^{154}Tb $\varepsilon+\beta^+$ decay (22.7 h) 1975So03,1972Vy04,1973La20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 200,2 (2025)	22-Aug-2022

Parent: ^{154}Tb: E=0+y; J$^\pi$=7$^-$; $T_{1/2}$=22.7 h *5*; Q(ε)=3550 *50*; %ε+%β^+ decay=98.2 *6*
^{154}Tb-J$^\pi$: Additional information 1.
^{154}Tb-$T_{1/2}$: Additional information 2.
^{154}Tb-Q($\varepsilon+\beta^+$): Additional information 3.
^{154}Tb-Q($\varepsilon+\beta^+$): From 2021Wa16.
^{154}Tb-%ε+%β^+ decay: From ε decay branch of 1.8% *6* (1973La20).
Additional information 4.

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 γ's.

A study of the ^{154}Tb isomers is reported as a part of the thesis which constitutes 2001KuZS. These data are not included here, since further analysis appears to be required.

^{154}Gd Levels

Additional information 5.

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0.0[#]	0$^+$	996.28[&] *4*	2$^+$	1365.8[@] *6*	6$^+$	1911.57[a] *6*	6$^+$
123.06[#] *3*	2$^+$	1047.59[@] *5*	4$^+$	1432.39[&] *8*	5$^+$	2137.51[b] *6*	7$^-$
371.00[#] *4*	4$^+$	1127.77[&] *5*	3$^+$	1606.78[&] *13*	6$^+$	2309.50 *7*	(8$^-$)
717.72[#] *5*	6$^+$	1144.52[#] *8*	8$^+$	1645.80[a] *5*	4$^+$	2459.4 *5*	6$^+$,7,8$^+$
815.47[@] *5*	2$^+$	1263.73[&] *5*	4$^+$	1770.23[a] *6*	5$^+$		

† Values are from least-squares fit to the γ energies.
‡ From ^{154}Gd Adopted Levels.
# Band(A): K$^\pi$=0$^+$ ground-state band.
@ Band(B): First excited K$^\pi$=0$^+$ band. Probable β^-vibrational band.
& Band(C): K$^\pi$=2$^+$ γ-vibrational band.
a Band(D): K$^\pi$=4$^+$ band. Probable hexadecapole vibration.
b Band(E): K$^\pi$=7$^-$ band. Configuration=(ν 3/2[651])+(ν 11/2[505]).

ε,β^+ radiations

E(decay)	E(level)	Log *ft*	I($\varepsilon+\beta^+$)[†‡#@]
(1.24×10^3 *5*)	2309.50	7.2	6.6 *8*
(1.41×10^3 *5*)	2137.51	6.2	85 *7*

† 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%. All negative values are omitted. Several values that are incompatible with the J$^\pi$ values are also omitted; these are 2% *12* to 4$^+$ at 371 keV, 2.6% *4* to 2$^+$ at 815, 2.4% *7* to 4$^+$ at 1263, and 10.8% *12* to 4$^+$ at 1645.
‡ As a check of the normalization, it is noted that Σ I($\varepsilon+\beta^+$) is 94% *10* for the values given, 125% *23* for all positive values computed. The most meaningful sum may be of the positive values to states with J≥5; this sum is 97% *10*.
# 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: Value is an average of that which gives 100% ε+β^+ decay (0.186 *19*), that which gives 100% feeding of the g.s. (0.178 *32*), and that which gives 100% feeding of the 123 keV, 2$^+$ level (0.166 *15*). This normalization gives g.s. feeding of 99% *18*.

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_γ[†‡]	I_γ[@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[&]	Comments
123.07 *3*	250 *45*	123.06	2$^+$	0.0	0$^+$	E2		1.187	%Iγ=43 *8* 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* I$_\gamma$: This value gives I(γ+ce)(123)=550 *100* units. A more precise value of 601 *56* is obtained from the feeding of this level, with the reasonable assumption that there is no ε+β^+ feeding.
(124.4)		1770.23	5$^+$	1645.80	4$^+$	[M1,E2]		1.11 *4*	α(K)=0.77 *14*; α(L)=0.26 *13*; α(M)=0.06 *4*; α(N+..)=0.015 *8* α(N)=0.014 *7*; α(O)=0.0019 *9*; α(P)=5.0×10^{-5} *18*
141.33 *3*	42 *4*	1911.57	6$^+$	1770.23	5$^+$	E2+M1	7 *+6−3*	0.729	%Iγ=7.3 *9* α(K)=0.443 *10*; α(L)=0.221 *6*; α(M)=0.0516 *15*; α(N+..)=0.0131 *4* α(N)=0.0116 *4*; α(O)=0.00155 *4*; α(P)=2.37×10^{-5} *10*
171.99 *4*	26.4 *22*	2309.50	(8$^-$)	2137.51	7$^-$	[M1+E2]		0.40 *4*	%Iγ=4.6 *5* α(K)=0.31 *7*; α(L)=0.075 *23*; α(M)=0.017 *6*; α(N+..)=0.0044 *14* α(N)=0.0038 *13*; α(O)=0.00055 *14*; α(P)=2.0×10^{-5} *7*
225.94 *3*	155 *12*	2137.51	7$^-$	1911.57	6$^+$	E1		0.0329	%Iγ=26.8 *28* α(K)=0.0279 *4*; α(L)=0.00393 *6*; α(M)=0.000849 *12*; α(N+..)=0.000225 *4* α(N)=0.000194 *3*; α(O)=2.92×10^{-5} *4*; α(P)=1.732×10^{-6} *25*
(232.10 *4*)		1047.59	4$^+$	815.47	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*	456 *50*	371.00	4$^+$	123.06	2$^+$	E2		0.1098	%Iγ=79 *10* 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*
265.83 *6*	22.5 *23*	1911.57	6$^+$	1645.80	4$^+$	[E2]		0.0879	%Iγ=3.9 *5* α(K)=0.0658 *10*; α(L)=0.01723 *25*; α(M)=0.00392 *6*; α(N+..)=0.001014 *15* α(N)=0.000886 *13*; α(O)=0.0001246 *18*; α(P)=4.02×10^{-6} *6*
^{x}267.5 *3*	22.7 *23*								%Iγ=3.9 *5*
304.75 *12*	8.2 *2*	1911.57	6$^+$	1606.78	6$^+$	E2		0.0574	%Iγ=1.42 *10* α(K)=0.0440 *7*; α(L)=0.01043 *15*; α(M)=0.00236 *4*; α(N+..)=0.000613 *9* α(N)=0.000534 *8*; α(O)=7.59×10^{-5} *11*; α(P)=2.76×10^{-6} *4*
(330.00 *16*)		1047.59	4$^+$	717.72	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*

$^{154}_{64}Gd_{90}$-2

γ(^{154}Gd) (continued)

E_γ †‡	I_γ @	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α&	Comments
337.9 *2*	7.0 *21*	1770.23	5^+	1432.39	5^+	(E0+M1+E2)		0.12	%Iγ=1.2 *4* 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*	400 *30*	717.72	6^+	371.00	4^+	E2		0.0389	%Iγ=69 *7* 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*	3.2 *10*	1645.80	4^+	1263.73	4^+	E2+M1		0.040 *11*	%Iγ=0.55 *18* 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*
426.78 *7*	100	1144.52	8^+	717.72	6^+	E2		0.0214	%Iγ=17.3 *12* α(K)=0.01716 *24*; α(L)=0.00332 *5*; α(M)=0.000741 *11*; α(N+..)=0.000194 *3* α(N)=0.0001684 *24*; α(O)=2.46×10^{-5} *4*; α(P)=1.132×10^{-6} *16*
(444.58 *9*)		815.47	2^+	371.00	4^+	E2		0.0191	α(K)=0.01539 *22*; α(L)=0.00292 *4*; α(M)=0.000650 *10*; α(N+..)=0.0001705 *24* α(N)=0.0001478 *21*; α(O)=2.17×10^{-5} *3*; α(P)=1.020×10^{-6} *15*
479.18 *11*	22.0 *22*	1911.57	6^+	1432.39	5^+	[M1,E2]		0.022 *7*	%Iγ=3.8 *5* α(K)=0.018 *6*; α(L)=0.0028 *5*; α(M)=0.00062 *11*; α(N+..)=0.00016 *3* α(N)=0.000141 *25*; α(O)=2.2×10^{-5} *5*; α(P)=1.3×10^{-6} *5*
506.43 *11*	23.2 *26*	1770.23	5^+	1263.73	4^+	E2		0.01349	%Iγ=4.0 *5* 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*	22.0 *15*	1645.80	4^+	1127.77	3^+	E2+M1	−7 *3*	0.0129 *5*	%Iγ=3.8 *4* 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*
(545.5 *4*)		1263.73	4^+	717.72	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*
545.7	3.3 *12*	1911.57	6^+	1365.8	6^+				%Iγ=0.57 *21*
^{x}565.33 *12*	15.0 *14*								%Iγ=2.59 *30*
598.19 *6*	4.2 *6*	1645.80	4^+	1047.59	4^+	M1+E2	0.65 *20*	0.0139 *10*	%Iγ=0.73 *11* α(K)=0.0118 *9*; α(L)=0.00169 *9*; α(M)=0.000366 *19*;

From ENSDF

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

γ(^{154}Gd) (continued)

E_γ †‡	I_γ @	E_i(level)	J^π_i	E_f	J^π_f	Mult. #	δ #	α &	Comments
									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*
(625.19 *22*)		996.28	2$^+$	371.00	4$^+$	E2		0.00792	α(K)=0.00655 *10*; α(L)=0.001075 *15*; α(M)=0.000237 *4*; 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*
642.19 *22*	23.8 *17*	1770.23	5$^+$	1127.77	3$^+$	E2		0.00743 *11*	%Iγ=4.1 *4*
648 *1*	≈2	1365.8	6$^+$	717.72	6$^+$	E0+M1+E2	+1.30 *20*	0.045 *8*	%Iγ≈0.346 α(K)=0.0079 *5*; α(L)=0.00119 *5*; α(M)=0.000258 *11*; α(N+..)=6.9×10^{-5} *3* α(N)=5.93×10^{-5} *24*; α(O)=9.1×10^{-6} *4*; α(P)=5.6×10^{-7} *4* α: From the adopted values. The listed subshell coefficients do not include a contribution from the E0 component.
649.44 *6*	50 *4*	1645.80	4$^+$	996.28	2$^+$	E2		0.00723	%Iγ=8.6 *9* 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*
676.55 *7*	9.7 *15*	1047.59	4$^+$	371.00	4$^+$	E0+M1+E2	+2.9 *4*	0.053 *3*	%Iγ=1.68 *28* α: Deduced from α(K)exp=0.044 *3*. See the Adopted Gammas data set. δ: From ^{154}Eu β^- decay.
(692.41 *4*)		815.47	2$^+$	123.06	2$^+$	E0+M1+E2	7.5 *4*	0.00629	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.
714.6	4.5 *13*	1432.39	5$^+$	717.72	6$^+$	E2,M1		0.0081 *23*	%Iγ=0.78 *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*
722.5	6.1 *20*	1770.23	5$^+$	1047.59	4$^+$	[M1,E2]		0.0078 *23*	%Iγ=1.05 *35* 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*
756.71 *6*	9 *3*	1127.77	3$^+$	371.00	4$^+$	E2+M1	−6.1 *3*	0.00516	%Iγ=1.6 *5* 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.
(815.49 *7*)		815.47	2$^+$	0.0	0$^+$	E2		0.00427	α(K)=0.00358 *5*; α(L)=0.000542 *8*; α(M)=0.0001185 *17*;

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	α [&]	Comments
									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*
830.49 *9*	2.7 *10*	1645.80	4$^+$	815.47	2$^+$	[E2]		0.00410 *6*	%Iγ=0.47 *18*
873.21 *4*	19.5 *20*	996.28	2$^+$	123.06	2$^+$	E0+M1+E2	−9.4 *4*	0.00371	%Iγ=3.4 *4* 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* α: Theoretical value since α(K)exp indicates negligible E0 component.
888.8 *3*	8.1 *12*	1606.78	6$^+$	717.72	6$^+$	E2+M1	>1.8	0.0038 *3*	%Iγ=1.40 *23* α(K)=0.0032 *3*; α(L)=0.00047 *4*; α(M)=0.000103 *7*; α(N+..)=2.74×10^{-5} *19* α(N)=2.36×10^{-5} *16*; α(O)=3.6×10^{-6} *3*; α(P)=2.25×10^{-7} *21*
892.76 *6*	26.9 *22*	1263.73	4$^+$	371.00	4$^+$	E0+M1+E2	−3.8 *3*	0.00367	%Iγ=4.6 *5* 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* α: Theoretical value since α(K)exp indicates negligible E0 component. δ: From ^{154}Eu β^- decay.
924.6 *3*	≈2	1047.59	4$^+$	123.06	2$^+$	E2		0.00325	%Iγ≈0.346 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*	1.5 *6*	1645.80	4$^+$	717.72	6$^+$	[E2]		0.00323	%Iγ=0.26 *11* 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*
992.92 *12*	94 *8*	2137.51	7$^-$	1144.52	8$^+$	E1		1.15×10^{-3}	%Iγ=16.2 *18* α(K)=0.000987 *14*; α(L)=0.0001289 *18*; α(M)=2.77×10^{-5} *4*; α(N+..)=7.41×10^{-6} *11* α(N)=6.35×10^{-6} *9*; α(O)=9.85×10^{-7} *14*; α(P)=6.63×10^{-8} *10*
996.24 *6*	13.8 *14*	996.28	2$^+$	0.0	0$^+$	E2		0.00277	%Iγ=2.39 *29* 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*	41 *3*	1127.77	3$^+$	123.06	2$^+$	E2+M1	−7.4 *4*	0.00276	%Iγ=7.1 *7* α(K)=0.00233 *4*; α(L)=0.000336 *5*; α(M)=7.30×10^{-5} *11*;

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

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	α [&]	Comments
									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.
1061.39 *9*	24 *4*	1432.39	5$^+$	371.00	4$^+$	E2+M1	−4.3 +*12*−*26*	0.00251 *8*	%Iγ=4.1 *7* 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*
1093.6 *7*	≈2	2459.4	6$^+$,7,8$^+$	1365.8	6$^+$				%Iγ≈0.346
1140.75 *8*	13.3 *15*	1263.73	4$^+$	123.06	2$^+$	E2		0.00210	%Iγ=2.30 *30* 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*
1193.34 *24*	17.2 *26*	1911.57	6$^+$	717.72	6$^+$				%Iγ=3.0 *5*
1235.6	3.5 *5*	1606.78	6$^+$	371.00	4$^+$	[E2]		0.00180	%Iγ=0.60 *10* α(K)=0.001518 *22*; α(L)=0.000212 *3*; α(M)=4.59×10^{-5} *7*; α(N+..)=2.21×10^{-5} *3* α(N)=1.053×10^{-5} *15*; α(O)=1.623×10^{-6} *23*; α(P)=1.053×10^{-7} *15*; α(IPF)=9.87×10^{-6} *14*
(1274.7)		1645.80	4$^+$	371.00	4$^+$				
1315.1 *7*	≈2	2459.4	6$^+$,7,8$^+$	1144.52	8$^+$				%Iγ≈0.346
1399.2 *3*	3.1 *5*	1770.23	5$^+$	371.00	4$^+$	[M1,E2]		0.0018 *4*	%Iγ=0.54 *9* 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*
1419.81 *8*	267 *17*	2137.51	7$^-$	717.72	6$^+$	E1		7.54×10^{-4}	%Iγ=46 *4* α(K)=0.000521 *8*; α(L)=6.71×10^{-5} *10*; α(M)=1.439×10^{-5} *21*; α(N+..)=0.0001515 *22* α(N)=3.31×10^{-6} *5*; α(O)=5.14×10^{-7} *8*; α(P)=3.52×10^{-8} *5*; α(IPF)=0.0001476 *21*
1522.8	1.3 *6*	1645.80	4$^+$	123.06	2$^+$	[E2]		1.27×10^{-3}	%Iγ=0.22 *10* 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*
1541.2 *4*	2.4	1911.57	6$^+$	371.00	4$^+$	[E2]		1.25×10^{-3}	%Iγ=0.415 *28* α(K)=0.000993 *14*; α(L)=0.0001348 *19*;

γ(^{154}Gd) (continued)

E_γ [†‡]	I_γ [@]	E_i(level)	J^π_i	E_f	J^π_f	Comments
						α(M)=2.91×10^{-5} *4*; α(N+..)=9.63×10^{-5} *14* α(N)=6.68×10^{-6} *10*; α(O)=1.035×10^{-6} *15*; α(P)=6.89×10^{-8} *10*; α(IPF)=8.85×10^{-5} *13*
1741.6 *6*	3.2 *3*	2459.4	6$^+$,7,8$^+$	717.72	6$^+$	%Iγ=0.55 *6*

[†] 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.

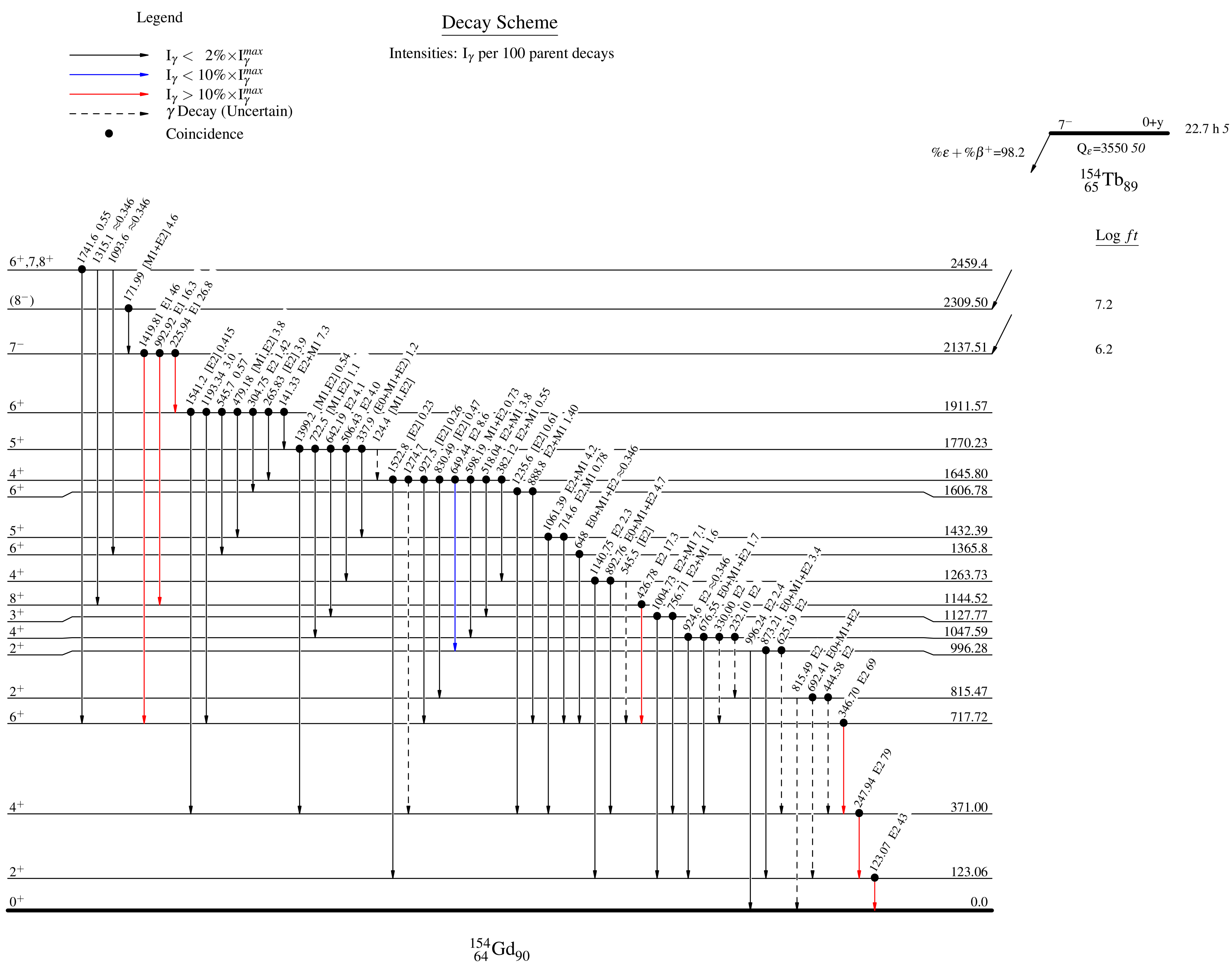
[#] Assignments and values are from ^{154}Gd adopted γ radiations and include the results of all types of experiments and all decay modes. See ^{154}Gd adopted γ radiations for other information including: (1) mixing ratios such as δ(M3/E2) and δ(M2/E1) where δ can be zero and is not included here; (2) comments on measurements for lines which are multiplets; and (3) identification of α values that are based on experimental values rather than theory.

[@] For absolute intensity per 100 decays, multiply by 0.173 *12*.

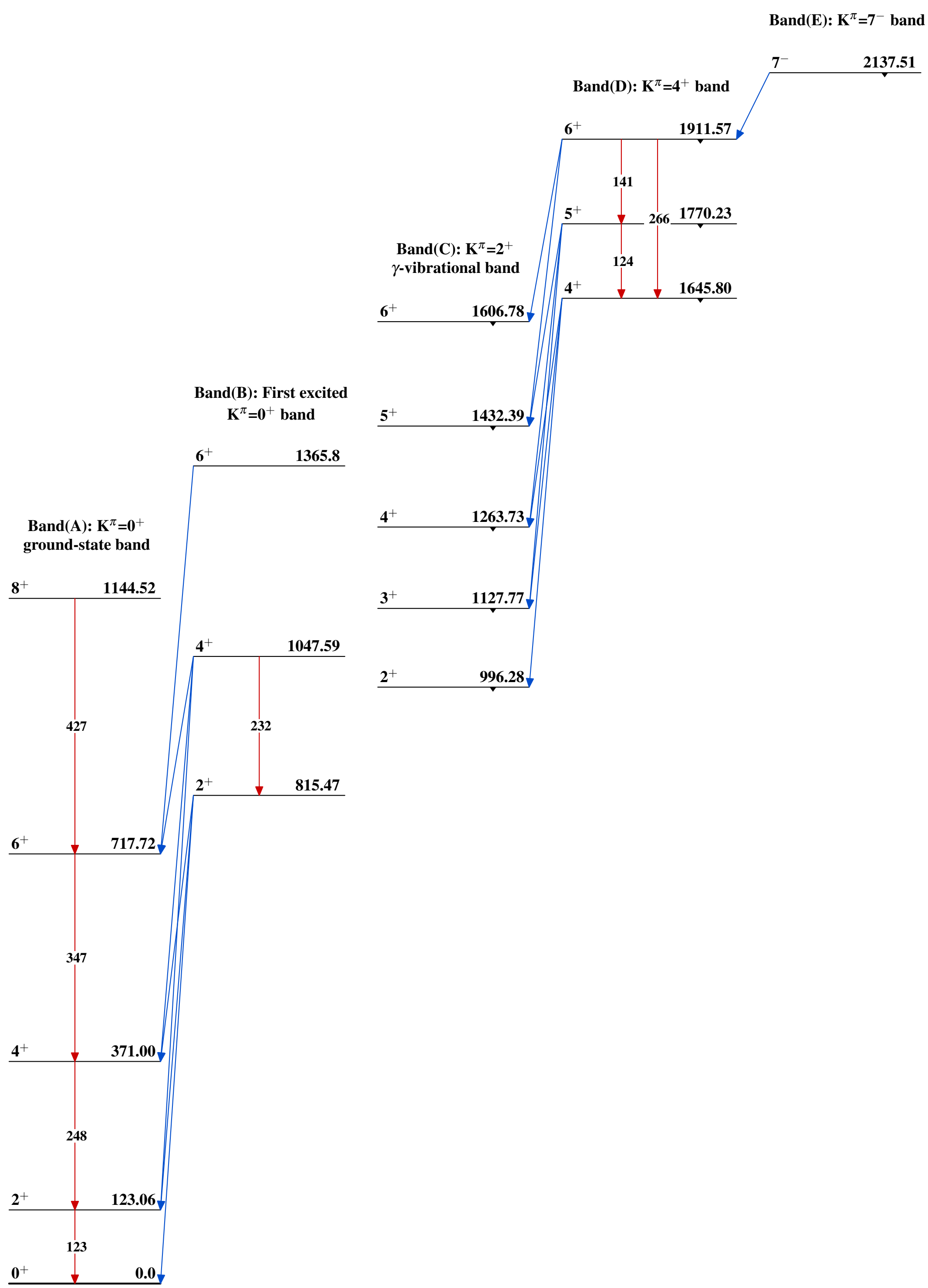
[&] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with “Frozen Orbitals” approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[x] γ ray not placed in level scheme.

^{154}Tb $\varepsilon+\beta^+$ decay (22.7 h)   1975So03,1972Vy04,1973La20



^{154}Tb ε decay (22.7 h) 1975So03,1972Vy04,1973La20



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