^{161}Gd β^- decay 1975Ga16,1976Hn01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 112,2497 (2011)	1-Jun-2011

Parent: ^{161}Gd: E=0; J$^\pi$=5/2$^-$; T$_{1/2}$=3.66 min *5*; Q(β^-)=1955.5 *14*; %β^- decay=100.0
^{161}Gd-J$^\pi$: Additional information 1.
^{161}Gd-T$_{1/2}$: Additional information 2.
^{161}Gd-Q(β^-): Additional information 3.
Additional information 4.

^{161}Tb Levels

Decay scheme is primarily that of 1975Ga16, which is the only report of levels above 750 keV. Below 750 keV, similar schemes are given by 1976Hn01, 1974OkZW, 1966Zy02, and 1966FuZZ.
The following data have been measured: γ-ray energies and intensities (1975Ga16, also 1976Hn01,1966Zy02,1966FuZZ), level half-lives (1964Lo09,1965Ma24,1967Ma33,1969Be54), $\gamma\gamma$ coincidences (1966Zy02,1969Be54,1974OkZW,1975Ga16,1976Hn01), and multipolarities from ce data (1959Sc29,1976Hn01) and from $\gamma\gamma(\theta)$ data (1974OkZW).
The $\gamma\gamma$-coincidence data on the drawing are from 1976Hn01.
Additional information 5.

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0[@]	3/2$^+$	6.906 d *19*	J$^\pi$: from ^{161}Tb Adopted Levels; J measured. T$_{1/2}$: from ^{161}Tb Adopted Levels.
56.289[@] *9*	5/2$^+$		
133.681[@] *11*	7/2$^+$		
230.72[@] *7*	9/2$^+$		
314.914[&] *11*	5/2$^+$		
394.364[&] *17*	7/2$^+$		
417.228[a] *12*	7/2$^-$	0.88 ns *2*	T$_{1/2}$: weighted average of 0.87 ns *5* (1964Lo09), 0.84 ns *4* (1965Ma24), and 0.90 ns *3* (1969Be54) from $\beta\gamma$(t).
480.130[b] *12*	5/2$^-$	<0.1 ns	T$_{1/2}$: from 1967Ma33 from βe^-(t). Other: <0.2 ns (1965Ma24) from $\beta\gamma$(t).
488.78[a] *3*	9/2$^-$		
585.776[b] *15*	7/2$^-$	<0.2 ns	T$_{1/2}$: from 1965Ma24 from $\beta\gamma$(t).
707.19[b] *25*	9/2$^-$		
1149.88 *7*	(3/2$^+$)		J$^\pi$: authors (1975Ga16) comment that a possible assignment is K$^\pi$=3/2$^+$ β-vibrational band based on 3/2[411] ground state. Additional information 6.
1209.72 *9*			J$^\pi$: assigned (3/2$^+$) by 1975Ga16, but assignment not adopted.
1252.37[c] *6*	5/2$^+$		
1349.66 *5*			J$^\pi$: assigned J$^\pi$=(5/2$^+$) and as bandhead of 5/2$^+$ β-vibrational band based on 5/2[413] state at 314 keV by 1975Ga16, but assignment not adopted.
1404.68 *12*			J$^\pi$: assigned (5/2$^+$) by 1975Ga16, but assignment not adopted.
1420.62 *7*			J$^\pi$: assigned J$^\pi$=(7/2$^+$) and as member of 5/2$^+$ β-vibrational band based on 5/2[413] state at 314 keV by 1975Ga16, but assignment not adopted.
1460.54 *10*			J$^\pi$: assigned (7/2) by 1975Ga16, but assignment not adopted.
1477.63 *11*			J$^\pi$: assigned J$^\pi$=(3/2$^-$) and as bandhead of 3/2$^-$[541], but assignment not adopted.
1533.80 *9*			J$^\pi$: assigned J$^\pi$=(5/2) and as member of 3/2$^-$[541] band, but assignment not adopted.
1537.43 *8*			
1552.17 *12*			J$^\pi$: assigned (7/2) by 1975Ga16, but assignment not adopted.
1558.18 *11*			J$^\pi$: assigned (5/2) by 1975Ga16, but assignment not adopted.
1601.02 *7*			J$^\pi$: assigned J$^\pi$=(7/2$^-$) and as member of 3/2$^-$[541] band, but assignment not adopted.
1623.11 *7*			J$^\pi$: assigned (5/2) by 1975Ga16, but assignment not adopted.

Continued on next page (footnotes at end of table)

^{161}Gd β^- decay 1975Ga16,1976Hn01 (continued)

^{161}Tb Levels (continued)

E(level)[†]	Comments
1655.81 *7*	J$^\pi$: assigned (7/2) by 1975Ga16, but assignment not adopted.
1778.19 *12*	J$^\pi$: assigned (7/2$^-$) by 1975Ga16, but assignment not adopted.
1810.75 *12*	
1825.2 *3*	
1853.6 *3*	J$^\pi$: assigned (7/2$^-$) by 1975Ga16, but assignment not adopted.
1856.95 *22*	

[†] From least-squares fit to γ energies.
[‡] The J$^\pi$ and band assignments are from ^{161}Tb Adopted Levels. They agree with those from the ^{161}Gd β^- decay results of 1975Ga16 and are based on γ multipolarities and expected band structure. Other J$^\pi$ and band assignments from 1975Ga16 which are not adopted are given in comments.
[#] From ^{161}Tb Adopted Levels. All data are from this decay.
[@] Band(A): 3/2[411] band.
[&] Band(B): 5/2[413] band.
[a] Band(C): 7/2[523] band.
[b] Band(D): 5/2[532] band.
[c] Band(E): 5/2[402] bandhead.

β^- radiations

IB,LOGFT Iβ^- values are computed from γ-intensity balances and the Iγ values are normalized to give a total Iβ^- of 100%. They are not normalized to give 100% feeding of the ground state because this value depends significantly on the very uncertain α of the 56γ. Iβ^- and log *ft* values are not given for levels above 600 keV, as the Iβ^- values are too small ($\leq$0.04%) to be meaningful, since the unplaced γ's can change the values significantly. The total Iβ^- given is 99.4%.

E(decay)[†]	E(level)	Iβ^-[‡#]	Log *ft*	Comments
(1369.7 *14*)	585.776	5.7	5.83	av Eβ=489.9 *7* Iβ^-: value assumes that one-half of the intensity of the 97-keV γ depopulates this level.
(1475.4 *14*)	480.130	4.4	6.07	av Eβ=534.4 *7*
1560 *30*	417.228	83.5	4.86	av Eβ=561.2 *7*
(1561.1 *14*)	394.364	1.5	6.63	av Eβ=571.0 *7*
(1640.6 *14*)	314.914	5.0	6.19	av Eβ=605.1 *7*

[†] Measured E(β^-) value is from 1966Zy02.
[‡] The calculated Iβ^-(g.s.)=8% *12* is not included since it is assumed that this value results from an error in the transition intensity of the 56-keV γ. This assumption is supported by the calculated Iβ^-(56)=−7% *12*. See comments on α for the 56γ.
[#] Absolute intensity per 100 decays.

γ(^{161}Tb)

Iγ normalization: the normalization is that of the evaluator. It assumes that the total Iβ^- is 100% and the Iβ^- feeding of the ground-state band is ≤0.5%. The total ground-state feeding is not used for normalization because the transition intensity of the 56 γ is not well known.

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[‡]	δ[#]	α[b]	Comments
56.290 12	380[&] 16	56.289	5/2$^+$	0	3/2$^+$	M1		16 3	α(K)=13.5 30; α(L)=2.0 4; α(M+..)=0.5 1 Mult.: from L1/M=3.0 5 (1959Sc29) and α(K)exp=15 3 (1959Sc29) and 13.5 30 (1976Hn01 who used ce data of 1959Sc29). From theory, α=11.51 and α(K)=9.67 for M1. α: values deduced by evaluator who assumes α and α(K) are both anomolous by the ratio α(K)exp/α(K)theory=1.40.
62.910 25	6 2	480.130	5/2$^-$	417.228	7/2$^-$	[M1,E2]		12 4	α(K)=4.9 22; α(L)=5 5; α(M)=1.3 11; α(N+..)=0.3 3 α(N)=0.29 24; α(O)=0.04 3; α(P)=0.00034 19
71.57 3	6 2	488.78	9/2$^-$	417.228	7/2$^-$	[M1,E2]		7.6 18	α(K)=3.6 13; α(L)=3.0 24; α(M)=0.7 6; α(N+..)=0.18 15 α(N)=0.16 13; α(O)=0.021 16; α(P)=0.00024 12
77.393 10	107 10	133.681	7/2$^+$	56.289	5/2$^+$	M1+E2	0.12 1	4.63	α(K)=3.84 6; α(L)=0.611 12; α(M)=0.135 3; α(N+..)=0.0360 7 α(N)=0.0310 6; α(O)=0.00470 9; α(P)=0.000286 4 Mult.: from K/L≈2.0 and α(K)exp=5.3 (1959Sc29). δ: The expected E2 component in this intraband cascade transition was computed by the evaluator using the Alaga rules (1955Al58) and the intensity of the crossover (133.68) E2 transition.
79.41 4	6 1	394.364	7/2$^+$	314.914	5/2$^+$	[M1,E2]		5.2 10	α(K)=2.8 9; α(L)=1.9 14; α(M)=0.5 4; α(N+..)=0.11 9 α(N)=0.10 8; α(O)=0.013 10; α(P)=0.00018 9 E$_\gamma$: placement by 1976Hn01, unplaced by 1975Ga16.
85.79 7	15 3	480.130	5/2$^-$	394.364	7/2$^+$	[E1]		0.453	α(K)=0.377 6; α(L)=0.0591 9; α(M)=0.01289 19; α(N+..)=0.00336 5 α(N)=0.00292 5; α(O)=0.000418 6; α(P)=2.05×10^{-5} 3
[x]89.43 15	5. 1								
97.04[cd] 7	12.5[c] 20	230.72	9/2$^+$	133.681	7/2$^+$	[M1,E2]		2.7 3	α(K)=1.6 4; α(L)=0.8 5; α(M)=0.19 13; α(N+..)=0.05 3 α(N)=0.04 3; α(O)=0.006 4; α(P)=0.00011 5
97.04[c] 7	12.5[c] 20	585.776	7/2$^-$	488.78	9/2$^-$	[M1,E2]		2.7 3	α(K)=1.6 4; α(L)=0.8 5; α(M)=0.19 13; α(N+..)=0.05 3 α(N)=0.04 3; α(O)=0.006 4; α(P)=0.00011 5
102.315 10	1400 80	417.228	7/2$^-$	314.914	5/2$^+$	E1		0.283	α(K)=0.237 4; α(L)=0.0361 5; α(M)=0.00786 11; α(N+..)=0.00206 3 α(N)=0.00179 3; α(O)=0.000259 4; α(P)=1.316×10^{-5} 19 Mult.: from K/L=5.5 and α(K)exp=0.22 (1959Sc29). E1 also deduced by 1976Hn01 from α(K)exp based on ce data of 1959Sc29, but α(K)exp value is not reported.
105.64 2	74 10	585.776	7/2$^-$	480.130	5/2$^-$	[M1,E2]		2.00 13	α(K)=1.3 3; α(L)=0.6 4; α(M)=0.13 8; α(N+..)=0.033 20 α(N)=0.029 18; α(O)=0.0039 22; α(P)=8.E−5 4

γ(^{161}Tb) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[#]	α[b]	Comments
121.7 *3*	1.0 *3*	707.19	9/2⁻	585.776	7/2⁻	[M1,E2]		1.265 *24*	α(K)=0.87 *20*; α(L)=0.31 *16*; α(M)=0.07 *4*; α(N+..)=0.019 *10* α(N)=0.016 *9*; α(O)=0.0022 *11*; α(P)=5.7×10^{-5} *23*
133.68 *2*	16 *2*	133.681	7/2⁺	0	3/2⁺	[E2]		0.915	α(K)=0.516 *8*; α(L)=0.307 *5*; α(M)=0.0725 *11*; α(N+..)=0.0185 *3* α(N)=0.01630 *23*; α(O)=0.00214 *3*; α(P)=2.68×10^{-5} *4*
165.213 *15*	260 *20*	480.130	5/2⁻	314.914	5/2⁺	E1		0.0780	α(K)=0.0658 *10*; α(L)=0.00957 *14*; α(M)=0.00208 *3*; α(N+..)=0.000549 *8* α(N)=0.000475 *7*; α(O)=7.03×10^{-5} *10*; α(P)=3.91×10^{-6} *6* Mult.: from α(K)exp=0.10 (1959Sc29). E1 also deduced by 1976Hn01 from α(K)exp based on ce data of 1959Sc29, but α(K)exp value is not reported.
168.47 *7*	8.2 *12*	585.776	7/2⁻	417.228	7/2⁻	[M1,E2]		0.46 *5*	α(K)=0.34 *8*; α(L)=0.09 *3*; α(M)=0.020 *7*; α(N+..)=0.0052 *16* α(N)=0.0045 *15*; α(O)=0.00064 *17*; α(P)=2.3×10^{-5} *9*
181.232 *12*	75 *3*	314.914	5/2⁺	133.681	7/2⁺	M1+E2	≈−0.87	0.371 *25*	α(K)≈0.288; α(L)≈0.0645; α(M)≈0.01463; α(N+..)≈0.00383 α(N)≈0.00334; α(O)≈0.000477; α(P)≈1.97×10^{-5}
191.38 *3*	64 *3*	585.776	7/2⁻	394.364	7/2⁺	[E1]		0.0528	α(K)=0.0446 *7*; α(L)=0.00641 *9*; α(M)=0.001394 *20*; α(N+..)=0.000369 *6* α(N)=0.000319 *5*; α(O)=4.74×10^{-5} *7*; α(P)=2.70×10^{-6} *4*
258.62 *3*	99 *4*	314.914	5/2⁺	56.289	5/2⁺	M1+E2	−0.6 *+3−2*	0.140 *11*	α(K)=0.115 *11*; α(L)=0.0192 *4*; α(M)=0.00425 *13*; α(N+..)=0.00113 *3* α(N)=0.00098 *3*; α(O)=0.0001462 *21*; α(P)=8.3×10^{-6} *10* δ: from 1974OkZW; authors report only smaller of the two values from the analysis based on α(K)exp≈0.22 (1959Sc29) which implies predominately M1. M1 also deduced by 1976Hn01 from α(K)exp based on ce data of 1959Sc29, but α(K)exp value is not reported.
270.87 *5*	88 *4*	585.776	7/2⁻	314.914	5/2⁺	[E1]		0.0214	α(K)=0.0182 *3*; α(L)=0.00256 *4*; α(M)=0.000555 *8*; α(N+..)=0.0001475 *21* α(N)=0.0001272 *18*; α(O)=1.91×10^{-5} *3*; α(P)=1.139×10^{-6} *16*
283.55 *3*	600 *25*	417.228	7/2⁻	133.681	7/2⁺	E1		0.0191	α(K)=0.01618 *23*; α(L)=0.00227 *4*; α(M)=0.000493 *7*; α(N+..)=0.0001311 *19* α(N)=0.0001131 *16*; α(O)=1.701×10^{-5} *24*; α(P)=1.019×10^{-6} *15* Mult.: from α(K)exp=0.041 (1959Sc29). E1 also deduced by 1976Hn01 from α(K)exp based on ce data of 1959Sc29, but α(K)exp value is not reported.
314.92 *2*	2290 *90*	314.914	5/2⁺	0	3/2⁺	M1+E2	+0.29 *6*	0.0884 *18*	α(K)=0.0745 *16*; α(L)=0.01092 *16*; α(M)=0.00239 *4*; α(N+..)=0.000641 *10* α(N)=0.000551 *8*; α(O)=8.46×10^{-5} *13*; α(P)=5.45×10^{-6} *13* δ: from 1974OkZW; authors report only smaller of the two values from the analysis based on α(K)exp=0.10 and K/L≥6.3 (1959Sc29) which imply predominately M1. E2+M1 is reported by 1976Hn01 from α(K)exp based ce data of 1959Sc29 which

$^{161}_{65}$Tb$_{96}$-4

$\gamma(^{161}Tb)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [#]	α [b]	Comments
									might support larger δ value, but α(K)exp value is not reported.
338.07 *2*	170 *10*	394.364	7/2$^+$	56.289	5/2$^+$	M1+E2	+0.08 *3*	0.0755	α(K)=0.0639 *10*; α(L)=0.00910 *13*; α(M)=0.00198 *3*; α(N+..)=0.000534 *8* α(N)=0.000458 *7*; α(O)=7.07×10^{-5} *10*; α(P)=4.70×10^{-6} *7*
360.94 *2*	606×10^1 *15*	417.228	7/2$^-$	56.289	5/2$^+$	E1		0.01051	α(K)=0.00893 *13*; α(L)=0.001237 *18*; α(M)=0.000268 *4*; α(N+..)=7.15×10^{-5} *10* α(N)=6.16×10^{-5} *9*; α(O)=9.33×10^{-6} *13*; α(P)=5.73×10^{-7} *8* Mult.: from α(K)exp=0.018 (1959Sc29). E1 also deduced by 1976Hn01 from α(K)exp based on ce data of 1959Sc29, but α(K)exp value is not reported.
394.34 *6*	22 *2*	394.364	7/2$^+$	0	3/2$^+$	[E2]		0.0278	α(K)=0.0219 *3*; α(L)=0.00456 *7*; α(M)=0.001030 *15*; α(N+..)=0.000270 *4* α(N)=0.000235 *4*; α(O)=3.37×10^{-5} *5*; α(P)=1.428×10^{-6} *20*
417.0 *4*	31 *4*	417.228	7/2$^-$	0	3/2$^+$	[M2]		0.1524	α(K)=0.1254 *18*; α(L)=0.0211 *3*; α(M)=0.00470 *7*; α(N+..)=0.001265 *19* α(N)=0.001088 *16*; α(O)=0.0001664 *24*; α(P)=1.053×10^{-5} *16*
423.86 *7*	18 *3*	480.130	5/2$^-$	56.289	5/2$^+$	[E1]		0.00718	α(K)=0.00611 *9*; α(L)=0.000839 *12*; α(M)=0.000182 *3*; α(N+..)=4.85×10^{-5} *7* α(N)=4.18×10^{-5} *6*; α(O)=6.35×10^{-6} *9*; α(P)=3.96×10^{-7} *6*
452.2 *2*	6 *1*	585.776	7/2$^-$	133.681	7/2$^+$				
480.12 *2*	270 *15*	480.130	5/2$^-$	0	3/2$^+$	[E1]		0.00539	α(K)=0.00459 *7*; α(L)=0.000627 *9*; α(M)=0.0001357 *19*; α(N+..)=3.63×10^{-5} *5* α(N)=3.12×10^{-5} *5*; α(O)=4.75×10^{-6} *7*; α(P)=3.00×10^{-7} *5*
529.50 *2*	127 *7*	585.776	7/2$^-$	56.289	5/2$^+$				
772.18 *10*	0.36 *3*	1252.37	5/2$^+$	480.130	5/2$^-$				
818.9 [@] *3*	0.07 *2*	1404.68		585.776	7/2$^-$				
[x]832.0 *3*	0.10 *2*								
835.0 [c] *3*	0.09 [c] *2*	1149.88	(3/2$^+$)	314.914	5/2$^+$				
835.0 [d] *3*	0.09 *2*	1252.37	5/2$^+$	417.228	7/2$^-$				
835.0 [cd] *3*	0.09 [c] *2*	1420.62		585.776	7/2$^-$				
857.93 *11*	0.21 *2*	1252.37	5/2$^+$	394.364	7/2$^+$				
[x]869.3 *2*	0.097 *15*								
[x]911.53 *12*	0.19 *2*								
924.55 *12*	0.19 *2*	1404.68		480.130	5/2$^-$				
[x]928.42 *14*	0.13 *2*								
[x]932.85 *10*	0.29 *2*								
937.53 *9*	0.92 *5*	1252.37	5/2$^+$	314.914	5/2$^+$				
947.75 *24*	0.053 *6*	1533.80		585.776	7/2$^-$				
951.10 *22*	0.055 *6*	1537.43		585.776	7/2$^-$				
955.35 *8*	0.79 *4*	1349.66		394.364	7/2$^+$				
972.3 [@] *8*	0.024 *8*	1460.54		488.78	9/2$^-$				

From ENSDF

$^{161}_{65}Tb_{96}$-5

γ(^{161}Tb) (continued)

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
^{x}979.37 *14*	0.11 *1*				
^{x}1012.90 *10*	0.30 *2*				
1015.10 *14*	0.12 *2*	1601.02		585.776	7/2$^-$
1026.25 *10*	0.28 *2*	1420.62		394.364	7/2$^+$
1034.72 *8*	2.74 *7*	1349.66		314.914	5/2$^+$
^{x}1044.30 *22*	0.055 *10*				
1048.75 *12*	0.19 *2*	1537.43		488.78	9/2$^-$
1053.7$^{@}$ *3*	0.045 *10*	1533.80		480.130	5/2$^-$
^{x}1057.06 *10*	0.36 *2*				
1063.4 *2*	0.073 *12*	1552.17		488.78	9/2$^-$
1066.22 *12*	0.145 *15*	1460.54		394.364	7/2$^+$
1071.5$^{@}$ *4*	0.035 *6*	1778.19		707.19	9/2$^-$
1093.52 *9*	0.64 *4*	1149.88	(3/2$^+$)	56.289	5/2$^+$
1105.84 *13*	0.133 *12*	1420.62		314.914	5/2$^+$
1112.20 *15*	0.18 *5*	1601.02		488.78	9/2$^-$
^{x}1113.49 *10*	0.53 *8*				
^{x}1117.15 *14*	0.12 *2*				
1120.92 *10*	0.42 *3*	1601.02		480.130	5/2$^-$
^{x}1126.3 *3*	0.064 *15*				
1135.2 *4*	0.038 *8*	1552.17		417.228	7/2$^-$
1143.15 *12*	0.20 *2*	1537.43		394.364	7/2$^+$
1145.50 *18*	0.09 *2*	1460.54		314.914	5/2$^+$
1149.94 *9*	1.20 *6*	1149.88	(3/2$^+$)	0	3/2$^+$
1153.43 *12*	0.155 *20*	1209.72		56.289	5/2$^+$
^{x}1160.09 *12*	0.158 *15*				
^{x}1171.4 *5*	0.030 *12*				
1175.82 *11*	0.20 *2*	1655.81		480.130	5/2$^-$
^{x}1186.06 *18*	0.073 *10*				
1192.42 *15*	0.103 *15*	1778.19		585.776	7/2$^-$
^{x}1197.07 *13*	0.140 *15*				
1209.72 *11*	0.187 *15*	1209.72		0	3/2$^+$
1224.93 *20*	0.056 *10*	1810.75		585.776	7/2$^-$
1228.72 *14*	0.109 *10*	1623.11		394.364	7/2$^+$
^{x}1238.01 *18*	0.073 *6*				
^{x}1242.0 *4*	0.038 *7*				
1252.42 *12*	0.181 *12*	1252.37	5/2$^+$	0	3/2$^+$
^{x}1258.88 *13*	0.126 *8*				
1261.11 *11*	0.195 *10*	1655.81		394.364	7/2$^+$
1271.8$^{@}$ *5*	0.019 *5*	1856.95		585.776	7/2$^-$
1286.4 *4*	0.039 *7*	1601.02		314.914	5/2$^+$

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
1297.9 *2*	0.073 *12*	1778.19		480.130	5/2$^-$
1308.27 *10*	0.296 *20*	1623.11		314.914	5/2$^+$
1341.10 *12*	0.166 *15*	1655.81		314.914	5/2$^+$
1344.2$^{@}$ *4*	0.033 *7*	1477.63		133.681	7/2$^+$
1349.60 *9*	0.51 *3*	1349.66		0	3/2$^+$
^{x}1354.9 *3*	0.043 *7*				
^{x}1357.8 *3*	0.045 *7*				
1364.19 *13*	0.119 *13*	1420.62		56.289	5/2$^+$
1373.2$^{@}$ *5*	0.027 *6*	1853.6		480.130	5/2$^-$
1376.7 *3*	0.041 *6*	1856.95		480.130	5/2$^-$
^{x}1379.74 *13*	0.165 *12*				
1400.13 *12*	0.175 *12*	1533.80		133.681	7/2$^+$
1421.37 *15*	0.089 *7*	1477.63		56.289	5/2$^+$
1424.3 *2*	0.066 *5*	1558.18		133.681	7/2$^+$
1430.7$^{@}$ *6*	0.012 *4*	1825.2		394.364	7/2$^+$
^{x}1433.82 *16*	0.085 *6*				
1439.5 *4*	0.035 *5*	1856.95		417.228	7/2$^-$
1459.5$^{@}$ *5*	0.027 *5*	1853.6		394.364	7/2$^+$
^{x}1472.4 *2*	0.059 *6*				
1477.55^{c} *15*	0.136^{c} *10*	1477.63		0	3/2$^+$
1477.55^{cd} *15*	0.136^{c} *10*	1533.80		56.289	5/2$^+$
1480.9 *3*	0.040 *5*	1537.43		56.289	5/2$^+$
1489.42 *15*	0.140 *10*	1623.11		133.681	7/2$^+$
1495.82^{c} *16*	0.082^{c} *7*	1552.17		56.289	5/2$^+$
1495.82^{c} *16*	0.082^{c} *7*	1810.75		314.914	5/2$^+$
1501.8 *2*	0.058 *5*	1558.18		56.289	5/2$^+$
1533.87 *15*	0.138 *10*	1533.80		0	3/2$^+$
1538.7 *5*	0.024 *6*	1853.6		314.914	5/2$^+$
1544.80 *14*	0.116 *8*	1601.02		56.289	5/2$^+$
1547.5$^{@}$ *5*	0.024 *6*	1778.19		230.72	9/2$^+$
1558.33 *15*	0.099 *8*	1558.18		0	3/2$^+$
1567.0$^{@}$ *6*	0.012 *3*	1623.11		56.289	5/2$^+$
^{x}1590.5 *5*	0.024 *5*				
^{x}1600.55 *15*	0.42 *3*				
1622.95^{c} *15*	0.212^{c} *15*	1623.11		0	3/2$^+$
1622.95^{c} *15*	0.212^{c} *15*	1853.6		230.72	9/2$^+$
1677.3 *4*	0.028 *5*	1810.75		133.681	7/2$^+$
1691.7 *4*	0.029 *5*	1825.2		133.681	7/2$^+$
^{x}1738.8 *3*	0.033 *5*				
1768.6$^{@}$ *5*	0.022 *4*	1825.2		56.289	5/2$^+$

$^{161}_{65}$Tb$_{96}$-6

γ(^{161}Tb) (continued)

† From 1975Ga16; the nine doubtful unplaced γ's and one possible sum peak (1975Ga16) have been omitted. Others: 1976Hn01, 1974OkZW, 1966Zy02, and 1966FuZZ.

‡ From K x ray/γ and L_1/M ratios for 56-keV γ (1959Sc29 and 1976Hn01) and from α(K)exp′s (1976Hn01), using ce data of 1959Sc29 for all other γ's with the γ and ce data scaled to the theoretical M1 value for the 56-keV γ. The precision of the ce data (1959Sc29) is judged by the evaluator to be sufficient to distinguish between E1 and M1+E2 transitions, but not between M1 and E2 transitions.

From $\gamma\gamma(\theta)$ results of 1974OkZW.

@ Authors (1975Ga16) indicate γ is doubtful even though it is placed in scheme and intensity is >0.

& This Iγ and the α result in an intensity for the β^- feeding of the 56-keV level of −7% *12*. If the theoretical α for an M1 γ is used, this computed Iβ^- becomes −23%. To obtain an intensity balance, Iγ would need to increase by about 10%.

[a] For absolute intensity per 100 decays, multiply by 0.00991 *4*.

[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.

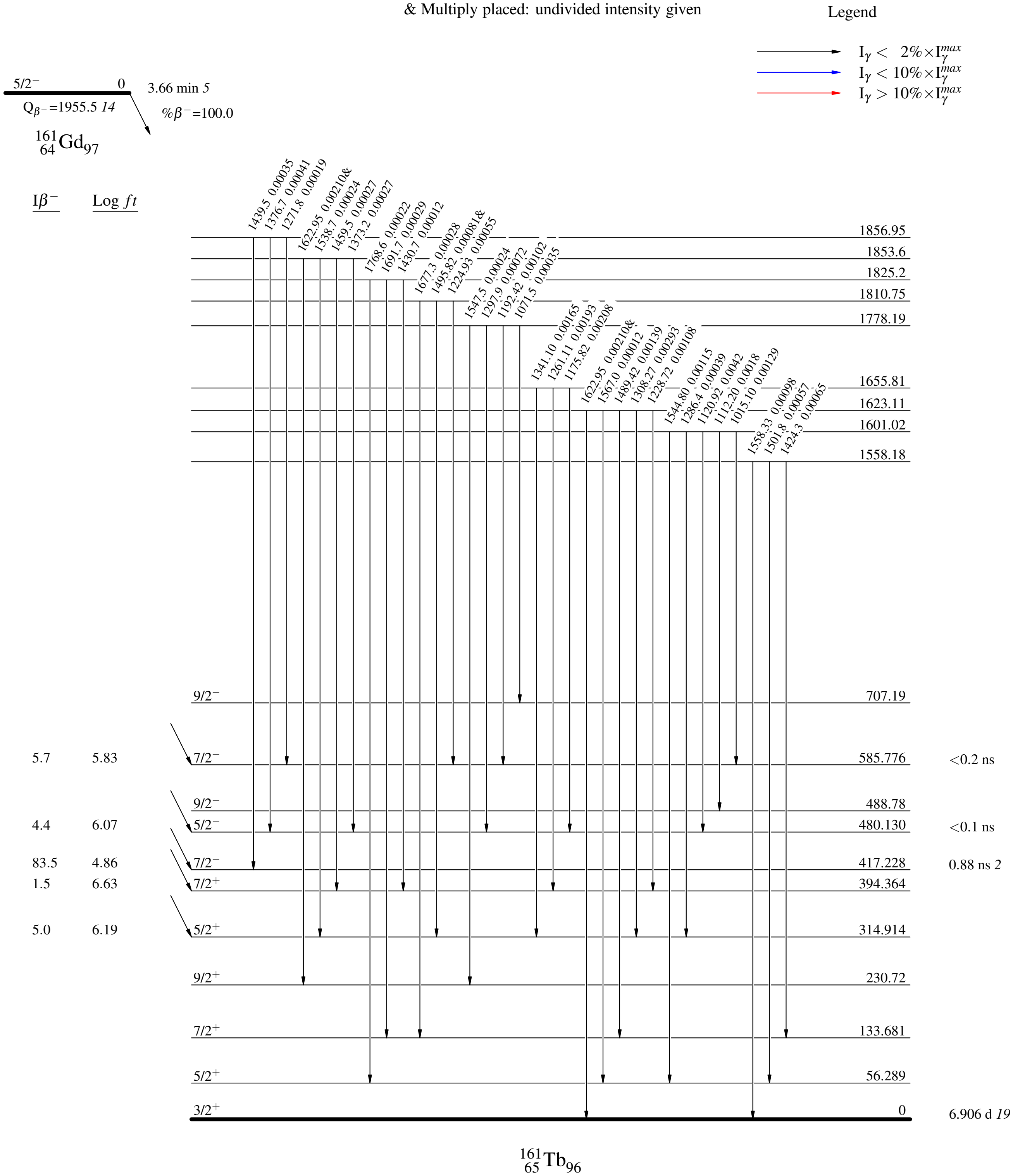
[d] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

^{161}Gd β^- decay 1975Ga16,1976Hn01

Decay Scheme

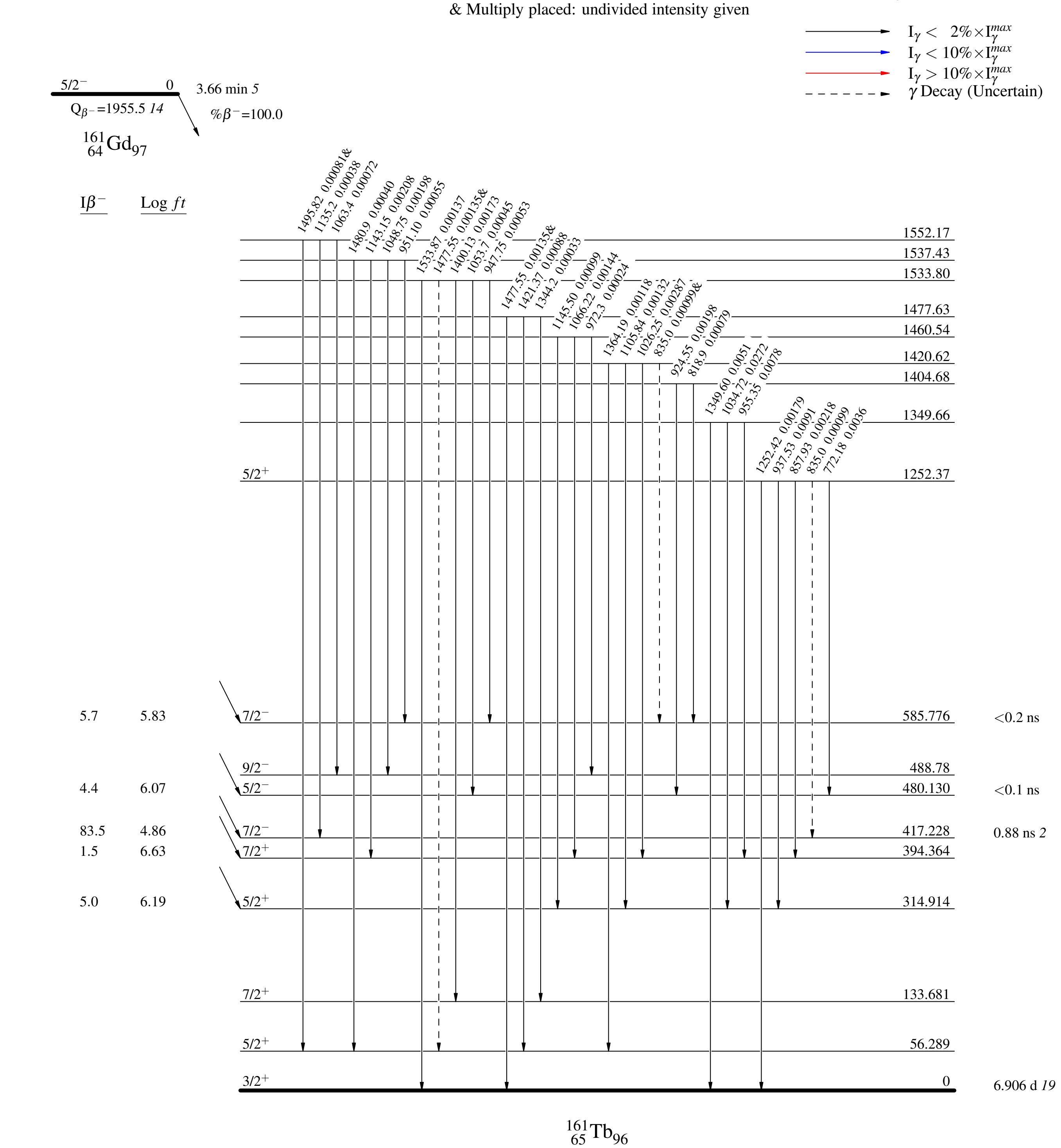
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{161}Gd β^- decay 1975Ga16,1976Hn01

Decay Scheme (continued)

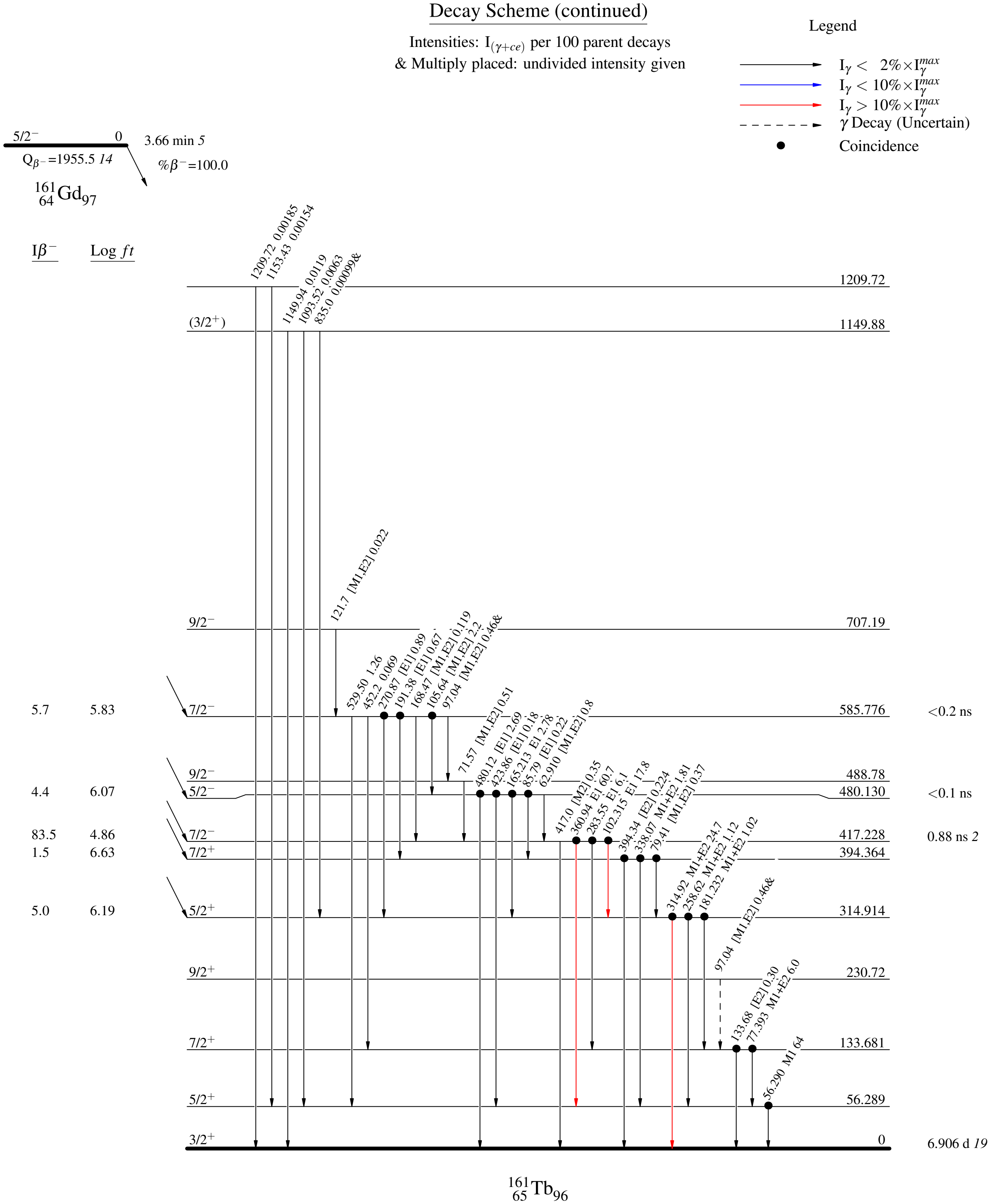
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



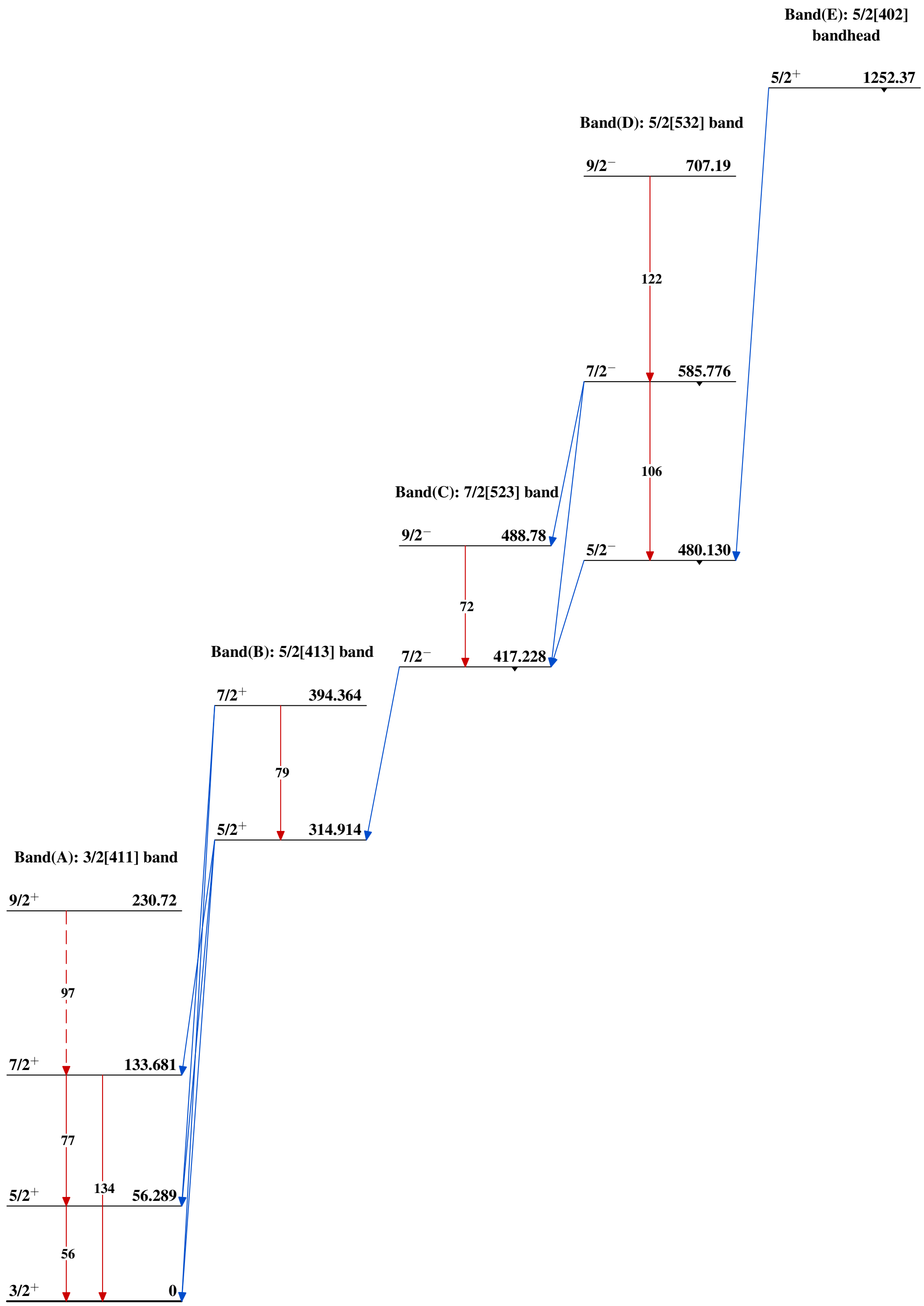
^{161}Gd β^- decay 1975Ga16,1976Hn01

Decay Scheme (continued)

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



$^{161}Gd\ \beta^-$ decay 1975Ga16,1976Hn01



$^{161}_{65}Tb_{96}$