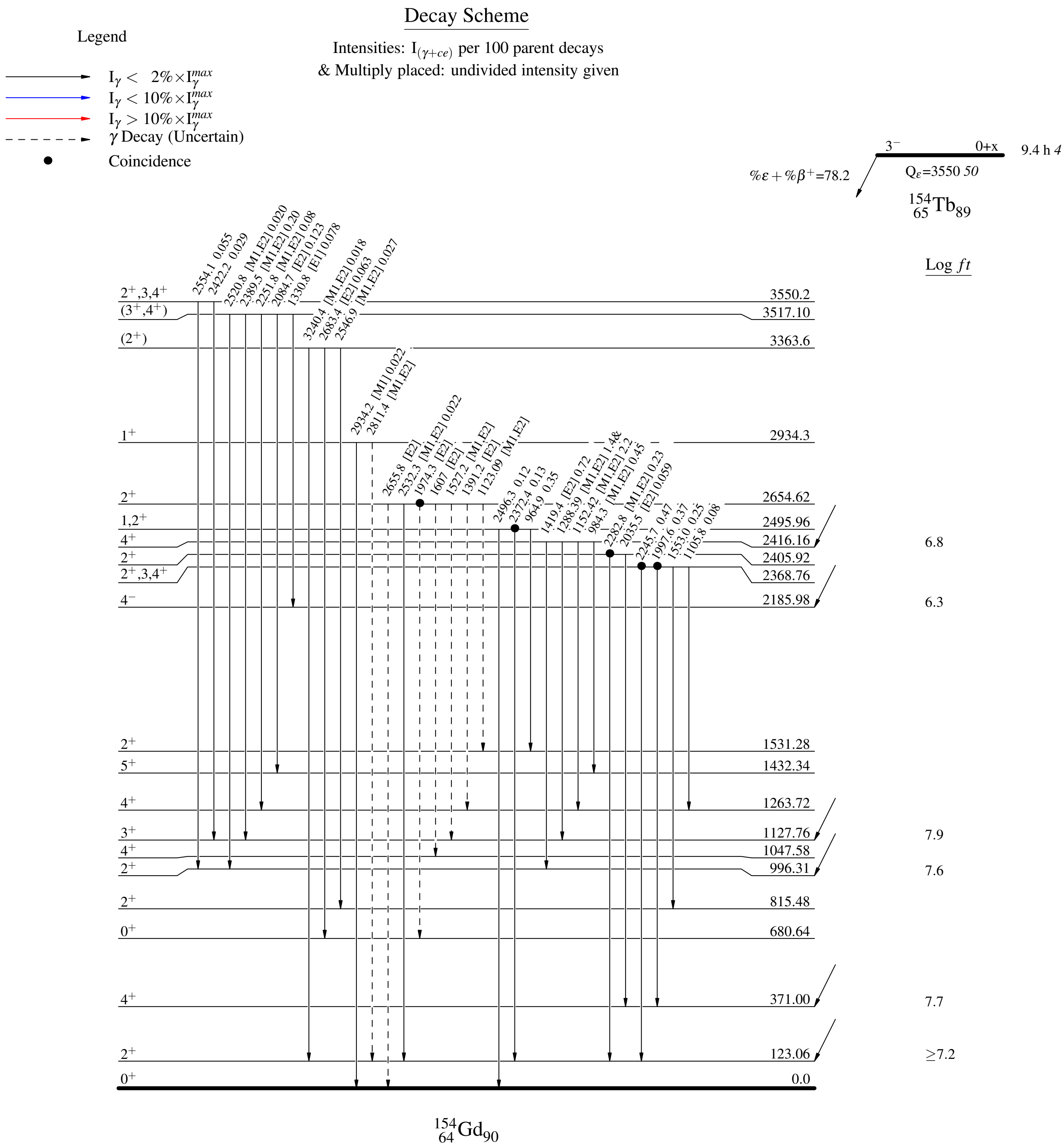
γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [&]	α [b]	Comments
								α(N)=2.33×10^{-6} *4*; α(O)=3.63×10^{-7} *5*; α(P)=2.51×10^{-8} *4*; α(IPF)=0.000609 *9*
(2811.4 *8*)		2934.3	1$^+$	123.06	2$^+$	[M1,E2]	0.00113 *8*	α(K)=0.000352 *19*; α(L)=4.6×10^{-5} *3*; α(M)=9.9×10^{-6} *6*; α(N+..)=0.00072 *6* α(N)=2.28×10^{-6} *14*; α(O)=3.55×10^{-7} *22*; α(P)=2.47×10^{-8} *17*; α(IPF)=0.00072 *6*
[x]2839.2 *15*	0.10 *3*							
[x]2921.4 *15*	0.02 *1*							
2934.2 *7*	0.11 *3*	2934.3	1$^+$	0.0	0$^+$	[M1]	1.23×10^{-3}	α(K)=0.000338 *5*; α(L)=4.43×10^{-5} *7*; α(M)=9.54×10^{-6} *14*; α(N+..)=0.000834 *12* α(N)=2.20×10^{-6} *3*; α(O)=3.43×10^{-7} *5*; α(P)=2.39×10^{-8} *4*; α(IPF)=0.000832 *12*
[x]2942.2 *10*	0.14 *5*							
3240.4 *15*	0.09 *3*	3363.6	(2$^+$)	123.06	2$^+$	[M1,E2]	0.00123 *8*	α(K)=0.000267 *8*; α(L)=3.48×10^{-5} *12*; α(M)=7.5×10^{-6} *3*; α(N+..)=0.00092 *7* α(N)=1.72×10^{-6} *6*; α(O)=2.68×10^{-7} *10*; α(P)=1.87×10^{-8} *8*; α(IPF)=0.00092 *7*
[x]3260.0 *15*	0.09 *5*							

[†] From weighted average of values of 1972Vy04 and 1975So03. Values without uncertainties were computed from level energies by 1975So03.
[‡] Because of the more definitive isomer assignment only the unplaced γ's of 1975So03 are given.
[#] From 2003Ku19. The uncertainties are nominal values (from a private communication from J.L. Wood, one of the authors of 2003Ku19).
[@] Computed by the evaluators from the relative B(E2) values in 2003Ku19, normalized to Iγ(983.7γ)=0.6.
[&] Assignments and values are from ^{154}Gd adopted γ radiations and include the results of all types of experiments and all decay modes. See ^{154}Gd adopted γ radiations for other information including: (1) mixing ratios such as δ(M3/E2) and δ(M2/E1) where δ can be zero and is not included here; (2) comments on measurements for lines which are multiplets; and (3) identification of α values that are based on experimental values rather than theory.
[a] For absolute intensity per 100 decays, multiply by 0.20 *3*.
[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] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{154}_{64}$Gd$_{90}$-15

^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20

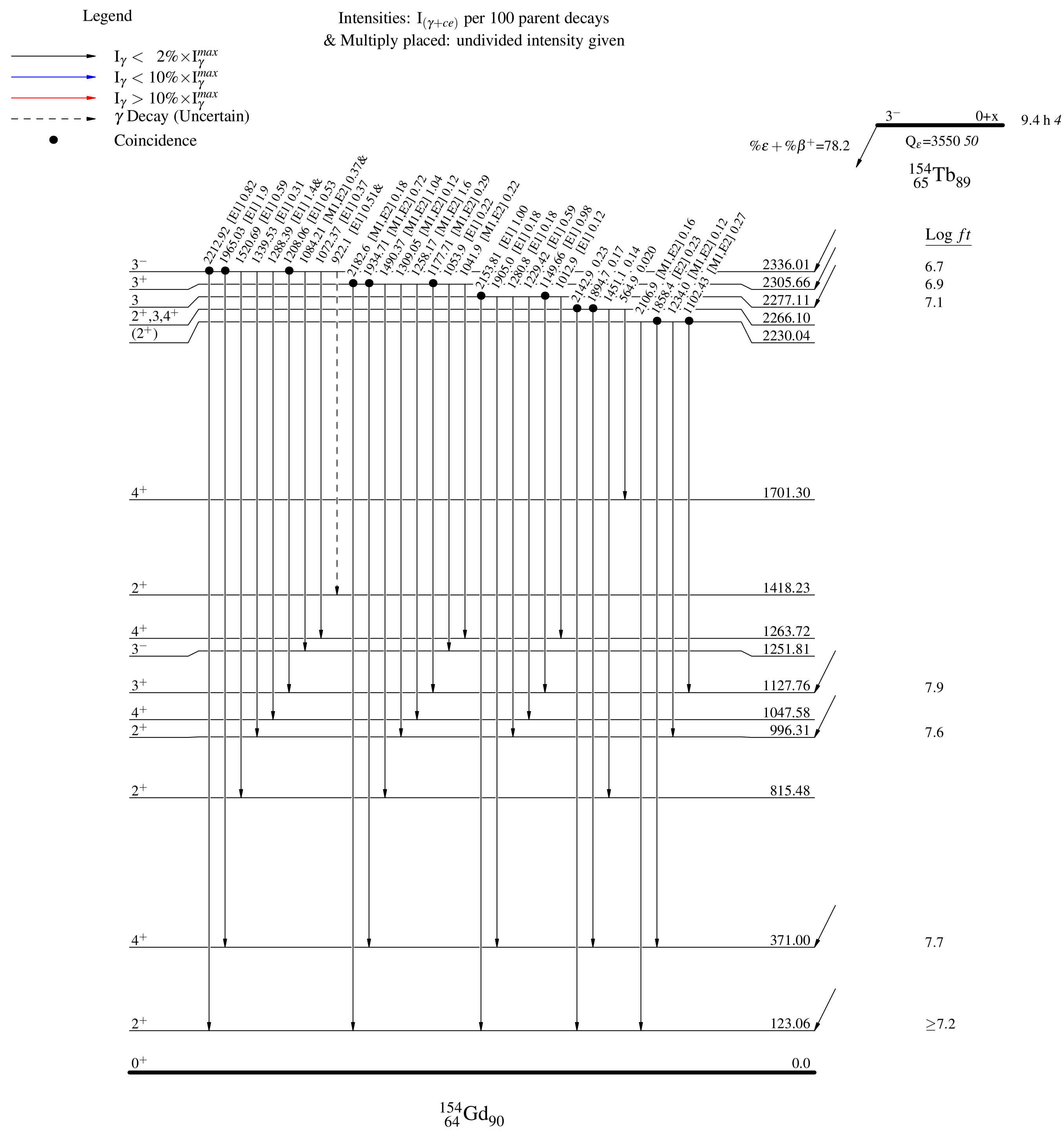


^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

& Multiply placed: undivided intensity given

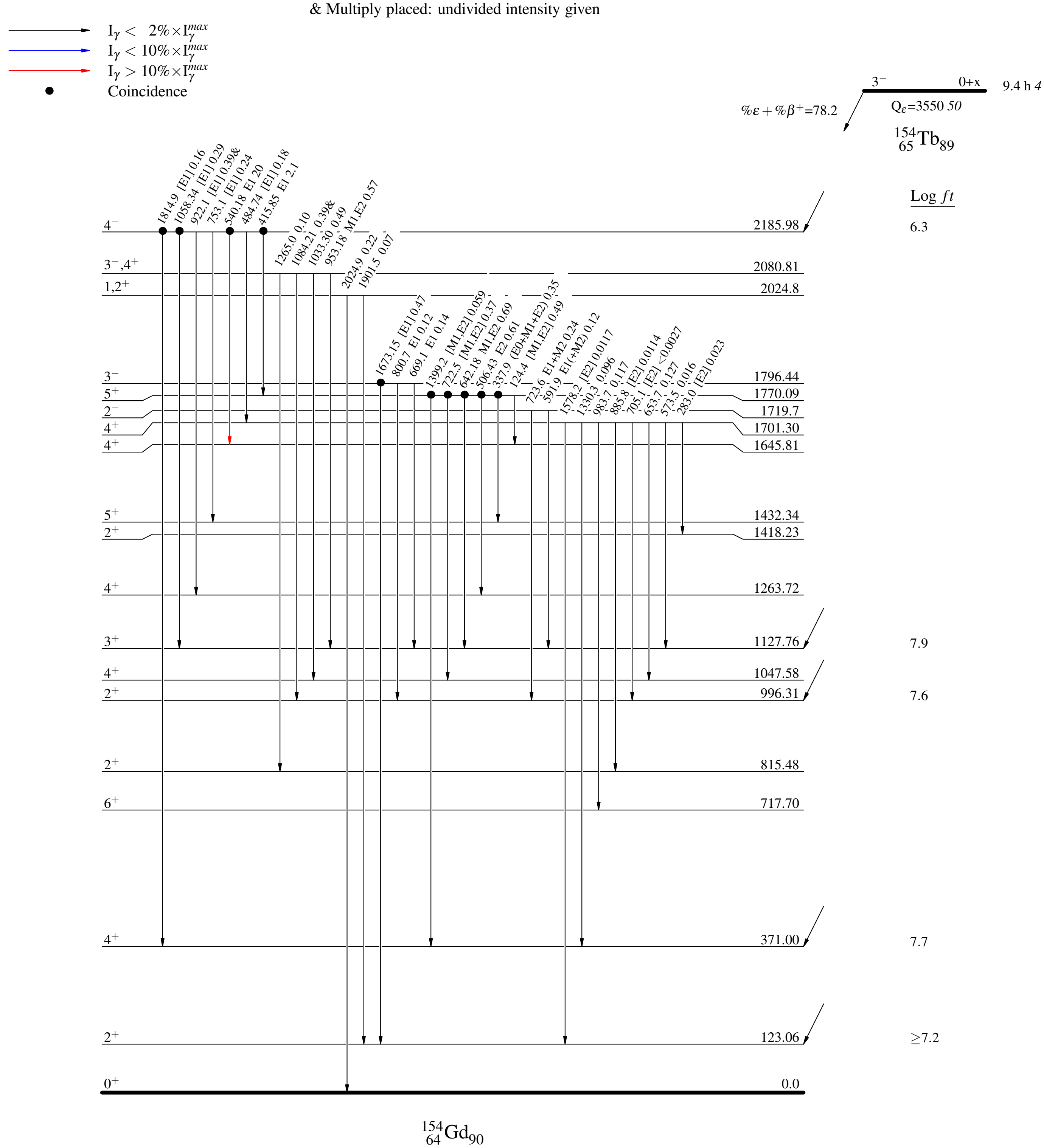


^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20

Decay Scheme (continued)

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

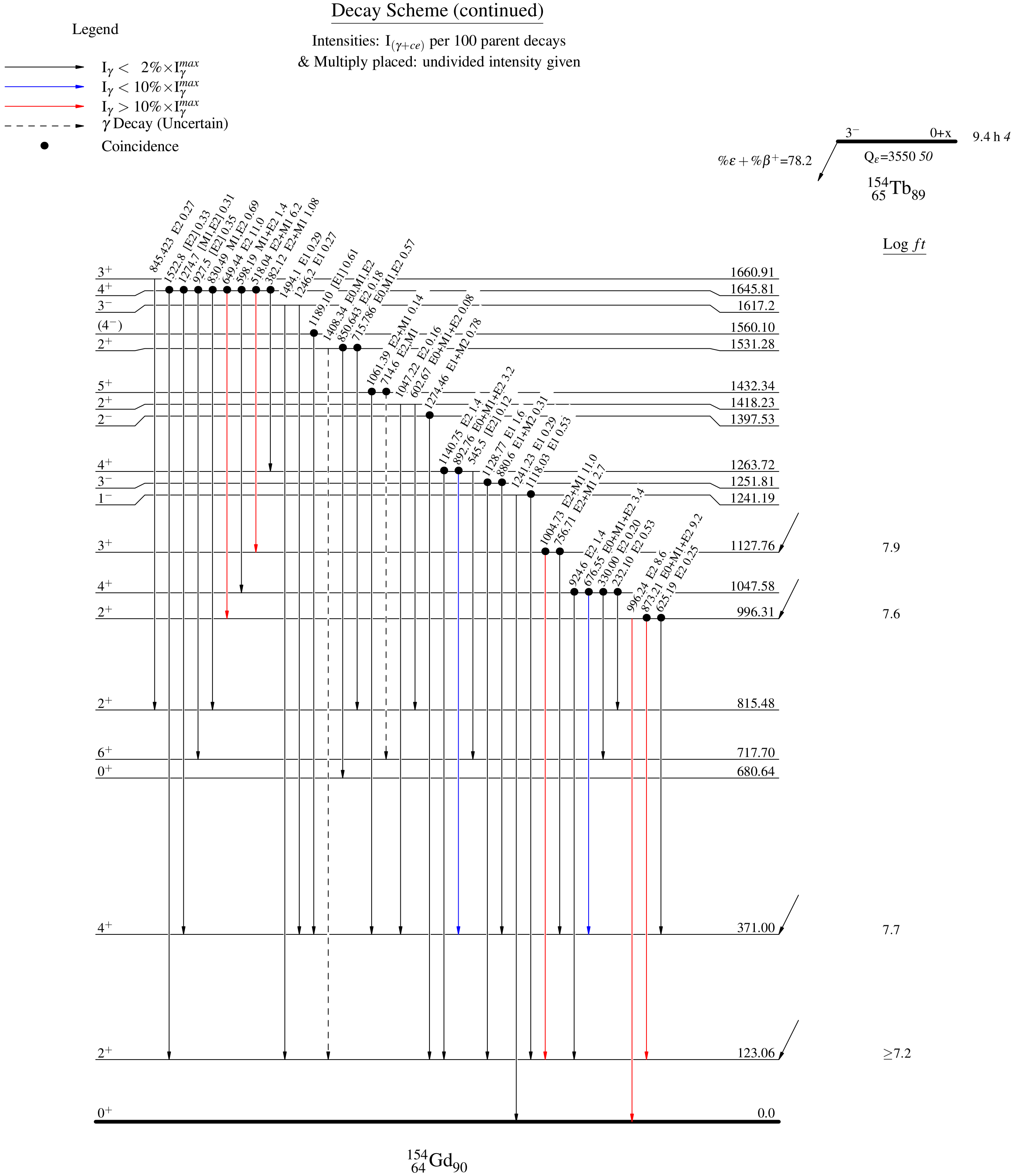
Legend



^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20

Decay Scheme (continued)

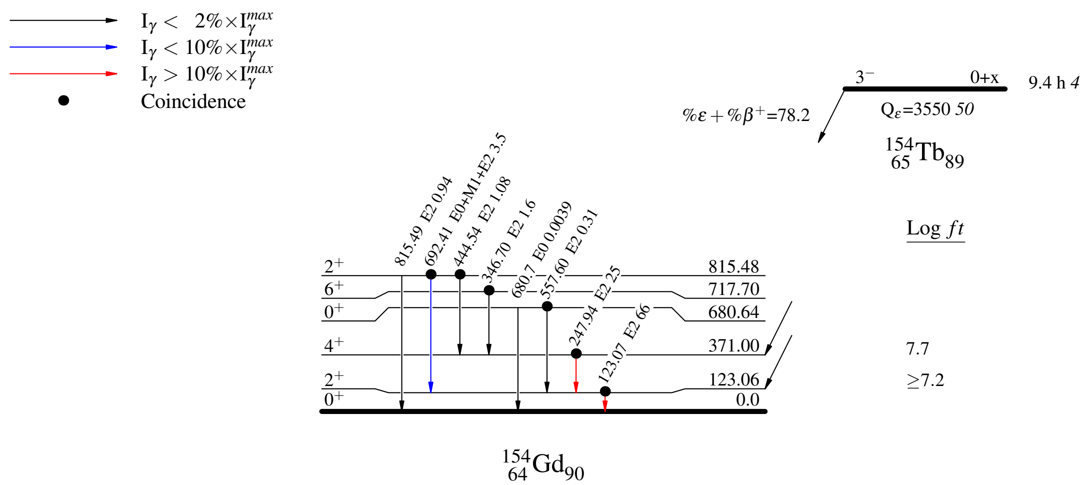
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



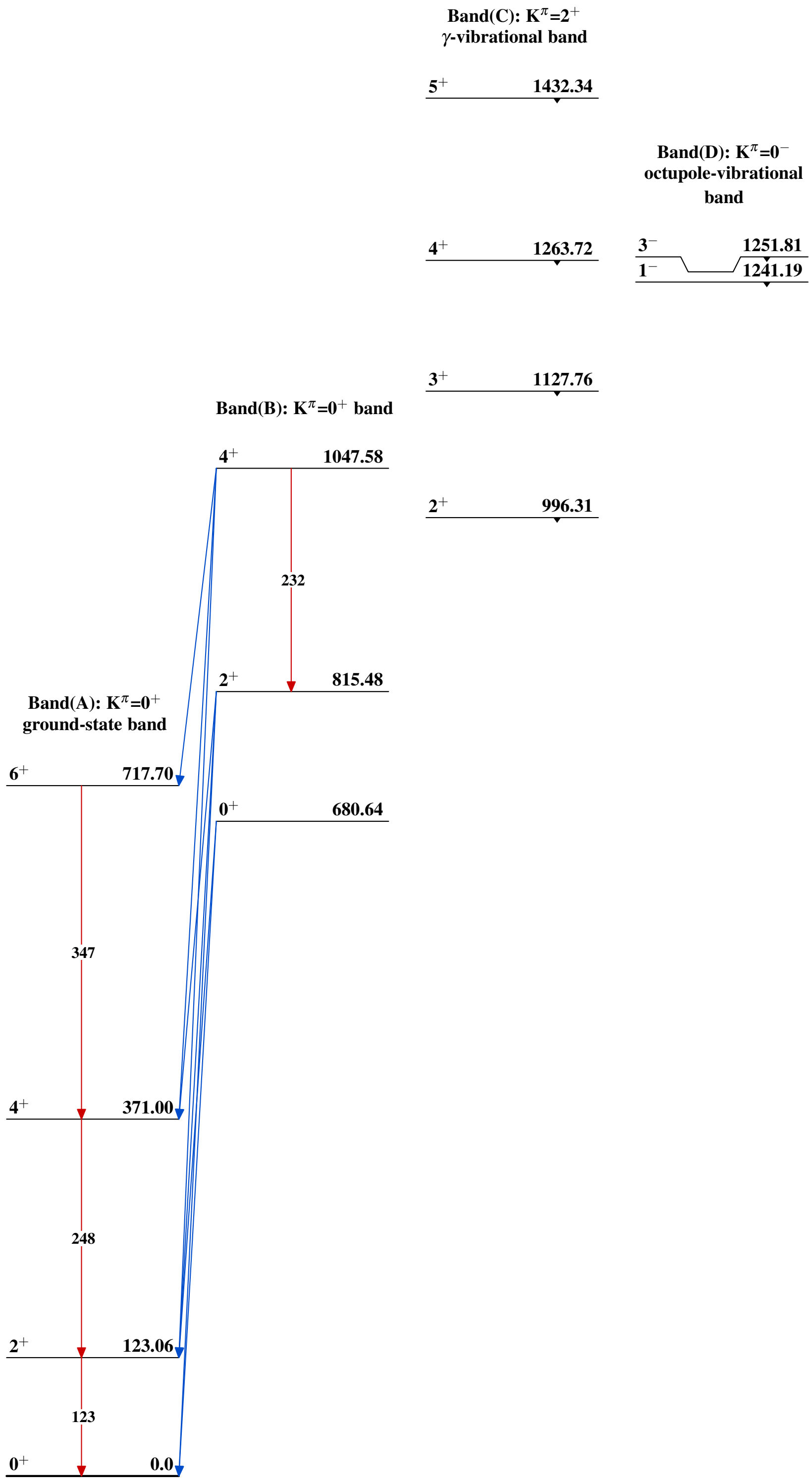
^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20

Decay Scheme (continued)

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

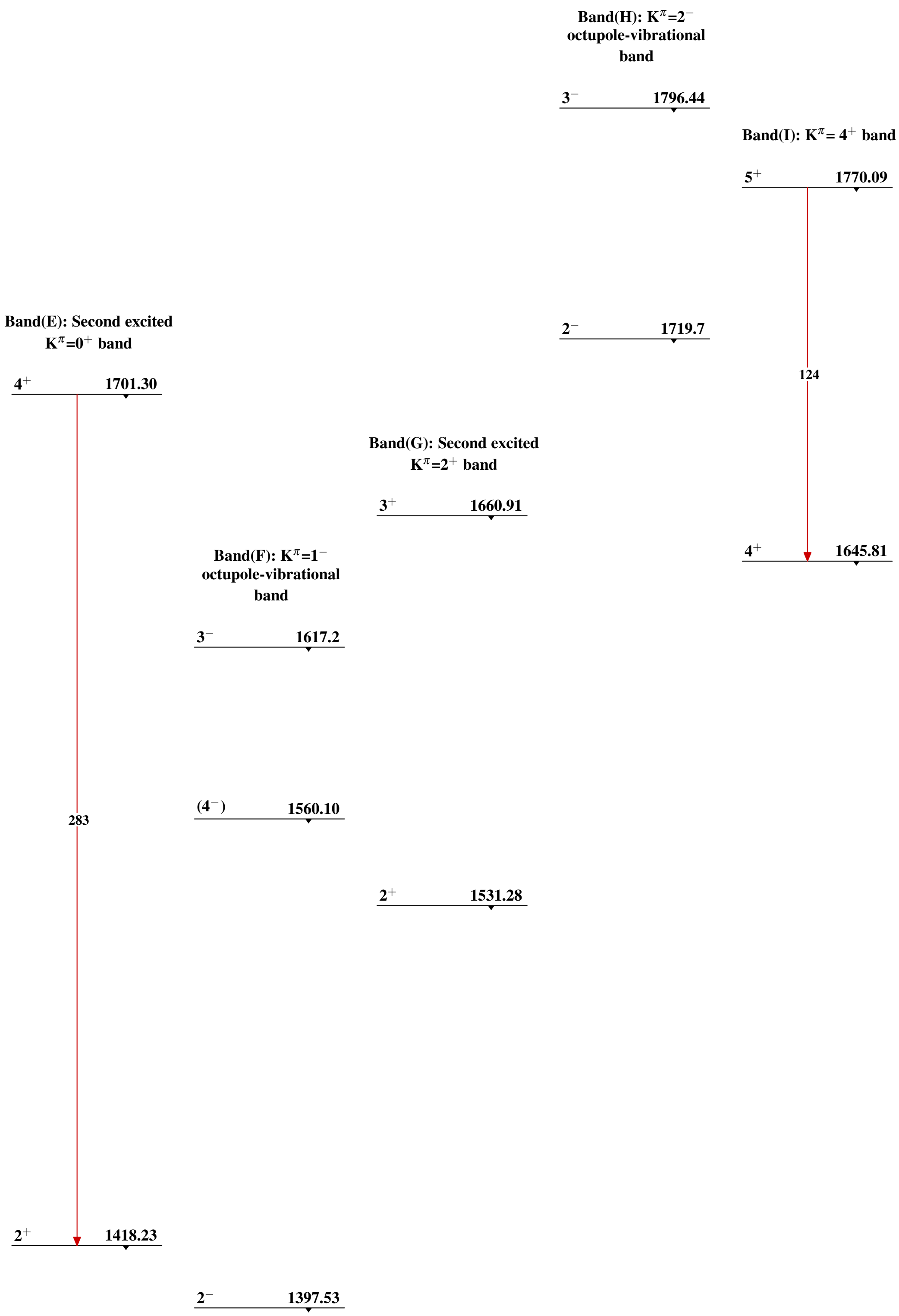


^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20



$^{154}_{64}Gd_{90}$

^{154}Tb ε decay (9.4 h) 1975So03,1972Vy04,1973La20 (continued)



$^{154}_{64}Gd_{90}$