^{153}Tb ε decay

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

Parent: ^{153}Tb: E=0.0; $J^\pi=5/2^+$; $T_{1/2}$=2.34 d *1*; Q(ε)=1569 *4*; %ε+%$β^+$ decay=100.0

Additional information 1.

Main references are 1991Gr21, 1983Pr07, 1982Al24, 1975Vy01, 1974Tu01, and 1974Pe16.

Sources have been produced by spallation of Ta by 660-MeV protons (1991Gr21,1983Pr07,1982Al24,1975Vy01), by spallation of Gd by 120-MeV protons (1975Vy01), and by irradiation of natural Gd by 50-MeV protons (1974Tu01), generally followed by chemical separation and mass separation. Other measurements: 1978Cr02, 1978Wa14, 1976Al09, 1975Se16, 1968Ni04, 1962Ha24, 1961St15, 1960Ab03, and 1959To26.

The decay scheme based on 1983Pr07, 1982Al24, 1975Vy01, and 1974Tu01 was modified on the basis of additional γγ and βγ coincidence measurements of 1991Gr21 with many changes including alternate placements for many γ rays. For example, for the 1015 level three of the previous five γ′s were removed and replaced with three new ones. The two level schemes have been combined with notes on the changes based on 1991Gr21.

^{153}Gd Levels

E(level)†	J^π‡	$T_{1/2}$#	Comments
0.0	$3/2^-$		
41.549 *9*	$5/2^-$	4.08 ns *6*	$T_{1/2}$: Weighted average of 4.1 ns *1* γce(t) (1969An19), 4.11 *24* γce(t) (1970VaZO), 4.05 ns *9* γce(t) and ce-ce(t) (1982Al24).
93.331 *12*	$7/2^-$	0.45 ns *8*	$T_{1/2}$: From γce(t) and ce-ce(t) (1982Al24).
95.124 *15*	$(9/2)^+$		
109.742 *9*	$(5/2)^-$	0.243 ns *14*	μ=+0.40 *15*; g=+0.16 *6* (1977VaZJ) $T_{1/2}$: From γce(t) and ce-ce(t) (1982Al24); others: 1.97 ns *23* (1970VaZO) and 0.35 ns *8*.
129.201 *10*	$3/2^-$	2.52 ns *9*	μ=0.37 *7* (1977Ba63) $T_{1/2}$: Weighted average of 2.50 ns *15* γγ(t) (1969An19), 2.84 ns *21* γce(t) (1970VaZO), 2.39 ns *14* γce(t) and ce-ce(t) (1982Al24).
183.413 *10*	$5/2^+$	0.76 ns *12*	$T_{1/2}$: From γce(t) and ce-ce(t) (1982Al24).
212.014 *11*	$3/2^+$		
215.977 *15*	$7/2^-$		
219.37 *3*	$(9/2^-)$		E(level): Level reported by 1991Gr21 only.
249.562 *12*	$5/2^-$		
290.299 *15*	$(7/2^+)$		
303.577 *11*	$5/2^+$		
315.334 *17*	$1/2^-$		
316.020 *13*	$(3/2,5/2)^+$		
327.191 *18*	$1/2^+$		
361.480 *17*	$3/2^-$		
368.636 *19*	$5/2^-$		J^π: $7/2^-$ in Adopted Levels.
412.91 *3*	$3/2^+$		
436.333 *15*	$1/2^-$		
442.205 *13*	$5/2^+$		
448.430 *21*	$5/2^-$		
482.875 *16*	$1/2^+$		
490.53 *4*	$(5/2^+,7/2^+)$		
504.04 *3*	$5/2^+$		E(level): Level reported by 1991Gr21 only.
508.846 *18*	$3/2^-$		
530.487 *17*	$3/2^-$		
548.665 *17*	$5/2^-$		
607.13 *3*	$5/2^-$		E(level): Level reported by 1991Gr21 only.
636.503 *25*	$7/2^-$		
677.0 *3*	$(1/2,3/2,5/2)^+$		E(level): Level not reported by 1991Gr21.
709.04 *4*	$3/2^+$		

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^{153}Tb ε decay (continued)

^{153}Gd Levels (continued)

E(level)[†]	Jπ[‡]	Comments
720.45 *13*	$(5/2,7/2)^-$	E(level): Level not reported by 1991Gr21.
731.62 *4*	$7/2^+$	
774.65 *4*	$(5/2^+)$	
782.569 *14*	$3/2^+$	
821.217 *24*	$(5/2^+)$	
847.62 *5*	$5/2^-,7/2^-$	
857.611 *16*	$3/2^-$	
865.595 *21*	$3/2^+$	
937.419 *25*	$5/2^+$	
945.159 *14*	$3/2^+$	
955.47 *3*	$5/2^+$	
990.36 *5*	$(3/2^+)$	
1014.76 *4*	$5/2^+$	
1035.188 *21*	$5/2^+$	
1044.60 *12*	$(3/2,5/2,7/2)^+$	
1066.36 *3*	$3/2^+$	
1101.619 *14*	$3/2^+$	
1118.51 *4*	$(3/2^+)$	
1131.72 *5*	$5/2^+$	
1180.49 *5*	$5/2^+$	
1199.02 *6*	$(7/2,9/2)^+$	
1272.70 *4*	$5/2^+$	
1328.12 *3*	$5/2^+$	
1387.48 *4*		E(level): Level reported only by 1991Gr21.
1401.43 *5*	$(3/2^+)$	
1422.69 *6*	$(3/2,5/2)^-$	
1426.56 *16*	$(1/2,3/2)^+$	E(level): Level reported only by 1991Gr21.
1452.39 *12*	$(3/2,5/2)^+$	E(level): Level reported only by 1991Gr21.

[†] From least-squares fit to γ-ray energies with γ′s with questionable placement omitted, uncertainties of 1.0 keV assigned to γ′s without uncertainties, and uncertainties of multiply placed γ′s increased by factors between 2.0 and 5.0. There are several cases where the energies of two γ rays from a level are discrepant, e.g., by over 5 σ; this may imply that one or both of these γ′s are multiplets. See ^{153}Gd Adopted Levels for more precise level energies.

[‡] From ^{153}Gd Adopted Levels, except as noted otherwise.

[#] Level half-lives have been reported by 1969An19, 1970VaZO, 1972Af03, and 1982Al24 (and 1991Gr21).

ε,β$^+$ radiations

E(decay)	E(level)	Iε[#]	Log *ft*	I(ε+β$^+$)[†#]	Comments
(117 *4*)	1452.39	0.063 *11*	7.21 *9*	0.063 *11*	εK=0.663 *12*; εL=0.254 *9*; εM+=0.082 *3*
(142 *4*)	1426.56	0.034 *7*	7.73 *10*	0.034 *7*	εK=0.714 *6*; εL=0.217 *5*; εM+=0.0689 *16*
(146 *4*)	1422.69	0.144 *12*	7.13 *5*	0.144 *12*	εK=0.719 *6*; εL=0.214 *4*; εM+=0.0675 *15*
(168 *4*)	1401.43	0.140 *11*	7.31 *5*	0.140 *11*	εK=0.742 *4*; εL=0.197 *3*; εM+=0.0614 *10*
(182 *4*)	1387.48	0.86 *5*	6.61 *4*	0.86 *5*	εK=0.753 *3*; εL=0.1887 *22*; εM+=0.0585 *8*
(241 *4*)	1328.12	0.34 *4*	7.32 *6*	0.34 *4*	εK=0.7815 *14*; εL=0.1675 *10*; εM+=0.0510 *4*
(296 *4*)	1272.70	0.136 *8*	7.93 *3*	0.136 *8*	εK=0.7957 *8*; εL=0.1570 *6*; εM+=0.04729 *21*
(370 *4*)	1199.02	0.127 *8*	8.18 *3*	0.127 *8*	εK=0.8069 *5*; εL=0.1487 *4*; εM+=0.04440 *13*
(389 *4*)	1180.49	0.247 *18*	7.94 *4*	0.247 *18*	εK=0.8090 *5*; εL=0.1472 *4*; εM+=0.04387 *11*
(437 *4*)	1131.72	0.247 *23*	8.06 *5*	0.247 *23*	εK=0.8134 *4*; εL=0.14390 *24*; εM+=0.04273 *9*
(450 *4*)	1118.51	0.174 *21*	8.24 *6*	0.174 *21*	εK=0.8144 *3*; εL=0.14315 *23*; εM+=0.04247 *8*
(467 *4*)	1101.619	2.66 *14*	7.088 *25*	2.66 *14*	εK=0.8156 *3*; εL=0.14226 *21*; εM+=0.04216 *7*

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^{153}Tb ε decay (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡#	Iε#	Log *ft*	I(ε+β+)†#	Comments
(503 *4*)	1066.36		0.303 *17*	8.10 *3*	0.303 *17*	εK=0.8178 *3*; εL=0.14063 *18*; εM+=0.04159 *6*
(524 *4*)	1044.60		0.161 *15*	8.42 *5*	0.161 *15*	εK=0.8190 *3*; εL=0.13974 *16*; εM+=0.04129 *6*
(534 *4*)	1035.188		1.07 *9*	7.61 *4*	1.07 *9*	εK=0.8195 *2*; εL=0.13938 *15*; εM+=0.04116 *6*
(554 *4*)	1014.76		0.31 *3*	8.18 *5*	0.31 *3*	εK=0.8204 *2*; εL=0.13865 *14*; εM+=0.04091 *5*
(579 *4*)	990.36		0.222 *17*	8.37 *4*	0.222 *17*	εK=0.8215 *2*; εL=0.1378 *2*; εM+=0.04063 *5*
(614 *4*)	955.47		0.73 *7*	7.91 *5*	0.73 *7*	εK=0.8229 *2*; εL=0.1368 *2*; εM+=0.04028 *4*
(624 *4*)	945.159		3.50 *18*	7.242 *24*	3.50 *18*	εK=0.8233 *2*; εL=0.1365 *1*; εM+=0.04018 *4*
(632 *4*)	937.419		0.54 *4*	8.06 *4*	0.54 *4*	εK=0.8235 *2*; εL=0.1363 *1*; εM+=0.04011 *4*
(703 *4*)	865.595		0.60 *4*	8.12 *3*	0.60 *4*	εK=0.8258 *2*; εL=0.13470 *9*; εM+=0.03954 *3*
(711 *4*)	857.611		1.14 *9*	7.85 *4*	1.14 *9*	εK=0.8260 *1*; εL=0.13454 *8*; εM+=0.03949 *3*
(721 *4*)	847.62		0.26 *3*	8.51 *5*	0.26 *3*	εK=0.8262 *1*; εL=0.13434 *8*; εM+=0.03942 *3*
(748 *4*)	821.217		0.47 *5*	8.28 *5*	0.47 *5*	εK=0.8269 *1*; εL=0.13385 *8*; εM+=0.03925 *3*
(786 *4*)	782.569		1.56 *12*	7.81 *4*	1.56 *12*	εK=0.82778 *9*; εL=0.13320 *7*; εM+=0.03903 *3*
(794 *4*)	774.65		0.253 *21*	8.61 *4*	0.253 *21*	εK=0.82795 *9*; εL=0.13307 *7*; εM+=0.03898 *3*
(837 *4*)	731.62		0.64 *5*	8.25 *4*	0.64 *5*	εK=0.8288; εL=0.13243 *6*; εM+=0.03876 *2*
(849 *4*)	720.45		0.19 *6*	8.79 *14*	0.19 *6*	εK=0.8290; εL=0.13228 *6*; εM+=0.03871 *2*
(860 *4*)	709.04		0.40 *3*	8.48 *4*	0.40 *3*	εK=0.8292; εL=0.13213 *6*; εM+=0.03866 *2*
(892 *4*)	677.0		0.035 *9*	9.57 *12*	0.035 *9*	εK=0.8298; εL=0.13172 *5*; εM+=0.03852 *2*
(932 *4*)	636.503		0.43 *3*	8.52 *3*	0.43 *3*	εK=0.8304; εL=0.13125 *5*; εM+=0.03835 *2*
(962 *4*)	607.13		0.11 *3*	9.14 *12*	0.11 *3*	εK=0.8308; εL=0.13093 *5*; εM+=0.03825 *2*
(1020 *4*)	548.665		0.34 *7*	8.71 *9*	0.34 *7*	εK=0.8316; εL=0.13036 *4*; εM+=0.03805 *2*
(1039 *4*)	530.487		0.6 *6*	8.5 *5*	0.6 *6*	εK=0.8318; εL=0.13020 *4*; εM+=0.03799 *2*
(1060 *4*)	508.846		0.22 *9*	8.93 *18*	0.22 *9*	εK=0.8321; εL=0.13001 *4*; εM+=0.03793 *2*
(1078 *4*)	490.53		0.055 *6*	9.55 *5*	0.055 *6*	εK=0.8323; εL=0.12986 *4*; εM+=0.03788 *2*
(1086 *4*)	482.875		0.14 *3*	9.15 *10*	0.14 *3*	εK=0.8324; εL=0.12979 *4*; εM+=0.03785 *2* Iε: The calculated feeding is not consistent with a $5/2^+$ to $1/2^+$ transition.
(1133 *4*)	436.333		0.07 *7*	10.1[1u] *5*	0.07 *7*	εK=0.8192 *1*; εL=0.13952 *8*; εM+=0.04127 *3*
(1156 *4*)	412.91		0.054 *13*	9.62 *11*	0.054 *13*	εK=0.8331; εL=0.12927 *3*; εM+=0.03767 *1*
(1200 *4*)	368.636		0.20 *8*	9.08 *18*	0.20 *8*	εK=0.8334; εL=0.12896 *3*; εM+=0.03757 *1*
(1208 *4*)	361.480		0.30 *7*	8.91 *11*	0.30 *7*	εK=0.8335; εL=0.12892 *3*; εM+=0.037553 *9*
(1253 *4*)	316.020		0.51 *8*	8.72 *7*	0.51 *8*	εK=0.8338; εL=0.12862 *3*; εM+=0.037453 *9*
(1265 *4*)	303.577		5.0 *5*	7.73 *5*	5.0 *5*	εK=0.8339; εL=0.12855 *3*; εM+=0.037427 *9*
(1279 *4*)	290.299		1.01 *7*	8.44 *3*	1.01 *7*	εK=0.8340; εL=0.12847 *3*; εM+=0.037399 *9*
(1319 *4*)	249.562		2.01 *13*	8.17 *3*	2.01 *13*	εK=0.8341; εL=0.12822 *3*; εM+=0.037316 *8*
(1357 *4*)	212.014	0.028 *2*	51 *3*	6.79 *3*	51 *3*	av Eβ=164.7 *18*; εK=0.8342; εL=0.12800 *3*; εM+=0.037241 *8* E(decay): 1978Cr02 report 339 *5*; from decay energy, E±=345 *4*. Iβ+: From 1978Cr02 and sum Iβ+ determined to be 0.063 *9*. Authors quote Iβ+ ratios of 345 β+:447 β+:514 β+:557 β+ = 100 *5*:35 *4*:18 *+16−11*:11 *+17−9*.
(1386 *4*)	183.413	0.00243 *22*	3.10 *24*	8.02 *4*	3.10 *24*	av Eβ=177.5 *18*; εK=0.8342; εL=0.12783 *3*; εM+=0.037184 *8*
(1459 *4*)	109.742	0.0059 *19*	3.5 *11*	8.02 *14*	3.5 *11*	av Eβ=210.3 *18*; εK=0.8339; εL=0.12737 *3*; εM+=0.037034 *9* E(decay): 1978Cr02 reported 460 *10*; from decay energy, Eβ+=447 *4*. Iβ+: From 1978Cr02. Authors quote Iβ+/I(345 β+)=35 *4*/100 *5*.
(1527 *4*)	41.549	0.048 *15*	16 *5*	7.40 *14*	16 *5*	av Eβ=240.3 *18*; εK=0.8332; εL=0.12692 *3*; εM+=0.036888 *9* E(decay): Measured Eβ+=520 (1978Cr02); from decay energy, Eβ+=515 *4*. Iβ+: From 1978Cr02. Authors quote Iβ+/I(345 β+)=18 *+16−11*/100.0 *4*.

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^{153}Tb ε decay (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ [‡#]	Iε [#]	Log *ft*	I($\varepsilon+\beta^+$) [†#]	Comments
(1569 *4*)	0.0	0.006 *6*	1.4 *14*	8.5 *5*	1.4 *14*	av Eβ=258.8 *18*; εK=0.8325; εL=0.12662 *3*; εM+=0.03679 *1* E(decay): Measured Eβ+=570 *+50−20* (1978Cr02); from decay energy Eβ+=557 *4*. Iβ^+: From 1978Cr02. Authors quote Iβ+/I(345 keV β+)=11 *+17−9*/100 *5*.

† The $\varepsilon+\beta+$ decay to the ground state is from 1978Cr02 and the others are from intensity balances at each level. The I($\varepsilon+\beta+$) which are computed to be negative, and those that are smaller than their computed uncertainties, have been set to 0. With the many multiply placed γ's and the unplaced γ's, the uncertainties in the I($\varepsilon+\beta+$)'s that are less than, say, 5% are larger than the quoted values.

‡ %β+=0.063 *9* (1978Cr02).

Absolute intensity per 100 decays.

^{153}Tb ε decay (continued)

γ(^{153}Gd)

Iγ normalization: Based on ε+β+ (g.s.)=1.4 *13* (1978Cr02) and requiring intensity balance at each level.

E_γ[†]	I_γ[‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[# h]	α[g]	$I_{(\gamma+ce)}$[i]	Comments
(1.81)		95.124	$(9/2)^+$	93.331	$7/2^-$	[E1]			105 *5*	E_γ: From level energy difference. $I_{(\gamma+ce)}$: From intensity balance at 95 level.
16.4	0.22	109.742	$(5/2)^-$	93.331	$7/2^-$	[M1]		64.0	15	ce(L)/(γ+ce)=0.772 *7*; ce(M)/(γ+ce)=0.168 *3* ce(N)/(γ+ce)=0.0386 *8*; ce(O)/(γ+ce)=0.00597 *12*; ce(P)/(γ+ce)=0.000395 *8* α(L)=50.2 *7*; α(M)=10.92 *16* α(N)=2.51 *4*; α(O)=0.388 *6*; α(P)=0.0257 *4* E_γ: From level energy difference. I_γ: Calculated from Iγ(1+α) and α, for M1 multipolarity. $I_{(\gamma+ce)}$: From 1982Al24.
19.36	0.032 *7*	129.201	$3/2^-$	109.742	$(5/2)^-$	E2		3.94×10^3	130 *26*	ce(L)/(γ+ce)=0.774 *8*; ce(M)/(γ+ce)=0.181 *4* ce(N)/(γ+ce)=0.0400 *8*; ce(O)/(γ+ce)=0.00508 *10*; ce(P)/(γ+ce)=1.59×10^{-6} *4* α(L)=3.05×10^3 *5*; α(M)=712 *10* α(N)=157.4 *22*; α(O)=20.0 *3*; α(P)=0.00626 *9* $I_{(\gamma+ce)}$: From 1975Vy01. I_γ: Calculated from Iγ(1+α) and α.
35.8	0.021	129.201	$3/2^-$	93.331	$7/2^-$	[E2]		185	4	ce(L)/(γ+ce)=0.768 *8*; ce(M)/(γ+ce)=0.181 *4* ce(N)/(γ+ce)=0.0402 *8*; ce(O)/(γ+ce)=0.00513 *11*; ce(P)/(γ+ce)=2.47×10^{-6} *5* α(L)=142.9 *20*; α(M)=33.7 *5* α(N)=7.48 *11*; α(O)=0.955 *14*; α(P)=0.000460 *7* E_γ: From level energy difference. I_γ: Calculated from Iγ(1+α) and α. $I_{(\gamma+ce)}$: From 1982Al24.
41.56 *2*	140 *15*	41.549	$5/2^-$	0.0	$3/2^-$	M1+E2	0.26 *1*	9.4 *5*	1.50×10^3 *15*	ce(L)/(γ+ce)=0.702 *20*; ce(M)/(γ+ce)=0.161 *9* ce(N)/(γ+ce)=0.0361 *22*; ce(O)/(γ+ce)=0.0050 *3*; ce(P)/(γ+ce)=0.000149 *7* α(L)=7.3 *4*; α(M)=1.68 *8* α(N)=0.377 *17*; α(O)=0.0522 *22*; α(P)=0.001554 *23* I_γ: From I(1+α) and α. $I_{(\gamma+ce)}$: From 1975Vy01. δ: From 1962Ha24.
51.79 *2*	14.6 *25*	93.331	$7/2^-$	41.549	$5/2^-$	M1+E2	0.18	13.95		α(K)=10.94 *16*; α(L)=2.35 *4*; α(M)=0.525 *8* α(N)=0.1194 *17*; α(O)=0.01747 *25*; α(P)=0.000837 *12* α: Calculated from δ of 1975Vy01. I_γ: Values range from 12.1 *8* to 17.5 *15*.

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^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	Comments
53.60 [d] 2		95.124	(9/2)$^+$	41.549	5/2$^-$	M2		213	α(K)=143.8 *21*; α(L)=52.8 *8*; α(M)=12.54 *18* α(N)=2.90 *4*; α(O)=0.431 *6*; α(P)=0.0232 *4* Mult.: From 1991Gr21 and based on previous Ice data.
54.28 *6*	3.61 *18*	183.413	5/2$^+$	129.201	3/2$^-$	(E1)		1.464	α(K)=1.202 *18*; α(L)=0.206 *3*; α(M)=0.0448 *7* α(N)=0.01004 *15*; α(O)=0.001414 *21*; α(P)=6.23×10^{-5} *9*
66.17 *5*	0.95 *14*	249.562	5/2$^-$	183.413	5/2$^+$	(E1)		0.878	α(K)=0.728 *11*; α(L)=0.1181 *17*; α(M)=0.0256 *4* α(N)=0.00576 *9*; α(O)=0.000823 *12*; α(P)=3.84×10^{-5} *6* Mult.: Tentative assignment from 1974Tu01 decay scheme.
68.20 *3*	12.4 *4*	109.742	(5/2)$^-$	41.549	5/2$^-$	M1+E2	0.13 *3*	6.15 *10*	α(K)=5.08 *8*; α(L)=0.84 *5*; α(M)=0.184 *12* α(N)=0.042 *3*; α(O)=0.0064 *4*; α(P)=0.000379 *6*
[x]77.7 [c] *5*	≤2								
82.86 *2*	190 *22*	212.014	3/2$^+$	129.201	3/2$^-$	E1		0.484	α(K)=0.404 *6*; α(L)=0.0627 *9*; α(M)=0.01360 *19* α(N)=0.00307 *5*; α(O)=0.000444 *7*; α(P)=2.20×10^{-5} *3* I_γ: Values range from 167 *9* to 212 *5*.
[x]85.4 [c]									
87.63 [j] *2*	47 [j] *5*	129.201	3/2$^-$	41.549	5/2$^-$	M1+E2	0.03 *2*	2.94	α(K)=2.48 *4*; α(L)=0.361 *6*; α(M)=0.0785 *13* α(N)=0.0180 *3*; α(O)=0.00280 *5*; α(P)=0.000185 *3* I_γ: Values range from 42.5 *23* to 51.5 *15*. 1991Gr21 also place this γ from 303 level.
87.63 [j] *2*	<47 [j]	303.577	5/2$^+$	215.977	7/2$^-$				I_γ: Only placed here by 1991Gr21; main placement from 129 level. Mult.: Measurements give M1+E2 for doublet; J^π's requires E1.
88.30 [j] *2*	13.7 [j] *11*	183.413	5/2$^+$	95.124	(9/2)$^+$	E2		3.99	α(K)=1.588 *23*; α(L)=1.85 *3*; α(M)=0.438 *7* α(N)=0.0976 *14*; α(O)=0.01272 *18*; α(P)=7.78×10^{-5} *11* E_γ: 1991Gr21 also placed this γ from 530 level.
88.30 [j] *2*	<13.7 [j]	530.487	3/2$^-$	442.205	5/2$^+$				I_γ: This placement only by 1991Gr21; main placement is from 183 level.
90.15 *2*	9.8 *17*	183.413	5/2$^+$	93.331	7/2$^-$	E1		0.386	α(K)=0.323 *5*; α(L)=0.0495 *7*; α(M)=0.01072 *15* α(N)=0.00242 *4*; α(O)=0.000352 *5*; α(P)=1.779×10^{-5} *25*
91.54 *2*	5.7 *3*	303.577	5/2$^+$	212.014	3/2$^+$	M1+E2	0.67 *6*	2.87 *6*	α(K)=1.96 *4*; α(L)=0.70 *5*; α(M)=0.162 *12* α(N)=0.037 *3*; α(O)=0.0050 *4*; α(P)=0.000135 *4*
93.36 *3*	4.1 *7*	93.331	7/2$^-$	0.0	3/2$^-$	E2		3.24	α(K)=1.384 *20*; α(L)=1.432 *21*; α(M)=0.338 *5* α(N)=0.0754 *11*; α(O)=0.00985 *14*; α(P)=6.80×10^{-5} *10* I_γ: Values range from 3.4 *2* to 4.9 *3*.
102.255 *15*	205 *14*	212.014	3/2$^+$	109.742	(5/2)$^-$	E1		0.275	α(K)=0.231 *4*; α(L)=0.0347 *5*; α(M)=0.00753 *11* α(N)=0.001702 *24*; α(O)=0.000249 *4*; α(P)=1.294×10^{-5} *19*
[x]105.6 [b] *2*	1.9 *7*								
106.86 *3*	1.2 *2*	290.299	(7/2$^+$)	183.413	5/2$^+$	E2		1.97	α(K)=0.972 *14*; α(L)=0.773 *11*; α(M)=0.182 *3* α(N)=0.0406 *6*; α(O)=0.00535 *8*; α(P)=4.85×10^{-5} *7*
109.758 *15*	218 *8*	109.742	(5/2)$^-$	0.0	3/2$^-$	M1+E2	0.10 *7*	1.545 *23*	α(K)=1.299 *20*; α(L)=0.193 *10*; α(M)=0.0420 *23* α(N)=0.0097 *5*; α(O)=0.00149 *7*; α(P)=9.66×10^{-5} *17*
120.20 [d] *3*	0.8 *2*	303.577	5/2$^+$	183.413	5/2$^+$				

$^{153}_{64}Gd_{89}$-6

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	$I_{(\gamma+ce)}$[i]	Comments
122.8[e]	≤0.5	215.977	7/2⁻	93.331	7/2⁻	[M1,E2]		1.16 *5*	≤1	ce(K)/(γ+ce)=0.37 *5*; ce(L)/(γ+ce)=0.128 *57*; ce(M)/(γ+ce)=0.029 *16* ce(N)/(γ+ce)=0.0066 *35*; ce(O)/(γ+ce)=9.1×10^{-4} *43*; ce(P)/(γ+ce)=2.42×10^{-5} *86* α(K)=0.80 *15*; α(L)=0.28 *14*; α(M)=0.063 *34* α(N)=0.0143 *75*; α(O)=0.00197 *92*; α(P)=5.2×10^{-5} *19* E_γ,$I_{(\gamma+ce)}$: from 1982Al24. I_γ: From Iγ(1+α), assuming M1,E2 multipolarity.
126.11[j] *3*	<3.72[j]	219.37	(9/2⁻)	93.331	7/2⁻	M1		1.039		α(K)=0.878 *13*; α(L)=0.1264 *18*; α(M)=0.0275 *4* α(N)=0.00632 *9*; α(O)=0.000980 *14*; α(P)=6.54×10^{-5} *10* I_γ: Placement from 1991Gr21 only; other placement is from 442 level.
126.11[j] *3*	3.72[j] *16*	442.205	5/2⁺	316.020	(3/2,5/2)⁺	M1,E2		1.06 *3*		α(K)=0.74 *14*; α(L)=0.25 *13*; α(M)=0.057 *30* α(N)=0.0128 *65*; α(O)=0.00177 *80*; α(P)=4.8×10^{-5} *17* I_γ: 1991Gr21 also place γ from 219 level.
129.17 *2*	18.8 *5*	129.201	3/2⁻	0.0	3/2⁻	M1		0.971		α(K)=0.820 *12*; α(L)=0.1180 *17*; α(M)=0.0256 *4* α(N)=0.00590 *9*; α(O)=0.000915 *13*; α(P)=6.11×10^{-5} *9*
132.53 *3*	5.2 *3*	316.020	(3/2,5/2)⁺	183.413	5/2⁺	M1+E2	0.53 *6*	0.905		α(K)=0.712 *14*; α(L)=0.151 *8*; α(M)=0.0338 *19* α(N)=0.0077 *4*; α(O)=0.00112 *5*; α(P)=5.04×10^{-5} *14* δ: Calculated from α_K(exp).
[x]138.7[c]										
139.82 *3*	4.45 *16*	249.562	5/2⁻	109.742	(5/2)⁻	M1+E2	0.13 *10*	0.776		α(K)=0.652 *12*; α(L)=0.097 *5*; α(M)=0.0211 *12* α(N)=0.0048 *3*; α(O)=0.00075 *4*; α(P)=4.84×10^{-5} *11*
141.91 *2*	34.6 *6*	183.413	5/2⁺	41.549	5/2⁻	E1		0.1136		α(K)=0.0959 *14*; α(L)=0.01394 *20*; α(M)=0.00302 *5* α(N)=0.000685 *10*; α(O)=0.0001017 *15*; α(P)=5.62×10^{-6} *8*
147.65 *5*	0.66 *18*	508.846	3/2⁻	361.480	3/2⁻					
151.84 *4*	3.0 *3*	442.205	5/2⁺	290.299	(7/2⁺)	M1,E2		0.59 *3*		α(K)=0.44 *9*; α(L)=0.120 *45*; α(M)=0.027 *11* α(N)=0.0062 *25*; α(O)=8.7×10^{-4} *29*; α(P)=2.89×10^{-5} *99*
152.70 *10*	1.04 *17*	368.636	5/2⁻	215.977	7/2⁻	(E2)		0.556		α(K)=0.349 *5*; α(L)=0.1605 *23*; α(M)=0.0374 *6* α(N)=0.00838 *12*; α(O)=0.001127 *16*; α(P)=1.88×10^{-5} *3*

$^{153}_{64}Gd_{89}$-7

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[# h]	α[g]	$I_{(\gamma+ce)}$[i]	Comments
166.92 *3*	1.58 *16*	482.875	1/2$^+$	316.020	(3/2,5/2)$^+$	E2,M1		0.44 *4*		α(K)=0.33 *7*; α(L)=0.084 *27*; α(M)=0.0190 *66* α(N)=0.0043 *15*; α(O)=6.1×10^{-4} *17*; α(P)=2.22×10^{-5} *76*
[x]167.3[b] *2*										
170.42 *3*	204 *10*	212.014	3/2$^+$	41.549	5/2$^-$	E1		0.0695		α(K)=0.0588 *9*; α(L)=0.00842 *12*; α(M)=0.00182 *3* α(N)=0.000414 *6*; α(O)=6.19×10^{-5} *9*; α(P)=3.53×10^{-6} *5*
[x]174.4[c]										
174.40[k] *3*	24[k] *5*	215.977	7/2$^-$	41.549	5/2$^-$	(M1)		0.418	33	ce(K)/(γ+ce)=0.249 *3*; ce(L)/(γ+ce)=0.0357 *5*; ce(M)/(γ+ce)=0.00775 *12* ce(N)/(γ+ce)=0.00178 *3*; ce(O)/(γ+ce)=0.000277 *4*; ce(P)/(γ+ce)=1.85×10^{-5} *3* α(K)=0.354 *5*; α(L)=0.0506 *7*; α(M)=0.01099 *16* α(N)=0.00253 *4*; α(O)=0.000393 *6*; α(P)=2.63×10^{-5} *4* Iγ: From γγ coin.
174.40[k] *3*	24[k] *5*	303.577	5/2$^+$	129.201	3/2$^-$	(E1)		0.0653		α(K)=0.0553 *8*; α(L)=0.00790 *11*; α(M)=0.001709 *24* α(N)=0.000389 *6*; α(O)=5.82×10^{-5} *9*; α(P)=3.33×10^{-6} *5* Iγ: For Iγ(174 doublet)=47.6 *22* and Iγ deduced from placement from 215 level.
178.14 *2*	3.5 *4*	361.480	3/2$^-$	183.413	5/2$^+$	E1		0.0617		α(K)=0.0522 *8*; α(L)=0.00746 *11*; α(M)=0.001613 *23* α(N)=0.000367 *6*; α(O)=5.50×10^{-5} *8*; α(P)=3.15×10^{-6} *5*
183.44 *3*	30.4 *24*	183.413	5/2$^+$	0.0	3/2$^-$	E1		0.0571		α(K)=0.0483 *7*; α(L)=0.00689 *10*; α(M)=0.001489 *21* α(N)=0.000339 *5*; α(O)=5.08×10^{-5} *8*; α(P)=2.93×10^{-6} *5*
186.11 *4*	1.12 *16*	315.334	1/2$^-$	129.201	3/2$^-$	M1,E2		0.32 *4*		α(K)=0.24 *6*; α(L)=0.056 *14*; α(M)=0.0127 *36* α(N)=0.00287 *77*; α(O)=0.00041 *9*; α(P)=1.64×10^{-5} *56*
186.85[j] *3*	4.9[j] *3*	316.020	(3/2,5/2)$^+$	129.201	3/2$^-$	E1		0.0544		α(K)=0.0460 *7*; α(L)=0.00655 *10*; α(M)=0.001416 *20* α(N)=0.000322 *5*; α(O)=4.84×10^{-5} *7*; α(P)=2.79×10^{-6} *4* Iγ: 1991Gr21 also places γ from 436 level. Mult.,δ: γ is doubly placed, so mult. and δ may not apply.
186.85[j] *3*	<4.9[j]	436.333	1/2$^-$	249.562	5/2$^-$					Iγ: γ placed here by 1991Gr21; main placement is

$^{153}_{64}Gd_{89}$-8

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
									from 316 level. Mult.,δ: γ is doubly placed, so E1+M2 assignment and δ may not apply and $J^{\pi\prime}$s require E2.
192.82[&d] *6*	0.7 *2*	442.205	5/2$^+$	249.562	5/2$^-$				
193.78 *4*	10.9 *3*	303.577	5/2$^+$	109.742	(5/2)$^-$	E1		0.0494	α(K)=0.0418 *6*; α(L)=0.00594 *9*; α(M)=0.001283 *18* α(N)=0.000292 *4*; α(O)=4.39×10^{-5} *7*; α(P)=2.55×10^{-6} *4*
195.18 *3*	26.1 *7*	290.299	(7/2$^+$)	95.124	(9/2)$^+$	M1+E2	−0.22 *6*	0.303	α(K)=0.255 *5*; α(L)=0.0380 *8*; α(M)=0.00828 *19* α(N)=0.00190 *4*; α(O)=0.000293 *6*; α(P)=1.88×10^{-5} *4*
197.05[e j] *10*	2.46[j] *17*	290.299	(7/2$^+$)	93.331	7/2$^-$	E1		0.0472	α(K)=0.0400 *6*; α(L)=0.00567 *8*; α(M)=0.001226 *18* α(N)=0.000279 *4*; α(O)=4.20×10^{-5} *6*; α(P)=2.44×10^{-6} *4*
197.05[d j] *10*	2.46[j] *17*	412.91	3/2$^+$	215.977	7/2$^-$				
198.88 *5*	0.79 *17*	448.430	5/2$^-$	249.562	5/2$^-$				
[x]205.5[c] *5*	≈3								
206.27 *3*	7.2 *3*	316.020	(3/2,5/2)$^+$	109.742	(5/2)$^-$	E1		0.0418	α(K)=0.0355 *5*; α(L)=0.00502 *7*; α(M)=0.001084 *16* α(N)=0.000247 *4*; α(O)=3.72×10^{-5} *6*; α(P)=2.18×10^{-6} *3*
208.08 *3*	19.0 *6*	249.562	5/2$^-$	41.549	5/2$^-$	M1+E2	−0.008 *9*	0.257	α(K)=0.217 *3*; α(L)=0.0310 *5*; α(M)=0.00673 *10* α(N)=0.001549 *22*; α(O)=0.000240 *4*; α(P)=1.613×10^{-5} *23*
210.27 *3*	44 *4*	303.577	5/2$^+$	93.331	7/2$^-$	E1		0.0398	α(K)=0.0337 *5*; α(L)=0.00476 *7*; α(M)=0.001029 *15* α(N)=0.000235 *4*; α(O)=3.53×10^{-5} *5*; α(P)=2.07×10^{-6} *3* I_γ: Values range from 35 *5* to 50 *3*.
212.00 *2*	1000 *50*	212.014	3/2$^+$	0.0	3/2$^-$	E1		0.0389	α(K)=0.0330 *5*; α(L)=0.00466 *7*; α(M)=0.001007 *15* α(N)=0.000229 *4*; α(O)=3.46×10^{-5} *5*; α(P)=2.03×10^{-6} *3*
216.03 *5*	1.90 *17*	215.977	7/2$^-$	0.0	3/2$^-$	[E2]		0.1719	α(K)=0.1225 *18*; α(L)=0.0384 *6*; α(M)=0.00882 *13* α(N)=0.00198 *3*; α(O)=0.000274 *4*; α(P)=7.16×10^{-6} *10* Mult.: From J^π assignments; other: M1 (1991Gr21).
223.62 *3*	1.74 *15*	636.503	7/2$^-$	412.91	3/2$^+$				
224.6[ae] *3*	0.45 *30*	436.333	1/2$^-$	212.014	3/2$^+$				
226.15[jd] *6*	1.60[j] *21*	442.205	5/2$^+$	215.977	7/2$^-$				Mult.: Assigned E1 in 1991Gr21, but γ is doubly placed.
226.15[jd] *6*	1.60[j] *21*	709.04	3/2$^+$	482.875	1/2$^+$				Mult.: Assigned E1 in 1991Gr21, but γ is doubly placed.
229.60 *5*	0.70 *15*	412.91	3/2$^+$	183.413	5/2$^+$	M1		0.196	α(K)=0.1662 *24*; α(L)=0.0236 *4*; α(M)=0.00513 *8* α(N)=0.001181 *17*; α(O)=0.000183 *3*; α(P)=1.232×10^{-5} *18*
232.70 *25*	0.9 *3*	448.430	5/2$^-$	215.977	7/2$^-$				
233.87 *3*	2.69 *18*	782.569	3/2$^+$	548.665	5/2$^-$	E1		0.0301	α(K)=0.0255 *4*; α(L)=0.00359 *5*; α(M)=0.000775 *11* α(N)=0.0001767 *25*; α(O)=2.67×10^{-5} *4*; α(P)=1.589×10^{-6} *23* Mult.: From 1991Gr21 and based on previous Ice data.
[x]238.40[a] *25*	1.1 *3*								
239.72 *10*	1.8 *4*	368.636	5/2$^-$	129.201	3/2$^-$				I_γ: Values range from 0.7 *4* to 2.1 *3*.
241.6[ael] *4*	0.63 *30*	490.53	(5/2$^+$,7/2$^+$)	249.562	5/2$^-$				

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [#h]	α [g]	Comments
[x]247.8 [c] 5	3								
248.77 2	10.0 9	290.299	(7/2$^+$)	41.549	5/2$^-$	(E1)		0.0257	α(K)=0.0218 3; α(L)=0.00305 5; α(M)=0.000658 10 α(N)=0.0001502 21; α(O)=2.27×10^{-5} 4; α(P)=1.363×10^{-6} 19
249.55 2	75.0 18	249.562	5/2$^-$	0.0	3/2$^-$	M1		0.1566	α(K)=0.1326 19; α(L)=0.0188 3; α(M)=0.00408 6 α(N)=0.000940 14; α(O)=0.0001460 21; α(P)=9.82×10^{-6} 14
258.5 [e]	0.8	548.665	5/2$^-$	290.299	(7/2$^+$)				E$_\gamma$,I$_\gamma$: From 1982Al24.
258.70 [e] 10	≈0.5	368.636	5/2$^-$	109.742	(5/2)$^-$	M1		0.1421	α(K)=0.1203 17; α(L)=0.01707 24; α(M)=0.00370 6 α(N)=0.000852 12; α(O)=0.0001324 19; α(P)=8.91×10^{-6} 13 I$_\gamma$: From the three references, Iγ=2.64 16. This probably includes Iγ=1.3 and 0.8 from 442 and 548 levels (1982Al24), leaving 0.5 from this level. Other: 0.8 (1982Al24).
258.7	1.3	442.205	5/2$^+$	183.413	5/2$^+$	M1		0.1421	α(K)=0.1203 17; α(L)=0.01707 24; α(M)=0.00370 6 α(N)=0.000852 12; α(O)=0.0001324 19; α(P)=8.91×10^{-6} 13 E$_\gamma$,I$_\gamma$: From 1982Al24; average of the three Iγ=2.64 16 for triplet.
262.00 2	19.3 8	303.577	5/2$^+$	41.549	5/2$^-$	E1		0.0225	α(K)=0.0191 3; α(L)=0.00266 4; α(M)=0.000575 8 α(N)=0.0001311 19; α(O)=1.99×10^{-5} 3; α(P)=1.200×10^{-6} 17
266.93 [je] 15	1.8 [j] 4	636.503	7/2$^-$	368.636	5/2$^-$	M1		0.1306	α(K)=0.1106 16; α(L)=0.01568 22; α(M)=0.00340 5 α(N)=0.000783 11; α(O)=0.0001216 18; α(P)=8.18×10^{-6} 12
266.93 [j] 15	1.8 [j] 4	709.04	3/2$^+$	442.205	5/2$^+$	M1		0.1306	α(K)=0.1106 16; α(L)=0.01568 22; α(M)=0.00340 5 α(N)=0.000783 11; α(O)=0.0001216 18; α(P)=8.18×10^{-6} 12
[x]268.2 [a] 4	0.40 20								
273.42 10	1.62 25	315.334	1/2$^-$	41.549	5/2$^-$	E2		0.0804	α(K)=0.0605 9; α(L)=0.01551 22; α(M)=0.00353 5 α(N)=0.000797 12; α(O)=0.0001123 16; α(P)=3.72×10^{-6} 6
274.2 [d] 3	2.0 3	316.020	(3/2,5/2)$^+$	41.549	5/2$^-$				
275.15 3	7.5 13	368.636	5/2$^-$	93.331	7/2$^-$	M1(+E2)	−0.3 3	0.117 8	α(K)=0.098 8; α(L)=0.01450 24; α(M)=0.00316 8 α(N)=0.000726 15; α(O)=0.0001118 17; α(P)=7.2×10^{-6} 8
[x]277.6 [a] 6	0.30 20								
278.5 [e]	1.5	720.45	(5/2,7/2)$^-$	442.205	5/2$^+$				E$_\gamma$,I$_\gamma$: From 1982Al24.
278.52 [e] 4	1.2	490.53	(5/2$^+$,7/2$^+$)	212.014	3/2$^+$	(E2)		0.0759	α(K)=0.0573 8; α(L)=0.01448 21; α(M)=0.00329 5 α(N)=0.000744 11; α(O)=0.0001050 15; α(P)=3.53×10^{-6} 5 I$_\gamma$: from 1982Al24; average of three Iγ=2.6 3 for doublet.
278.52 [d] 3	3.0 2	782.569	3/2$^+$	504.04	5/2$^+$				E$_\gamma$: Previous evaluations has γ of similar energy from 490 and 720 levels, whereas 1991Gr21 has only this placement.
280.9 3	0.43 14	530.487	3/2$^-$	249.562	5/2$^-$				
[x]283.7 [b] 4	≈0.4								
285.3 [d] 3	0.5 2	504.04	5/2$^+$	219.37	(9/2$^-$)				

$^{153}_{64}Gd_{89}$-10

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	$I_{(\gamma+ce)}$ [i]	Comments
290.5 [&d] 3	0.3 1	290.299	(7/2$^+$)	0.0	3/2$^-$					
291.74 [jd] 3	2.18 [j] 10	607.13	5/2$^-$	315.334	1/2$^-$					E_γ: Previous evaluation only places γ from 775 level, but 1991Gr21 only places it from this new level.
291.74 [je] 3	2.18 [j] 10	774.65	(5/2$^+$)	482.875	1/2$^+$					E_γ: Previous evaluation only places this γ from this level, but 1991Gr21 only places it from new 607 level.
292.3 [e] 2	0.88 10	508.846	3/2$^-$	215.977	7/2$^-$					E_γ: γ is placed only from 775 level in 1991Gr21.
[x]295.0 [a] 3	0.5 3									
298.3 [a] 4	0.9 4	782.569	3/2$^+$	482.875	1/2$^+$					
299.64 3	4.4 6	482.875	1/2$^+$	183.413	5/2$^+$	[E2]		0.0605		α(K)=0.0462 7; α(L)=0.01108 16; α(M)=0.00251 4 α(N)=0.000568 8; α(O)=8.07×10^{-5} 12; α(P)=2.89×10^{-6} 4
303.0 2	1.5	412.91	3/2$^+$	109.742	(5/2)$^-$	[E1]		0.01554		I_γ: Values range from 3.5 5 to 5.0 2. α(K)=0.01321 19; α(L)=0.00183 3; α(M)=0.000395 6 α(N)=9.02×10^{-5} 13; α(O)=1.370×10^{-5} 20; α(P)=8.42×10^{-7} 12
303.52 3	29.8 14	303.577	5/2$^+$	0.0	3/2$^-$	E1		0.01547		I_γ: From 1982Al24. α(K)=0.01315 19; α(L)=0.00182 3; α(M)=0.000393 6 α(N)=8.98×10^{-5} 13; α(O)=1.364×10^{-5} 20; α(P)=8.38×10^{-7} 12
310.40 15	0.9 3	1131.72	5/2$^+$	821.217	(5/2$^+$)					I_γ: Values range from 0.5 2 to 1.2 1.
[x]310.9 [a] 3	0.5 3									
[x]312.6 [a] 4	0.4 2									
314.3 [e]	0.8	530.487	3/2$^-$	215.977	7/2$^-$					E_γ,I_γ: From 1982Al24.
315.20 3	16.9 21	315.334	1/2$^-$	0.0	3/2$^-$	M1		0.0838		α(K)=0.0711 10; α(L)=0.01002 14; α(M)=0.00217 3 α(N)=0.000500 7; α(O)=7.77×10^{-5} 11; α(P)=5.24×10^{-6} 8
316.05 3	15.4 20	316.020	(3/2,5/2)$^+$	0.0	3/2$^-$	E1		0.01398		α(K)=0.01189 17; α(L)=0.001643 23; α(M)=0.000355 5 α(N)=8.10×10^{-5} 12; α(O)=1.232×10^{-5} 18; α(P)=7.60×10^{-7} 11
318.85 10	2.02 18	731.62	7/2$^+$	412.91	3/2$^+$					
319.3 2	1.5	448.430	5/2$^-$	129.201	3/2$^-$					I_γ: From 1982Al24.
320.00 [j] 3	10.1 [j] 13	361.480	3/2$^-$	41.549	5/2$^-$	M1+E2	−0.13 +12−14	0.0800 20		α(K)=0.0678 19; α(L)=0.00961 15; α(M)=0.00208 3

$^{153}_{64}Gd_{89}$-11

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	$I_{(\gamma+ce)}$ [i]	Comments
										α(N)=0.000480 *7*; α(O)=7.45×10^{-5} *12*; α(P)=4.99×10^{-6} *16*
320.00 [jel] *3*	10.1 [j] *13*	636.503	7/2$^-$	316.020	(3/2,5/2)$^+$					I_γ: Values range from 7.5 *15* to 12.5 *10*. E_γ: Placement doubtful since mult. conflicts with J^π's. Mult.: Assigned M1, but γ multiply placed and J^π's require E1 or M2.
325.29 *8*	1.35 *17*	508.846	3/2$^-$	183.413	5/2$^+$	E1		0.01302		α(K)=0.01108 *16*; α(L)=0.001527 *22*; α(M)=0.000330 *5* α(N)=7.53×10^{-5} *11*; α(O)=1.147×10^{-5} *16*; α(P)=7.10×10^{-7} *10*
327.19 [jd] *3*	7.6 [j] *16*	327.191	1/2$^+$	0.0	3/2$^-$					Mult.: Assigned M1, but γ may be multiply placed and J^π's require E1.
327.19 [je] *3*	7.6 [j] *16*	368.636	5/2$^-$	41.549	5/2$^-$	M1		0.0759		α(K)=0.0644 *9*; α(L)=0.00907 *13*; α(M)=0.00197 *3* α(N)=0.000453 *7*; α(O)=7.03×10^{-5} *10*; α(P)=4.75×10^{-6} *7* Mult.: Assigned M1, but γ may be multiply placed.
327.19 [jd] *3*	7.6 [j] *16*	857.611	3/2$^-$	530.487	3/2$^-$	M1		0.0759		α(K)=0.0644 *9*; α(L)=0.00907 *13*; α(M)=0.00197 *3* α(N)=0.000453 *7*; α(O)=7.03×10^{-5} *10*; α(P)=4.75×10^{-6} *7* Mult.: Assigned M1, but γ is multiply placed.
[x]328.6 [a] *4*	0.7 *4*									
332.62 [k] *3*	4.8 [k] *9*	442.205	5/2$^+$	109.742	(5/2)$^-$	(E1)		0.01232		α(K)=0.01048 *15*; α(L)=0.001444 *21*; α(M)=0.000312 *5* α(N)=7.12×10^{-5} *10*; α(O)=1.085×10^{-5} *16*; α(P)=6.73×10^{-7} *10* Mult.: From 1982Al24.
332.62 [k] *3*	2.2 [k]	548.665	5/2$^-$	215.977	7/2$^-$					I_γ: From 1982Al24; average from three Iγ=4.8 *9* for doublet with range from 3.6 to 5.7.
334.25 [d] *10*	1.21 *21*	782.569	3/2$^+$	448.430	5/2$^-$					
338.9 [ae] *5*	0.9 *5*	448.430	5/2$^-$	109.742	(5/2)$^-$	M1,E2		0.055 *14*		α(K)=0.046 *14*; α(L)=0.0077 *6*; α(M)=0.00170 *10* α(N)=0.000389 *24*; α(O)=5.8×10^{-5} *6*; α(P)=3.2×10^{-6} *12* Mult.: From 1982Al24.
340.43 *3*	8.6 *9*	782.569	3/2$^+$	442.205	5/2$^+$	M1+E2	−0.24 *8*	0.0669 *14*		α(K)=0.0566 *13*; α(L)=0.00810 *13*; α(M)=0.00176 *3* α(N)=0.000405 *6*; α(O)=6.26×10^{-5} *10*; α(P)=4.15×10^{-6} *11*
346.28 [j] *4*	2.16 [j] *9*	636.503	7/2$^-$	290.299	(7/2$^+$)					E_γ: γ is also placed from 782 level in 1991Gr21.

$^{153}_{64}Gd_{89}$-12

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	δ [#h]	α [g]	$I_{(\gamma+ce)}$ [i]	Comments
										Mult.: Previously assigned M1 and 1991Gr21

$^{153}_{64}Gd_{89}$-13

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	Comments
									assigns E1, but γ may be doubly placed. J^π's require E1.
346.28 [jd] *4*	2.16 [j] *9*	782.569	3/2$^+$	436.333	1/2$^-$				Mult.: Previously assigned M1 and 1991Gr21 assigns E1, but γ may be doubly placed. J^π's require E1.
348.75 *5*	2.0 *4*	442.205	5/2$^+$	93.331	7/2$^-$	E1		0.01097	α(K)=0.00934 *13*; α(L)=0.001283 *18*; α(M)=0.000277 *4* α(N)=6.33×10^{-5} *9*; α(O)=9.65×10^{-6} *14*; α(P)=6.01×10^{-7} *9*
									Mult.: From 1982Al24 and 1991Gr21; other: 1975Vy01 assign E2.
352.1 [ae] *3*	0.6 *5*	720.45	(5/2,7/2)$^-$	368.636	5/2$^-$				
353.42 *2*	0.9 *4*	482.875	1/2$^+$	129.201	3/2$^-$	E1		0.01062	α(K)=0.00904 *13*; α(L)=0.001242 *18*; α(M)=0.000268 *4* α(N)=6.13×10^{-5} *9*; α(O)=9.34×10^{-6} *13*; α(P)=5.83×10^{-7} *9* I_γ: Values range from 0.3 *3* to 1.3 *2*. Mult.: From 1991Gr21 and based on previous Ice data.
355.05 *5*	7.4 *9*	448.430	5/2$^-$	93.331	7/2$^-$	M1+E2	+0.02 *13*	0.0612 *11*	α(K)=0.0519 *9*; α(L)=0.00730 *11*; α(M)=0.001581 *23* α(N)=0.000364 *6*; α(O)=5.66×10^{-5} *9*; α(P)=3.82×10^{-6} *7* I_γ: Values range from 5.9 *9* to 8.3 *4*. Value may include the Iγ=0.8 for 354.4 γ from 483 level.
[x]356.9 [a] *4*	0.5 *3*								
361.68 *10*	6.5 *11*	361.480	3/2$^-$	0.0	3/2$^-$	M1+E2	0.20 *4*	0.0574 *9*	α(K)=0.0486 *8*; α(L)=0.00690 *10*; α(M)=0.001497 *22* α(N)=0.000345 *5*; α(O)=5.34×10^{-5} *8*; α(P)=3.57×10^{-6} *6*
362.85 *10*	1.33 *20*	731.62	7/2$^+$	368.636	5/2$^-$				
[x]365.0 *4*	0.22 *7*								I_γ: Values range from 0.20 *6* to 0.8 *4*.
365.4 [d] *3*	0.02 *1*	548.665	5/2$^-$	183.413	5/2$^+$				
368.63 *5*	1.66 *9*	368.636	5/2$^-$	0.0	3/2$^-$	E2+M1		0.044 *12*	α(K)=0.036 *11*; α(L)=0.0060 *7*; α(M)=0.00132 *12* α(N)=0.00030 *3*; α(O)=4.5×10^{-5} *6*; α(P)=2.56×10^{-6} *91*
371.24 *6*	3.17 *16*	412.91	3/2$^+$	41.549	5/2$^-$	E1		0.00943	α(K)=0.00803 *12*; α(L)=0.001100 *16*; α(M)=0.000237 *4* α(N)=5.43×10^{-5} *8*; α(O)=8.28×10^{-6} *12*; α(P)=5.19×10^{-7} *8*
379.32 *9*	0.69 *17*	508.846	3/2$^-$	129.201	3/2$^-$	E2+M1	1.13	0.0394	α(K)=0.0325 *5*; α(L)=0.00543 *8*; α(M)=0.001197 *17* α(N)=0.000273 *4*; α(O)=4.10×10^{-5} *6*; α(P)=2.27×10^{-6} *4*
381.0 [d] *3*	0.42 *10*	636.503	7/2$^-$						E_γ: Placement suggested by βγ coincidences, but energy is off 6 keV, so placement is questionable.
386.7 [e] *3*	1.2 *3*	677.0	(1/2,3/2,5/2)$^+$	290.299	(7/2$^+$)	E2		0.0283	α(K)=0.0224 *4*; α(L)=0.00457 *7*; α(M)=0.001025 *15* α(N)=0.000233 *4*; α(O)=3.38×10^{-5} *5*; α(P)=1.460×10^{-6} *21* E_γ: γ is placed only from 708 level in 1991Gr21.
386.7 [d] *3*	1.2 *3*	709.04	3/2$^+$	327.191	1/2$^+$	E2		0.0283	α(K)=0.0224 *4*; α(L)=0.00457 *7*; α(M)=0.001025 *15* α(N)=0.000233 *4*; α(O)=3.38×10^{-5} *5*; α(P)=1.460×10^{-6} *21*

$^{153}_{64}Gd_{89}$-14

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
									E_γ: Placement doubtful; in previous evaluation γ is placed only from 508 level and energy fit is poor, but in 1991Gr21 it is only placed here.
[x]390.8[a] 3	1.1 4					E2+M1	0.95	0.0381	α(K)=0.0316 5; α(L)=0.00507 8; α(M)=0.001115 16 α(N)=0.000255 4; α(O)=3.86×10^{-5} 6; α(P)=2.24×10^{-6} 4
[x]392.1[a] 5	0.5 3								
393.22[l] 11	2.6 6	709.04	3/2$^+$	316.020	(3/2,5/2)$^+$	M1		0.0469	α(K)=0.0398 6; α(L)=0.00557 8; α(M)=0.001207 17 α(N)=0.000278 4; α(O)=4.32×10^{-5} 6; α(P)=2.93×10^{-6} 5 E_γ: May be doublet with γ's of 392.9 and 393.8 from this level. I_γ: Values range from 1.8 3 to 4.0 10.
394.9[e] 3	0.64 19	490.53	(5/2$^+$,7/2$^+$)	95.124	(9/2)$^+$				
398.5 4	0.42 10	847.62	5/2$^-$,7/2$^-$	448.430	5/2$^-$				
400.60 5	5.29 19	442.205	5/2$^+$	41.549	5/2$^-$	E1		0.00786	α(K)=0.00670 10; α(L)=0.000914 13; α(M)=0.000197 3 α(N)=4.51×10^{-5} 7; α(O)=6.89×10^{-6} 10; α(P)=4.35×10^{-7} 6
405.3[d] 4	0.87 17	847.62	5/2$^-$,7/2$^-$	442.205	5/2$^+$				Mult.: From 1991Gr21 and based on previous Ice data.
406.81 07	2.6 6	448.430	5/2$^-$	41.549	5/2$^-$	M1		0.0430	α(K)=0.0365 6; α(L)=0.00510 8; α(M)=0.001104 16 α(N)=0.000254 4; α(O)=3.95×10^{-5} 6; α(P)=2.68×10^{-6} 4 I_γ: Values range from 1.9 3 to 3.2 2.
[x]408.5[a] 5	0.6 3								
410.6[d] 2	1.11 15	504.04	5/2$^+$	93.331	7/2$^-$				
413.0 4	0.30 15	412.91	3/2$^+$	0.0	3/2$^-$				I_γ: Values range from 0.10 3 to 0.5 3.
417.20[jd] 5	2.1[j] 2	636.503	7/2$^-$	219.37	(9/2$^-$)				I_γ: Previously this γ only placed from 865 level with Iγ=1.6 5, and only placed here in 1991Gr21 with Iγ=0.21 2. Mult.: Assigned E1 from 1991Gr21 based on previous Ice data, but J^π's require M1,E2.
417.20[je] 5	1.6[j] 5	865.595	3/2$^+$	448.430	5/2$^-$				I_γ: Values range from 1.1 2 to 2.1 2.
418.7[e] 5	<0.4	548.665	5/2$^-$	129.201	3/2$^-$				I_γ: From 1982Al24; average of three is Iγ=0.50 15, which includes the 419 γ from the 709 level.
419.0	0.6	709.04	3/2$^+$	290.299	(7/2$^+$)				E_γ,I_γ: From 1982Al24; average of the three is Iγ=0.50 15 for the 418.9 γ placed from the 548 level.
420.6[j] 2	1.8[j] 3	530.487	3/2$^-$	109.742	(5/2)$^-$	M1+E2		0.0309 86	α(K)=0.0256 78; α(L)=0.0041 6; α(M)=0.00089 12 α(N)=0.00020 3; α(O)=3.1×10^{-5} 6; α(P)=1.81×10^{-6} 64
420.6[j] 2	1.8[j] 3	636.503	7/2$^-$	215.977	7/2$^-$	M1+E2	0.67	0.0341	α(K)=0.0286 4; α(L)=0.00430 6; α(M)=0.000939 14 α(N)=0.000215 3; α(O)=3.30×10^{-5} 5; α(P)=2.06×10^{-6} 3
423.32 10	0.50 12	865.595	3/2$^+$	442.205	5/2$^+$	M1,E2		0.0303 85	α(K)=0.0252 77; α(L)=0.0040 6; α(M)=0.00088 12 α(N)=0.00020 3; α(O)=3.0×10^{-5} 6; α(P)=1.78×10^{-6} 63 Mult.: From 1991Gr21, and based on previous Ice data.
[x]433.5[a] 4	0.30 20								
436.31[jf] 2	14.1[j] 18	436.333	1/2$^-$	0.0	3/2$^-$	M1		0.0358	α(K)=0.0304 5; α(L)=0.00425 6; α(M)=0.000920 13

$^{153}_{64}Gd_{89}$-15

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	$I_{(\gamma+ce)}$ [i]	Comments
										α(N)=0.000212 *3*; α(O)=3.29×10^{-5} *5*; α(P)=2.23×10^{-6} *4* Mult.: Assigned M1, but γ may be doublet.
436.31 [jd] *2*	14.1 [j] *18*	945.159	3/2$^+$	508.846	3/2$^-$					
[x]439.0 [a] *5*	0.25 *20*									
441.3 [d] *3*	1.1 *4*	945.159	3/2$^+$	504.04	5/2$^+$					
442.16 *4*	5.9 *11*	442.205	5/2$^+$	0.0	3/2$^-$	E1		0.00624		α(K)=0.00532 *8*; α(L)=0.000722 *11*; α(M)=0.0001556 *22* α(N)=3.56×10^{-5} *5*; α(O)=5.46×10^{-6} *8*; α(P)=3.48×10^{-7} *5* I_γ: Values range from 4.9 *9* to 7.0 *5*. Mult.: From 1982Al24. Assignment is inconsistent with α_K of 1975Vy01.
[x]448.0 [a] *8*	0.15 *15*									
448.6 *2*	3.9 *6*	448.430	5/2$^-$	0.0	3/2$^-$	M1+E2	+0.27 *15*	0.0324 *13*		α(K)=0.0274 *12*; α(L)=0.00387 *11*; α(M)=0.000840 *22* α(N)=0.000193 *6*; α(O)=3.00×10^{-5} *9*; α(P)=2.00×10^{-6} *10*
451.6 [d] *2*	0.6 *3*	955.47	5/2$^+$	504.04	5/2$^+$	M1		0.0328		α(K)=0.0279 *4*; α(L)=0.00388 *6*; α(M)=0.000841 *12* α(N)=0.000194 *3*; α(O)=3.01×10^{-5} *5*; α(P)=2.04×10^{-6} *3* Mult.: From 1991Gr21, and based on previous Ice data.
455.36 [j] *2*	9.8 [j] *15*	548.665	5/2$^-$	93.331	7/2$^-$	M1+E2	−0.12 *+20−26*	0.0319 *17*		α(K)=0.0271 *15*; α(L)=0.00378 *14*; α(M)=0.00082 *3* α(N)=0.000189 *7*; α(O)=2.93×10^{-5} *12*; α(P)=1.98×10^{-6} *12* E_γ: γ is also placed from 782 level in 1991Gr21. I_γ: Average of values from 1991Gr21 and 1974Pe16; in contrast 1975Vy01 gives 0.5 *5*.
455.36 [jd] *2*	9.8 [j] *15*	782.569	3/2$^+$	327.191	1/2$^+$	M1+E2	−0.12 *+20−26*	0.0319 *17*		α(K)=0.0271 *15*; α(L)=0.00378 *14*; α(M)=0.00082 *3* α(N)=0.000189 *7*; α(O)=2.93×10^{-5} *12*; α(P)=1.98×10^{-6} *12* I_γ: Average of values from 1991Gr21 and 1974Pe16; in contrast 1975Vy01 gives 0.5 *5* and 1991Gr21 gives 1.14 *4*.
459.4 [d] *2*	0.57 *12*	709.04	3/2$^+$	249.562	5/2$^-$	E1		0.00571		α(K)=0.00487 *7*; α(L)=0.000660 *10*; α(M)=0.0001422 *20* α(N)=3.26×10^{-5} *5*; α(O)=4.99×10^{-6} *7*; α(P)=3.19×10^{-7} *5* Mult.: From 1991Gr21, and based on previous Ice

$^{153}_{64}Gd_{89}$-16

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	$I_{(\gamma+ce)}$[i]	Comments
										data.

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[# h]	α[g]	Comments
462.48[d] *20*	0.79 *8*	504.04	$5/2^+$	41.549	$5/2^-$				
462.48[el] *20*	0.79 *8*	1328.12	$5/2^+$	865.595	$3/2^+$	E2+M1		0.0240 *69*	α(K)=0.0200 *62*; α(L)=0.0031 *6*; α(M)=0.00068 *11* α(N)=0.00016 *3*; α(O)=2.4×10^{-5} *5*; α(P)=1.42×10^{-6} *50*
466.6[d] *2*	3.0 *8*	782.569	$3/2^+$	316.020	$(3/2,5/2)^+$				
467.20[j] *3*	11.9[j] *23*	508.846	$3/2^-$	41.549	$5/2^-$	E2+M1	0.97	0.0236	α(K)=0.0197 *3*; α(L)=0.00304 *5*; α(M)=0.000666 *10* α(N)=0.0001526 *22*; α(O)=2.32×10^{-5} *4*; α(P)=1.400×10^{-6} *20* I_γ: Values range from 6.8 *15* to 14.2 *1*. E_γ: γ is also placed from 782 level in 1991Gr21. Mult.,δ: mult. and δ assigned, but γ may be doublet.
467.20[jd] *3*	11.9[j] *23*	782.569	$3/2^+$	315.334	$1/2^-$				I_γ: Values range from 6.8 *15* to 14.2 *1*. Mult.,δ: Assigned E2+M1, but γ may be doublet and J^π's require E1.
470.7[e] *2*	0.59 *10*	720.45	$(5/2,7/2)^-$	249.562	$5/2^-$				
470.7[d] *2*	0.59 *10*	1328.12	$5/2^+$	857.611	$3/2^-$				
[x]473.5[a] *6*	0.30 *20*								
[x]477.0[a] *6*	0.30 *20*								
479.3[d] *2*	0.66 *8*	847.62	$5/2^-,7/2^-$	368.636	$5/2^-$				
482.12 *7*	2.1 *5*	731.62	$7/2^+$	249.562	$5/2^-$	E1		0.00512	α(K)=0.00437 *7*; α(L)=0.000590 *9*; α(M)=0.0001271 *18* α(N)=2.91×10^{-5} *4*; α(O)=4.47×10^{-6} *7*; α(P)=2.87×10^{-7} *4* I_γ: Values range from 1.2 *4* to 2.6 *2*.
[x]482.8 *2*	0.9 *3*								
484.00[jf] *6*	1.9[j] *4*	482.875	$1/2^+$	0.0	$3/2^-$	E1		0.00507	α(K)=0.00433 *6*; α(L)=0.000585 *9*; α(M)=0.0001260 *18* α(N)=2.88×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=2.84×10^{-7} *4* I_γ: Values range from 1.1 *4* to 2.5 *2*.
484.00[jd] *6*	1.9[j] *4*	1014.76	$5/2^+$	530.487	$3/2^-$	E1		0.00507	α(K)=0.00433 *6*; α(L)=0.000585 *9*; α(M)=0.0001260 *18* α(N)=2.88×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=2.84×10^{-7} *4* I_γ: Values range from 1.1 *4* to 2.5 *2*.
488.90[jf] *8*	2.8[j] *4*	530.487	$3/2^-$	41.549	$5/2^-$				
488.90[je] *8*	2.8[j] *4*	857.611	$3/2^-$	368.636	$5/2^-$				
488.90[jd] *8*	2.8[j] *4*	937.419	$5/2^+$	448.430	$5/2^-$				
493.4[el]	0.4	709.04	$3/2^+$	215.977	$7/2^-$				E_γ,I_γ: From 1982Al24.
494.35[d] *5*	2.05 *18*	1101.619	$3/2^+$	607.13	$5/2^-$	E1		0.00483	α(K)=0.00413 *6*; α(L)=0.000557 *8*; α(M)=0.0001200 *17* α(N)=2.75×10^{-5} *4*; α(O)=4.22×10^{-6} *6*; α(P)=2.71×10^{-7} *4*
496.61[je] *5*	7.8[j] *12*	857.611	$3/2^-$	361.480	$3/2^-$				
496.61[j] *5*	7.8[j] *12*	945.159	$3/2^+$	448.430	$5/2^-$				
[x]499.83[a] *23*	0.77 *17*								
[x]501.5[a] *4*	0.4 *2*								
503.04 *20*	1.8 *3*	945.159	$3/2^+$	442.205	$5/2^+$	M1,E2		0.0193 *56*	α(K)=0.0162 *50*; α(L)=0.0025 *5*; α(M)=0.00054 *10* α(N)=0.000124 *23*; α(O)=1.9×10^{-5} *4*; α(P)=1.15×10^{-6} *40*

$^{153}_{64}Gd_{89}$-18

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	α [g]	Comments
504.0 [&d] 1		504.04	5/2+	0.0	3/2−			
504.6 [je] 2	3.4 [j] 18	720.45	(5/2,7/2)−	215.977	7/2−	M1	0.0247	α(K)=0.0210 3; α(L)=0.00291 4; α(M)=0.000631 9 α(N)=0.0001452 21; α(O)=2.26×10^{-5} 4; α(P)=1.536×10^{-6} 22 I_γ: Values range from 1.5 4 to 5.2 2. Mult.: Assigned M1, but γ may be doublet.
504.6 [jd] 2	3.4 [j] 18	1035.188	5/2+	530.487	3/2−			I_γ: Values range from 1.5 4 to 5.2 2.
507.3 2	4.7 7	548.665	5/2−	41.549	5/2−	M1	0.0244	α(K)=0.0207 3; α(L)=0.00287 4; α(M)=0.000622 9 α(N)=0.0001432 21; α(O)=2.23×10^{-5} 4; α(P)=1.515×10^{-6} 22 I_γ: Values range from 3.6 5 to 5.1 2.
508.75 12	8.9 4	508.846	3/2−	0.0	3/2−	M1	0.0242	α(K)=0.0206 3; α(L)=0.00285 4; α(M)=0.000618 9 α(N)=0.0001422 20; α(O)=2.21×10^{-5} 4; α(P)=1.504×10^{-6} 21 I_γ: Values range from 5.6 8 to 12.0 3.
[x]511.00 [a] 25	2.0 4							
[x]512.5 [a] 4	0.7 4							
513.8 [jd] 2	2.1 [j] 9	607.13	5/2−	93.331	7/2−	M1	0.0236	α(K)=0.0201 3; α(L)=0.00278 4; α(M)=0.000602 9 α(N)=0.0001386 20; α(O)=2.16×10^{-5} 3; α(P)=1.467×10^{-6} 21 E_γ: Previous evaluation only places γ from 955 level, but 1991Gr21 only places it from this new level. I_γ: Values range from 1.4 4 to 3.0 3.
513.8 [jfe] 2	2.1 [j] 9	955.47	5/2+	442.205	5/2+			I_γ: Values range from 1.4 4 to 3.0 3.
515.7 [d] 2	1.12 24	731.62	7/2+	215.977	7/2−	E1	0.00440	α(K)=0.00375 6; α(L)=0.000506 7; α(M)=0.0001089 16 α(N)=2.49×10^{-5} 4; α(O)=3.83×10^{-6} 6; α(P)=2.47×10^{-7} 4 I_γ: Values range from 0.9 3 to 1.7 3.
[x]523.8 [a] 4	0.6 3							
525.6 [jd] 5	4.0 [j] 4	709.04	3/2+	183.413	5/2+			
525.6 [jf] 5	4.0 [j] 4	774.65	(5/2+)	249.562	5/2−			
525.6 [jd] 6	1.31 [j] 19	1035.188	5/2+	508.846	3/2−			
526.6 [je] 6	1.31 [j] 19	636.503	7/2−	109.742	(5/2)−			
530.43 [j] 4	3.76 [j] 17	530.487	3/2−	0.0	3/2−	M1	0.0218	α(K)=0.0185 3; α(L)=0.00256 4; α(M)=0.000555 8 α(N)=0.0001277 18; α(O)=1.99×10^{-5} 3; α(P)=1.352×10^{-6} 19
530.43 [jd] 4	3.76 [j] 17	857.611	3/2−	327.191	1/2+			Mult.: Assigned M1, but γ is multiply placed and J^π's require E1.
533.08 5	3.20 23	782.569	3/2+	249.562	5/2−	E1	0.00409	α(K)=0.00349 5; α(L)=0.000469 7; α(M)=0.0001010 15 α(N)=2.31×10^{-5} 4; α(O)=3.56×10^{-6} 5; α(P)=2.30×10^{-7} 4 Mult.: From 1983Pr07.
541.36 [d] 5	3.1 3	857.611	3/2−	316.020	(3/2,5/2)+			
542.5 [j] 2	0.7 [j] 2	636.503	7/2−	95.124	(9/2)+	E1	0.00393	α(K)=0.00336 5; α(L)=0.000451 7; α(M)=9.71×10^{-5} 14 α(N)=2.23×10^{-5} 4; α(O)=3.42×10^{-6} 5; α(P)=2.22×10^{-7} 4
542.5 [j] 2	0.7 [j] 2	857.611	3/2−	315.334	1/2−			
548.30 [j] 12	3.2 [j] 8	548.665	5/2−	0.0	3/2−	M1	0.0200	α(K)=0.01702 24; α(L)=0.00236 4; α(M)=0.000510 8

$^{153}_{64}Gd_{89}$-19

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
									α(N)=0.0001173 *17*; α(O)=1.83×10^{-5} *3*; α(P)=1.243×10^{-6} *18* Mult.: Assigned M1, but γ may be doublet.
548.30[j] *12*	3.2[j] *8*	731.62	7/2$^+$	183.413	5/2$^+$	M1		0.0200	α(K)=0.01702 *24*; α(L)=0.00236 *4*; α(M)=0.000510 *8* α(N)=0.0001173 *17*; α(O)=1.83×10^{-5} *3*; α(P)=1.243×10^{-6} *18* Mult.: Assigned M1, but γ may be doublet.
549.4[d] *2*	0.90 *17*	865.595	3/2$^+$	316.020	(3/2,5/2)$^+$	M1		0.0199	α(K)=0.01693 *24*; α(L)=0.00234 *4*; α(M)=0.000507 *8* α(N)=0.0001167 *17*; α(O)=1.82×10^{-5} *3*; α(P)=1.237×10^{-6} *18*
552.95 *10*	3.8 *4*	1101.619	3/2$^+$	548.665	5/2$^-$	E1		0.00377	α(K)=0.00322 *5*; α(L)=0.000432 *6*; α(M)=9.30×10^{-5} *13* α(N)=2.13×10^{-5} *3*; α(O)=3.28×10^{-6} *5*; α(P)=2.13×10^{-7} *3* I_γ: Values range from 2.8 *5* to 4.2 *2*.
554.3[ae] *6*	0.4 *3*	857.611	3/2$^-$	303.577	5/2$^+$				
[x]555.6[a] *5*	0.5 *3*								
557.26[j] *6*	1.95[j] *8*	847.62	5/2$^-$,7/2$^-$	290.299	(7/2$^+$)	E1		0.00371	α(K)=0.00317 *5*; α(L)=0.000425 *6*; α(M)=9.14×10^{-5} *13* α(N)=2.10×10^{-5} *3*; α(O)=3.22×10^{-6} *5*; α(P)=2.09×10^{-7} *3* Mult.: Assigned E1, but γ may be doublet.
557.26[je] *6*	1.95[j] *8*	1066.36	3/2$^+$	508.846	3/2$^-$	E1		0.00371	α(K)=0.00317 *5*; α(L)=0.000425 *6*; α(M)=9.14×10^{-5} *13* α(N)=2.10×10^{-5} *3*; α(O)=3.22×10^{-6} *5*; α(P)=2.09×10^{-7} *3* Mult.: Assigned E1, but γ may be doublet.
565.54[jd] *8*	1.06[j] *9*	607.13	5/2$^-$	41.549	5/2$^-$	M1+E2		0.0143 *42*	α(K)=0.0120 *37*; α(L)=0.0018 *4*; α(M)=0.00039 *8* α(N)=9.0×10^{-5} *19*; α(O)=1.4×10^{-5} *4*; α(P)=8.6×10^{-7} *30* E_γ: Previous evaluation only places γ from 1422 level, but 1991Gr21 only places it from this new level.
565.54[jef] *8*	1.06[j] *9*	1422.69	(3/2,5/2)$^-$	857.611	3/2$^-$				
566.2[ae] *3*	1.1 *3*	1014.76	5/2$^+$	448.430	5/2$^-$				
570.2[ae] *5*	0.5 *4*	1118.51	(3/2$^+$)	548.665	5/2$^-$				
571.35[d] *7*	2.6 *5*	821.217	(5/2$^+$)	249.562	5/2$^-$				Mult.: ce data imply (M1) but ΔJ^π requires E1. I_γ: Values range from 2.0 *4* to 3.1 *2*.
[x]573.7[a] *5*	0.6 *4*								
[x]576.8[a] *4*	0.5 *3*								
579.82 *4*	4.34 *19*	709.04	3/2$^+$	129.201	3/2$^-$	E1		0.00340	α(K)=0.00290 *4*; α(L)=0.000389 *6*; α(M)=8.37×10^{-5} *12* α(N)=1.92×10^{-5} *3*; α(O)=2.95×10^{-6} *5*; α(P)=1.92×10^{-7} *3*
[x]581.8[a] *6*	0.5 *4*								
586.5[d] *5*	0.73 *15*	1035.188	5/2$^+$	448.430	5/2$^-$	E1		0.00332	α(K)=0.00283 *4*; α(L)=0.000379 *6*; α(M)=8.16×10^{-5} *12* α(N)=1.87×10^{-5} *3*; α(O)=2.88×10^{-6} *4*; α(P)=1.88×10^{-7} *3* Mult.: From 1991Gr21, and based on previous Ice data.
591.40 *10*	0.78 *17*	774.65	(5/2$^+$)	183.413	5/2$^+$				

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
594.7[d] *3*	1.0 *3*	1452.39	(3/2,5/2)$^+$	857.611	3/2$^-$				
598.20 *20*	3.1 *9*	847.62	5/2$^-$,7/2$^-$	249.562	5/2$^-$	M1+E2	−0.02 *23*	0.0161 *5*	α(K)=0.0137 *5*; α(L)=0.00189 *5*; α(M)=0.000408 *10* α(N)=9.40×10^{-5} *24*; α(O)=1.46×10^{-5} *4*; α(P)=1.00×10^{-6} *4* I_γ: Values range from 2.0 *4* to 4.0 *2*.
599.2[f] *2*		709.04	3/2$^+$	109.742	(5/2)$^-$				
599.2[d] *2*	1.0 *6*	782.569	3/2$^+$	183.413	5/2$^+$				
605.25 *8*	1.4 *4*	821.217	(5/2$^+$)	215.977	7/2$^-$				I_γ: Values range from 0.8 *4* to 1.8 *1*.
607.5[jd] *2*	0.99[j] *10*	607.13	5/2$^-$	0.0	3/2$^-$	M1		0.01548	α(K)=0.01316 *19*; α(L)=0.00182 *3*; α(M)=0.000393 *6* α(N)=9.04×10^{-5} *13*; α(O)=1.407×10^{-5} *20*; α(P)=9.60×10^{-7} *14* Mult.: Assigned M1, but γ is doublet.
607.5[jd] *2*	0.99[j] *10*	857.611	3/2$^-$	249.562	5/2$^-$	M1		0.01548	α(K)=0.01316 *19*; α(L)=0.00182 *3*; α(M)=0.000393 *6* α(N)=9.04×10^{-5} *13*; α(O)=1.407×10^{-5} *20*; α(P)=9.60×10^{-7} *14* Mult.: Assigned M1, but γ is doublet.
610.2[ae] *5*	0.4 *3*	720.45	(5/2,7/2)$^-$	109.742	(5/2)$^-$				
[x]613.1[a] *5*	0.4 *3*								
616.2[ae] *4*	0.6 *3*	865.595	3/2$^+$	249.562	5/2$^-$				
617.8[d] *1*	0.73 *9*	945.159	3/2$^+$	327.191	1/2$^+$	M1+E2	0.94	0.01170	α(K)=0.00986 *14*; α(L)=0.001445 *21*; α(M)=0.000315 *5* α(N)=7.22×10^{-5} *11*; α(O)=1.109×10^{-5} *16*; α(P)=7.04×10^{-7} *10*
621.92 *10*	0.62 *11*	731.62	7/2$^+$	109.742	(5/2)$^-$				
629.73 *3*	11.0 *6*	945.159	3/2$^+$	315.334	1/2$^-$				Final level is 315.36 or 315.988. Mult.,δ: Previous assignment M1+E2 and δ=−3.1 *4* with final level of 316.11, but 1991Gr21 assigns E1 and final level 315.42. γ may be doublet.
636.40 *6*	2.72 *17*	636.503	7/2$^-$	0.0	3/2$^-$	E2		0.00759	α(K)=0.00628 *9*; α(L)=0.001025 *15*; α(M)=0.000225 *4* α(N)=5.15×10^{-5} *8*; α(O)=7.73×10^{-6} *11*; α(P)=4.29×10^{-7} *6* Mult.: 1991Gr21 assigns M1+E2, but J^π's require E2.
638.27[j] *10*	3.52[j] *18*	731.62	7/2$^+$	93.331	7/2$^-$	E1		0.00277	α(K)=0.00237 *4*; α(L)=0.000316 *5*; α(M)=6.79×10^{-5} *10* α(N)=1.557×10^{-5} *22*; α(O)=2.40×10^{-6} *4*; α(P)=1.574×10^{-7} *22* Mult.: Assigned E1 in 1991Gr21, but γ may be doublet.
638.27[j] *10*	3.52[j] *18*	821.217	(5/2$^+$)	183.413	5/2$^+$				Mult.: Assigned E1 in 1991Gr21, but γ may be doublet. J^π's require M1,E2.
641.7[&d] *2*	0.5 *1*	945.159	3/2$^+$	303.577	5/2$^+$				
646.5[jf] *3*	0.60[j] *21*	937.419	5/2$^+$	290.299	(7/2$^+$)				
646.5[jd] *3*	0.60[j] *21*	1014.76	5/2$^+$	368.636	5/2$^-$				
650.2[d] *3*	0.2 *1*	1180.49	5/2$^+$	530.487	3/2$^-$				
653.25[j] *4*	4.95[j] *15*	782.569	3/2$^+$	129.201	3/2$^-$	E1		0.00264	α(K)=0.00226 *4*; α(L)=0.000300 *5*; α(M)=6.46×10^{-5} *9*

$^{153}_{64}Gd_{89}$-21

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	Comments
									α(N)=1.481×10^{-5} *21*; α(O)=2.28×10^{-6} *4*; α(P)=1.500×10^{-7} *21* Mult.: Assigned E1, but γ may be doublet.
653.25 [j] *4*	4.95 [j] *15*	1101.619	3/2$^+$	448.430	5/2$^-$	E1		0.00264	α(K)=0.00226 *4*; α(L)=0.000300 *5*; α(M)=6.46×10^{-5} *9* α(N)=1.481×10^{-5} *21*; α(O)=2.28×10^{-6} *4*; α(P)=1.500×10^{-7} *21* Mult.: Assigned E1, but γ may be doublet.
665.3	1	955.47	5/2$^+$	290.299	(7/2$^+$)				E_γ,I_γ: From 1982Al24.
665.30 *4*	9.8 *10*	1101.619	3/2$^+$	436.333	1/2$^-$	E1		0.00254	α(K)=0.00217 *3*; α(L)=0.000289 *4*; α(M)=6.21×10^{-5} *9* α(N)=1.425×10^{-5} *20*; α(O)=2.20×10^{-6} *3*; α(P)=1.445×10^{-7} *21* I_γ: from Iγ=10.8 *10* for (665.3+665.34) and I(665.3) from 1982Al24.
666.2 [d] *2*	3.4 *10*	1035.188	5/2$^+$	368.636	5/2$^-$				
667.2 [d] *3*	1.28 *18*	709.04	3/2$^+$	41.549	5/2$^-$	E1		0.00252	α(K)=0.00216 *3*; α(L)=0.000287 *4*; α(M)=6.17×10^{-5} *9* α(N)=1.416×10^{-5} *20*; α(O)=2.18×10^{-6} *3*; α(P)=1.437×10^{-7} *21*
[x]671.8 [a] *5*	0.7 *4*					E1		0.00249	α(K)=0.00213 *3*; α(L)=0.000283 *4*; α(M)=6.09×10^{-5} *9* α(N)=1.395×10^{-5} *20*; α(O)=2.15×10^{-6} *3*; α(P)=1.417×10^{-7} *20*
673.50 [k] *10*	1.0 [k]	782.569	3/2$^+$	109.742	(5/2)$^-$	(E1)		0.00248	α(K)=0.00212 *3*; α(L)=0.000281 *4*; α(M)=6.05×10^{-5} *9* α(N)=1.388×10^{-5} *20*; α(O)=2.14×10^{-6} *3*; α(P)=1.410×10^{-7} *20* I_γ: From 1982Al24.
673.50 [k] *10*	2.1 [k] *6*	1035.188	5/2$^+$	361.480	3/2$^-$	E1		0.00248	α(K)=0.00212 *3*; α(L)=0.000281 *4*; α(M)=6.05×10^{-5} *9* α(N)=1.388×10^{-5} *20*; α(O)=2.14×10^{-6} *3*; α(P)=1.410×10^{-7} *20* I_γ: From Iγ(doublet)=3.1 *4* and Iγ(component from 782) as given by 1982Al24.
678.8 [d] *1*	1.69 *9*	1387.48		709.04	3/2$^+$	M1		0.01174	α(K)=0.00999 *14*; α(L)=0.001373 *20*; α(M)=0.000297 *5* α(N)=6.83×10^{-5} *10*; α(O)=1.064×10^{-5} *15*; α(P)=7.27×10^{-7} *11* Mult.: From 1991Gr21, and based on previous Ice data.
682.30 [jd] *5*	1.23 [j] *13*	865.595	3/2$^+$	183.413	5/2$^+$				Mult.: Previously assigned E1 and 1991Gr21 assigned E2, but γ may be doublet.
682.30 [jfe] *5*	1.23 [j] *13*	1118.51	(3/2$^+$)	436.333	1/2$^-$				Mult.: Previously assigned E1 and 1991Gr21 assigned E2, but γ may be doublet.
690.00 *6*	8.0 *3*	731.62	7/2$^+$	41.549	5/2$^-$	E1+M2	−0.017 *50*	0.00236 *13*	α(K)=0.00202 *11*; α(L)=0.000268 *17*; α(M)=5.8×10^{-5} *4* α(N)=1.32×10^{-5} *9*; α(O)=2.04×10^{-6} *13*; α(P)=1.35×10^{-7} *9*
[x]695.3 *2*	0.49 *13*								

$^{153}_{64}Gd_{89}$-22

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
696.3[a] *3*	0.7 *4*	945.159	3/2+	249.562	5/2−				
698.6[ae] *4*	0.7 *4*	1014.76	5/2+	316.020	(3/2,5/2)+				
704.0[ae] *6*	0.34 *15*	1066.36	3/2+	361.480	3/2−	E1		0.00226	α(K)=0.00193 *3*; α(L)=0.000256 *4*; α(M)=5.51×10^{-5} *8* α(N)=1.264×10^{-5} *18*; α(O)=1.95×10^{-6} *3*; α(P)=1.289×10^{-7} *19*
705.95 *15*	1.11 *12*	955.47	5/2+	249.562	5/2−				
711.50 *3*	3.51 *15*	821.217	(5/2+)	109.742	(5/2)−	E1		0.00221	α(K)=0.00189 *3*; α(L)=0.000251 *4*; α(M)=5.39×10^{-5} *8* α(N)=1.237×10^{-5} *18*; α(O)=1.91×10^{-6} *3*; α(P)=1.261×10^{-7} *18*
[x]713.6[a] *5*	0.5 *4*								
718.50[j] *10*	1.45[j] *10*	847.62	5/2−,7/2−	129.201	3/2−				
718.50[jd] *10*	1.45[j] *10*	937.419	5/2+	219.37	(9/2−)				
718.50[jel] *10*	1.45[j] *10*	1035.188	5/2+	316.020	(3/2,5/2)+				
718.50[je] *10*	1.45[j] *10*	1131.72	5/2+	412.91	3/2+				
721.42 *6*	2.99 *10*	937.419	5/2+	215.977	7/2−	E1		0.00215	α(K)=0.00184 *3*; α(L)=0.000244 *4*; α(M)=5.24×10^{-5} *8* α(N)=1.201×10^{-5} *17*; α(O)=1.85×10^{-6} *3*; α(P)=1.227×10^{-7} *18*
727.84 *7*	2.6 *8*	821.217	(5/2+)	93.331	7/2−	E1+M2	0.07 *35*	0.0022 *37*	α(K)=0.0019 *31*; α(L)=2.5×10^{-4} *47*; α(M)=5.E−5 *11* α(N)=1.3×10^{-5} *24*; α(O)=1.9×10^{-6} *37*; α(P)=1.3×10^{-7} *25* I_γ: Values range from 1.8 *3* to 3.2 *3*.
728.6[&e] *2*	1.3 *3*	857.611	3/2−	129.201	3/2−				
728.6[&d] *2*	1.3 *3*	1044.60	(3/2,5/2,7/2)+	316.020	(3/2,5/2)+				
731.6[ae] *8*	0.5 *4*	731.62	7/2+	0.0	3/2−				
733.5 *2*	1.1 *1*	774.65	(5/2+)	41.549	5/2−				Mult.: From 1991Gr21, and based on previous Ice data.
736.41 *4*	4.31 *17*	865.595	3/2+	129.201	3/2−	E1		0.00206	α(K)=0.001764 *25*; α(L)=0.000233 *4*; α(M)=5.02×10^{-5} *7* α(N)=1.151×10^{-5} *17*; α(O)=1.778×10^{-6} *25*; α(P)=1.177×10^{-7} *17*
737.8[e]		847.62	5/2−,7/2−	109.742	(5/2)−				E_γ,I_γ: From 1982Al24.
739.68 *15*	8.3 *15*	955.47	5/2+	215.977	7/2−	E1		0.00204	α(K)=0.001748 *25*; α(L)=0.000231 *4*; α(M)=4.97×10^{-5} *7* α(N)=1.141×10^{-5} *16*; α(O)=1.761×10^{-6} *25*; α(P)=1.167×10^{-7} *17* I_γ: From Iγ(doublet)=9.4 *15* and Iγ(component from 990 level) as given by 1982Al24.

$^{153}_{64}Gd_{89}$-23

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ †	I_γ ‡i	E_i(level)	J_i^π	E_f	J_f^π	Mult.@	δ#h	α g	$I_{(\gamma+ce)}$ i	Comments
740.8 je 2	2.8 j 3	990.36	(3/2+)	249.562	5/2−					
740.8 jd 2	2.8 j 3	1044.60	(3/2,5/2,7/2)+	303.577	5/2+					
x742.0 a 6	1.4 7									
x744.4 3	0.20 10									
745.5 a 5	0.6 4	1035.188	5/2+	290.299	(7/2+)					
748.0 2	0.42 10	857.611	3/2−	109.742	(5/2)−					
750.0 jd 2	0.41 j 10	1118.51	(3/2+)	368.636	5/2−					
750.0 jef 2	0.41 j 10	1199.02	(7/2,9/2)+	448.430	5/2−					
754.00 5	1.1 4	937.419	5/2+	183.413	5/2+					I_γ: From Iγ(doublet)=1.74 *10* and Iγ(component from 847 level) as given by 1982Al24.
754.3 e	0.6	847.62	5/2−,7/2−	93.331	7/2−					E_γ,I_γ: From 1982Al24.
755.84 5	4.5 3	865.595	3/2+	109.742	(5/2)−	E1		0.00196		α(K)=0.001674 *24*; α(L)=0.000221 *3*; α(M)=4.76×10^{-5} *7* α(N)=1.091×10^{-5} *16*; α(O)=1.685×10^{-6} *24*; α(P)=1.118×10^{-7} *16*
761.82 6	2.65 21	945.159	3/2+	183.413	5/2+	M1		0.00884		α(K)=0.00753 *11*; α(L)=0.001030 *15*; α(M)=0.000223 *4* α(N)=5.12×10^{-5} *8*; α(O)=7.98×10^{-6} *12*; α(P)=5.46×10^{-7} *8*
765.1 ae 3	0.6 3	1014.76	5/2+	249.562	5/2−					
771.8 4	0.54 9	955.47	5/2+	183.413	5/2+	M1		0.00856		α(K)=0.00729 *11*; α(L)=0.000997 *14*; α(M)=0.000215 *3* α(N)=4.96×10^{-5} *7*; α(O)=7.73×10^{-6} *11*; α(P)=5.29×10^{-7} *8* Mult.: From 1991Gr21, and based on previous Ice data.
775.0 2	0.8 4	774.65	(5/2+)	0.0	3/2−					I_γ: Values range from 0.5 *1* to 1.4 *3*.
x776.8 a 6	0.8 4									
779.52 je 10	2.4 j 9	821.217	(5/2+)	41.549	5/2−	(E1)		0.00184		α(K)=0.001574 *22*; α(L)=0.000208 *3*; α(M)=4.46×10^{-5} *7* α(N)=1.024×10^{-5} *15*; α(O)=1.583×10^{-6} *23*; α(P)=1.052×10^{-7} *15* I_γ: Values range from 1.5 *3* to 3.2 *3*.
779.52 j 10	2.4 j 9	1328.12	5/2+	548.665	5/2−	(E1)		0.00184		α(K)=0.001574 *22*; α(L)=0.000208 *3*; α(M)=4.46×10^{-5} *7* α(N)=1.024×10^{-5} *15*; α(O)=1.583×10^{-6} *23*; α(P)=1.052×10^{-7} *15*
782.0 ae 8	0.4 4	782.569	3/2+	0.0	3/2−					
785.65 3	6.8 4	1035.188	5/2+	249.562	5/2−	E1		0.00181		α(K)=0.001549 *22*; α(L)=0.000204 *3*; α(M)=4.39×10^{-5} *7* α(N)=1.008×10^{-5} *15*; α(O)=1.558×10^{-6} *22*;

$^{153}_{64}Gd_{89}$-24

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [# h]	α [g]	Comments
									α(P)=1.036×10^{-7} *15* I_γ: From Iγ(doublet)=8.8 *4* and Iγ(component from 1101 level) as given by 1982Al24.
785.65 *3*	2.0	1101.619	3/2$^+$	316.020	(3/2,5/2)$^+$	M1+E2	0.09 *+51−11*	0.0082 *10*	α(K)=0.0070 *8*; α(L)=0.00095 *10*; α(M)=0.000206 *20* α(N)=4.7×10^{-5} *5*; α(O)=7.4×10^{-6} *8*; α(P)=5.0×10^{-7} *7* I_γ: From 1982Al24.
786.8 [e]	0.8	1199.02	(7/2,9/2)$^+$	412.91	3/2$^+$				E_γ,I_γ: From 1982Al24.
[x]788.8 [a] *6*	0.8 *3*								
794.1 [&d] *2*	0.5 *1*	1401.43	(3/2$^+$)	607.13	5/2$^-$				
795.3 [d] *2*	1.24 *9*	1044.60	(3/2,5/2,7/2)$^+$	249.562	5/2$^-$	E1		1.77×10^{-3}	α(K)=0.001512 *22*; α(L)=0.000199 *3*; α(M)=4.29×10^{-5} *6* α(N)=9.83×10^{-6} *14*; α(O)=1.520×10^{-6} *22*; α(P)=1.011×10^{-7} *15*
[x]796.8 [a] *6*	0.70 *25*								
798.85 *10*	2.45 *9*	1014.76	5/2$^+$	215.977	7/2$^-$	E1		1.75×10^{-3}	α(K)=0.001499 *21*; α(L)=0.000198 *3*; α(M)=4.25×10^{-5} *6* α(N)=9.75×10^{-6} *14*; α(O)=1.506×10^{-6} *21*; α(P)=1.003×10^{-7} *14*
806.7 [d] *4*	0.29 *7*	990.36	(3/2$^+$)	183.413	5/2$^+$				I_γ: Values range from 0.24 *7* to 0.7 *3*.
812.1 *4*	0.47 *17*	1180.49	5/2$^+$	368.636	5/2$^-$				
816.00 [k] *4*	6.9 [k] *7*	857.611	3/2$^-$	41.549	5/2$^-$	E2+M1	1.36	0.00539	α(K)=0.00455 *7*; α(L)=0.000656 *10*; α(M)=0.0001427 *20* α(N)=3.27×10^{-5} *5*; α(O)=5.04×10^{-6} *7*; α(P)=3.22×10^{-7} *5* I_γ: From Iγ(doublet)=8.7 *5* and Iγ(component from 945 level) as given by 1982Al24. δ: Value is questionable since authors may not have been aware that the peak is a doublet.
816.00 [k] *4*	1.8 [k]	945.159	3/2$^+$	129.201	3/2$^-$	E1		1.68×10^{-3}	α(K)=0.001437 *21*; α(L)=0.000189 *3*; α(M)=4.07×10^{-5} *6* α(N)=9.34×10^{-6} *13*; α(O)=1.443×10^{-6} *21*; α(P)=9.62×10^{-8} *14*
819.2 *3*	0.40 *14*	1035.188	5/2$^+$	215.977	7/2$^-$				
821.40 *25*	1.18 *19*	821.217	(5/2$^+$)	0.0	3/2$^-$				
824.1 *3*	0.8 *3*	865.595	3/2$^+$	41.549	5/2$^-$				I_γ: Values range from 0.5 *2* to 1.5 *3*.
826.3 [l] *2*	2.1 *4*	955.47	5/2$^+$	129.201	3/2$^-$	E1		1.64×10^{-3}	α(K)=0.001403 *20*; α(L)=0.000185 *3*;

$^{153}_{64}Gd_{89}$-25

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[# h]	α[g]	Comments
									α(M)=3.97×10^{-5} *6* α(N)=9.10×10^{-6} *13*; α(O)=1.408×10^{-6} *20*; α(P)=9.39×10^{-8} *14*
827.4 *2*	4.1 *6*	937.419	5/2$^+$	109.742	(5/2)$^-$	E1		1.63×10^{-3}	α(K)=0.001399 *20*; α(L)=0.000184 *3*; α(M)=3.96×10^{-5} *6* α(N)=9.08×10^{-6} *13*; α(O)=1.404×10^{-6} *20*; α(P)=9.37×10^{-8} *14*
835.43 *3*	33.6 *11*	945.159	3/2$^+$	109.742	(5/2)$^-$	E1		1.60×10^{-3}	α(K)=0.001373 *20*; α(L)=0.000181 *3*; α(M)=3.88×10^{-5} *6* α(N)=8.91×10^{-6} *13*; α(O)=1.377×10^{-6} *20*; α(P)=9.19×10^{-8} *13*
842.35 *10*	0.99 *8*	937.419	5/2$^+$	95.124	(9/2)$^+$	E2		0.00398	α(K)=0.00334 *5*; α(L)=0.000502 *7*; α(M)=0.0001095 *16* α(N)=2.51×10^{-5} *4*; α(O)=3.81×10^{-6} *6*; α(P)=2.30×10^{-7} *4*
845.70 *3*	11.3 *5*	955.47	5/2$^+$	109.742	(5/2)$^-$	E1+M2	−0.04 *+27−20*	0.00159 *87*	α(K)=0.00136 *73*; α(L)=1.8×10^{-4} *11*; α(M)=3.9×10^{-5} *24* α(N)=8.9×10^{-6} *55*; α(O)=1.37×10^{-6} *86*; α(P)=9.2×10^{-8} *57*
[x]848.7[a] *5*	0.36 *20*								
852.00 *3*	8.8 *4*	1101.619	3/2$^+$	249.562	5/2$^-$	E1		1.54×10^{-3}	α(K)=0.001321 *19*; α(L)=0.0001737 *25*; α(M)=3.73×10^{-5} *6* α(N)=8.56×10^{-6} *12*; α(O)=1.325×10^{-6} *19*; α(P)=8.85×10^{-8} *13*
857.56 *3*	6.2 *3*	857.611	3/2$^-$	0.0	3/2$^-$	M1		0.00662	α(K)=0.00564 *8*; α(L)=0.000769 *11*; α(M)=0.0001661 *24* α(N)=3.82×10^{-5} *6*; α(O)=5.96×10^{-6} *9*; α(P)=4.09×10^{-7} *6*
860.88 *12*	2.33 *24*	990.36	(3/2$^+$)	129.201	3/2$^-$	E1		1.51×10^{-3}	α(K)=0.001295 *19*; α(L)=0.0001701 *24*; α(M)=3.66×10^{-5} *6* α(N)=8.39×10^{-6} *12*; α(O)=1.298×10^{-6} *19*; α(P)=8.68×10^{-8} *13*
865.50 *4*	6.6 *3*	865.595	3/2$^+$	0.0	3/2$^-$	E1		1.50×10^{-3}	α(K)=0.001281 *18*; α(L)=0.0001683 *24*; α(M)=3.62×10^{-5} *5* α(N)=8.30×10^{-6} *12*; α(O)=1.284×10^{-6} *18*; α(P)=8.59×10^{-8} *12*
869.1 *2*	0.82 *15*	1118.51	(3/2$^+$)	249.562	5/2$^-$				
871.2[d] *3*	0.70 *17*	1401.43	(3/2$^+$)	530.487	3/2$^-$	E1		1.48×10^{-3}	α(K)=0.001265 *18*; α(L)=0.0001662 *24*; α(M)=3.57×10^{-5} *5* α(N)=8.19×10^{-6} *12*; α(O)=1.268×10^{-6} *18*; α(P)=8.48×10^{-8} *12*

$^{153}_{64}Gd_{89}$-26

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
[x]875.8[a] 6	0.30 15								
[x]878.8[a] 6	0.35 20								
880.69 6	1.47 9	990.36	(3/2$^+$)	109.742	(5/2)$^-$				
882.45[jd] 10	1.45[j] 9	1066.36	3/2$^+$	183.413	5/2$^+$				Mult.: Assigned (E1), but γ is multiply placed and J^π's require M1,E2.
882.45[jf] 10	1.45[j] 9	1131.72	5/2$^+$	249.562	5/2$^-$	(E1)		1.44×10^{-3}	α(K)=0.001234 18; α(L)=0.0001620 23; α(M)=3.48×10^{-5} 5 α(N)=7.99×10^{-6} 12; α(O)=1.236×10^{-6} 18; α(P)=8.28×10^{-8} 12 Mult.: From α_K(exp), mult=E1,E2; from decay scheme mult=E2 is ruled out.
[x]883.6[a] 4	0.9 4								
885.68[jd] 6	1.04[j] 14	1014.76	5/2$^+$	129.201	3/2$^-$				α(K)=0.00122; α(L)=0.00016
885.68[jfe] 6	1.04[j] 14	1328.12	5/2$^+$	442.205	5/2$^+$				Mult.: Assigned E1, but γ is multiply placed and J^π's require M1,E2.
890.20 10	1.06 24	1180.49	5/2$^+$	290.299	(7/2$^+$)				I_γ: Values range from 0.5 4 to 1.3 1.
895.85 20	0.88 18	937.419	5/2$^+$	41.549	5/2$^-$	E1		1.40×10^{-3}	α(K)=0.001199 17; α(L)=0.0001573 22; α(M)=3.38×10^{-5} 5 α(N)=7.76×10^{-6} 11; α(O)=1.200×10^{-6} 17; α(P)=8.04×10^{-8} 12
[x]899.3[a] 6	0.30 15								
903.62 3	19.1 7	945.159	3/2$^+$	41.549	5/2$^-$	E1		1.38×10^{-3}	α(K)=0.001179 17; α(L)=0.0001547 22; α(M)=3.32×10^{-5} 5 α(N)=7.63×10^{-6} 11; α(O)=1.180×10^{-6} 17; α(P)=7.91×10^{-8} 11 I_γ: From Iγ(doublet)=20.4 12 and Iγ(component from 1272 level) as given by 1982Al24.
903.9[e]	1.3	1272.70	5/2$^+$	368.636	5/2$^-$				E_γ,I_γ: From 1982Al24.
905.93 6	14.4 5	1035.188	5/2$^+$	129.201	3/2$^-$	E1		1.37×10^{-3}	α(K)=0.001174 17; α(L)=0.0001539 22; α(M)=3.31×10^{-5} 5 α(N)=7.59×10^{-6} 11; α(O)=1.174×10^{-6} 17; α(P)=7.87×10^{-8} 11
912.3[d] 2	0.66 19	1131.72	5/2$^+$	219.37	(9/2$^-$)				Mult.: ce data imply (M1+E2), but ΔJ^π requires M2, so placement is questionable.
915.1[e] 3	0.40 8	1328.12	5/2$^+$	412.91	3/2$^+$				
916.5[a] 5	0.7 4	1131.72	5/2$^+$	215.977	7/2$^-$				
918.05 5	2.6 3	1101.619	3/2$^+$	183.413	5/2$^+$	M1(+E2)	−0.01 21	0.00562 14	α(K)=0.00479 12; α(L)=0.000651 15; α(M)=0.000141 3 α(N)=3.24×10^{-5} 8; α(O)=5.04×10^{-6} 12;

$^{153}_{64}Gd_{89}$-27

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
									α(P)=3.46×10^{-7} *9* I_γ: From Iγ(doublet)=3.3 *2* and Iγ(component from 1131 level) as given by 1982Al24.
925.46 *3*	3.83 *14*	1035.188	5/2$^+$	109.742	(5/2)$^-$	E1		1.31×10^{-3}	α(K)=0.001127 *16*; α(L)=0.0001476 *21*; α(M)=3.17×10^{-5} *5* α(N)=7.28×10^{-6} *11*; α(O)=1.127×10^{-6} *16*; α(P)=7.56×10^{-8} *11*
[x]929.8[a] *5*	0.40 *20*								
931.3[d] *3*	0.46 *24*	1180.49	5/2$^+$	249.562	5/2$^-$				Mult.: ce data imply (M1,E2) but ΔJ$^\pi$ requires E1.
[x]934.1[a] *6*	0.26 *20*								
935.7[ae] *5*	0.7 *4*	1118.51	(3/2$^+$)	183.413	5/2$^+$				
937.39[j] *4*	4.02[j] *20*	937.419	5/2$^+$	0.0	3/2$^-$	E1		1.28×10^{-3}	α(K)=0.001100 *16*; α(L)=0.0001440 *21*; α(M)=3.09×10^{-5} *5* α(N)=7.10×10^{-6} *10*; α(O)=1.099×10^{-6} *16*; α(P)=7.38×10^{-8} *11*
937.39[j] *4*	4.02[j] *20*	1066.36	3/2$^+$	129.201	3/2$^-$	E1		1.28×10^{-3}	α(K)=0.001100 *16*; α(L)=0.0001440 *21*; α(M)=3.09×10^{-5} *5* α(N)=7.10×10^{-6} *10*; α(O)=1.099×10^{-6} *16*; α(P)=7.38×10^{-8} *11*
945.23[jf] *3*	27.7[j] *9*	945.159	3/2$^+$	0.0	3/2$^-$	E1		1.26×10^{-3}	α(K)=0.001083 *16*; α(L)=0.0001417 *20*; α(M)=3.04×10^{-5} *5* α(N)=6.99×10^{-6} *10*; α(O)=1.082×10^{-6} *16*; α(P)=7.27×10^{-8} *11*
945.23[jd] *3*	27.7[j] *9*	1387.48		442.205	5/2$^+$	E1		1.26×10^{-3}	α(K)=0.001083 *16*; α(L)=0.0001417 *20*; α(M)=3.04×10^{-5} *5* α(N)=6.99×10^{-6} *10*; α(O)=1.082×10^{-6} *16*; α(P)=7.27×10^{-8} *11*
948.4[d] *2*	0.55 *15*	1452.39	(3/2,5/2)$^+$	504.04	5/2$^+$				
[x]951.6[a] *6*	0.5 *4*								
955.5 *2*	0.72 *15*	955.47	5/2$^+$	0.0	3/2$^-$	E1		1.24×10^{-3}	α(K)=0.001061 *15*; α(L)=0.0001388 *20*; α(M)=2.98×10^{-5} *5* α(N)=6.84×10^{-6} *10*; α(O)=1.059×10^{-6} *15*; α(P)=7.12×10^{-8} *10*
956.55 *6*	1.22 *15*	1066.36	3/2$^+$	109.742	(5/2)$^-$	E1		1.23×10^{-3}	α(K)=0.001059 *15*; α(L)=0.0001385 *20*; α(M)=2.97×10^{-5} *5* α(N)=6.83×10^{-6} *10*; α(O)=1.057×10^{-6} *15*; α(P)=7.11×10^{-8} *10*
958.0[ae] *6*	0.45 *20*	1328.12	5/2$^+$	368.636	5/2$^-$				
964.60[j] *10*	0.99[j] *8*	1180.49	5/2$^+$	215.977	7/2$^-$				
964.60[je] *10*	0.99[j] *8*	1401.43	(3/2$^+$)	436.333	1/2$^-$				
[x]967.2[a] *6*	0.46 *20*								
972.53 *4*	10.7 *3*	1101.619	3/2$^+$	129.201	3/2$^-$	E1		1.20×10^{-3}	α(K)=0.001026 *15*; α(L)=0.0001341 *19*; α(M)=2.88×10^{-5} *4* α(N)=6.61×10^{-6} *10*; α(O)=1.024×10^{-6} *15*; α(P)=6.89×10^{-8} *10*
979.60[jd] *15*	0.92[j] *8*	1199.02	(7/2,9/2)$^+$	219.37	(9/2$^-$)	E1		1.18×10^{-3}	α(K)=0.001012 *15*; α(L)=0.0001323 *19*; α(M)=2.84×10^{-5} *4* α(N)=6.52×10^{-6} *10*; α(O)=1.010×10^{-6} *15*; α(P)=6.80×10^{-8} *10*
979.60[jef] *15*	0.92[j] *8*	1422.69	(3/2,5/2)$^-$	442.205	5/2$^+$	E1		1.18×10^{-3}	α(K)=0.001012 *15*; α(L)=0.0001323 *19*; α(M)=2.84×10^{-5} *4*

$^{153}_{64}Gd_{89}$-28

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
									α(N)=6.52×10^{-6} *10*; α(O)=1.010×10^{-6} *15*; α(P)=6.80×10^{-8} *10*
982.9[jd] *1*	0.32[j] *7*	1199.02	(7/2,9/2)$^+$	215.977	7/2$^-$				Mult.: Assigned M1+E2, but γ is multiply placed and J^π's require E1.
982.9[jfe] *1*	0.32[j] *7*	1272.70	5/2$^+$	290.299	(7/2$^+$)	E2		0.00285	α(K)=0.00241 *4*; α(L)=0.000350 *5*; α(M)=7.60×10^{-5} *11* α(N)=1.743×10^{-5} *25*; α(O)=2.67×10^{-6} *4*; α(P)=1.667×10^{-7} *24*
990.3[jf] *2*	0.88[j] *20*	990.36	(3/2$^+$)	0.0	3/2$^-$				
990.3[jd] *2*	0.88[j] *20*	1426.56	(1/2,3/2)$^+$	436.333	1/2$^-$				
991.78 *4*	34.2 *13*	1101.619	3/2$^+$	109.742	(5/2)$^-$	E1		1.15×10^{-3}	α(K)=0.000989 *14*; α(L)=0.0001292 *18*; α(M)=2.77×10^{-5} *4* α(N)=6.37×10^{-6} *9*; α(O)=9.87×10^{-7} *14*; α(P)=6.65×10^{-8} *10*
997.10 *10*	0.98 *9*	1180.49	5/2$^+$	183.413	5/2$^+$	M1		0.00460	α(K)=0.00393 *6*; α(L)=0.000532 *8*; α(M)=0.0001149 *16* α(N)=2.65×10^{-5} *4*; α(O)=4.13×10^{-6} *6*; α(P)=2.84×10^{-7} *4*
1008.7[d] *2*	0.16 *5*	1118.51	(3/2$^+$)	109.742	(5/2)$^-$				
1012.15 *8*	0.94 *8*	1328.12	5/2$^+$	316.020	(3/2,5/2)$^+$				
1014.95 *8*	2.46 *8*	1014.76	5/2$^+$	0.0	3/2$^-$	E1		1.10×10^{-3}	α(K)=0.000948 *14*; α(L)=0.0001236 *18*; α(M)=2.65×10^{-5} *4* α(N)=6.09×10^{-6} *9*; α(O)=9.44×10^{-7} *14*; α(P)=6.37×10^{-8} *9*
[x]1016.8[a] *6*	0.6 *3*								
[x]1019.5[a] *6*	0.42 *20*								
1022.00 *8*	2.8 *3*	1131.72	5/2$^+$	109.742	(5/2)$^-$	E1		1.09×10^{-3}	α(K)=0.000935 *13*; α(L)=0.0001220 *17*; α(M)=2.62×10^{-5} *4* α(N)=6.01×10^{-6} *9*; α(O)=9.32×10^{-7} *13*; α(P)=6.29×10^{-8} *9*
1024.62[jf] *10*	0.36[j] *7*	1066.36	3/2$^+$	41.549	5/2$^-$	(E1)		1.09×10^{-3}	α(K)=0.000931 *13*; α(L)=0.0001214 *17*; α(M)=2.61×10^{-5} *4* α(N)=5.99×10^{-6} *9*; α(O)=9.28×10^{-7} *13*; α(P)=6.26×10^{-8} *9*
1024.62[jd] *10*	0.36[j] *7*	1118.51	(3/2$^+$)	93.331	7/2$^-$				Mult.: Assigned (E1), but γ is multiply placed and J^π's require M2 if γ goes to 93.320 level.
[x]1030.9[a] *6*	0.35 *20*								
1032.5 *6*	0.27 *8*	1401.43	(3/2$^+$)	368.636	5/2$^-$				
1035.4[ae] *4*	0.5 *3*	1035.188	5/2$^+$	0.0	3/2$^-$				
1036.69[l] *6*	1.3 *3*	1131.72	5/2$^+$	95.124	(9/2)$^+$	E2		0.00255	α(K)=0.00216 *3*; α(L)=0.000310 *5*;

$^{153}_{64}Gd_{89}$-29

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[g]	Comments
								α(M)=6.74×10^{-5} *10* α(N)=1.545×10^{-5} *22*; α(O)=2.37×10^{-6} *4*; α(P)=1.495×10^{-7} *21* Mult.: ce data imply M1,E2 but ΔJ$^\pi$ requires E2.
1044.2[&d] *5*	0.3 *1*	1044.60	(3/2,5/2,7/2)$^+$	0.0	3/2$^-$			
1051.48 *8*	1.31 *17*	1180.49	5/2$^+$	129.201	3/2$^-$	(E1)	1.03×10^{-3}	α(K)=0.000888 *13*; α(L)=0.0001157 *17*; α(M)=2.48×10^{-5} *4* α(N)=5.70×10^{-6} *8*; α(O)=8.84×10^{-7} *13*; α(P)=5.97×10^{-8} *9*
1054.7[d] *2*	0.87 *14*	1422.69	(3/2,5/2)$^-$	368.636	5/2$^-$			
1060.13 *6*	3.8 *4*	1101.619	3/2$^+$	41.549	5/2$^-$	E1	1.02×10^{-3}	α(K)=0.000874 *13*; α(L)=0.0001139 *16*; α(M)=2.44×10^{-5} *4* α(N)=5.61×10^{-6} *8*; α(O)=8.70×10^{-7} *13*; α(P)=5.88×10^{-8} *9*
[x]1061.8[a] *3*	1.27 *25*							
1066.65 *20*	1.26 *13*	1066.36	3/2$^+$	0.0	3/2$^-$			
[x]1068.7[a] *3*	1.2 *4*							
[x]1069.7 *6*	0.59 *9*							
1070.5 *4*	0.59 *9*	1180.49	5/2$^+$	109.742	(5/2)$^-$	E1	1.00×10^{-3}	α(K)=0.000859 *12*; α(L)=0.0001118 *16*; α(M)=2.40×10^{-5} *4* α(N)=5.51×10^{-6} *8*; α(O)=8.55×10^{-7} *12*; α(P)=5.78×10^{-8} *8*
1077.0 *3*	0.51 *17*	1118.51	(3/2$^+$)	41.549	5/2$^-$			
1078.40 *12*	1.86 *20*	1328.12	5/2$^+$	249.562	5/2$^-$	E1	9.88×10^{-4}	α(K)=0.000847 *12*; α(L)=0.0001103 *16*; α(M)=2.37×10^{-5} *4* α(N)=5.44×10^{-6} *8*; α(O)=8.43×10^{-7} *12*; α(P)=5.70×10^{-8} *8*
1085.60 *14*	0.53 *7*	1401.43	(3/2$^+$)	316.020	(3/2,5/2)$^+$	E2	0.00232	α(K)=0.00197 *3*; α(L)=0.000280 *4*; α(M)=6.08×10^{-5} *9* α(N)=1.394×10^{-5} *20*; α(O)=2.14×10^{-6} *3*; α(P)=1.362×10^{-7} *19*
1090.10 *12*	0.57 *25*	1131.72	5/2$^+$	41.549	5/2$^-$	E1	9.68×10^{-4}	α(K)=0.000831 *12*; α(L)=0.0001081 *16*; α(M)=2.32×10^{-5} *4* α(N)=5.33×10^{-6} *8*; α(O)=8.26×10^{-7} *12*; α(P)=5.59×10^{-8} *8*
1098.4[d] *3*	0.31 *10*	1401.43	(3/2$^+$)	303.577	5/2$^+$			
1101.65 *3*	10.38 *18*	1101.619	3/2$^+$	0.0	3/2$^-$	E1	9.52×10^{-4}	α(K)=0.000815 *12*; α(L)=0.0001060 *15*; α(M)=2.28×10^{-5} *4* α(N)=5.22×10^{-6} *8*; α(O)=8.10×10^{-7} *12*; α(P)=5.49×10^{-8} *8*; α(IPF)=1.98×10^{-6} *3*
1105.80 *15*	1.81 *12*	1199.02	(7/2,9/2)$^+$	93.331	7/2$^-$			
1107.7[ael] *5*	0.37 *20*	1422.69	(3/2,5/2)$^-$	315.334	1/2$^-$			
1111.6 *3*	0.46 *6*	1328.12	5/2$^+$	215.977	7/2$^-$			

$^{153}_{64}Gd_{89}$-30

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[#h]	α[g]	Comments
1118.50[j] *10*	1.40[j] *24*	1118.51	(3/2$^+$)	0.0	3/2$^-$	E1		9.27×10^{-4}	α(K)=0.000793 *12*; α(L)=0.0001031 *15*; α(M)=2.21×10^{-5} *3* α(N)=5.08×10^{-6} *8*; α(O)=7.88×10^{-7} *11*; α(P)=5.34×10^{-8} *8*; α(IPF)=3.50×10^{-6} *5*
1118.50[je] *10*	1.40[j] *24*	1422.69	(3/2,5/2)$^-$	303.577	5/2$^+$	E1		9.27×10^{-4}	α(K)=0.000793 *12*; α(L)=0.0001031 *15*; α(M)=2.21×10^{-5} *3* α(N)=5.08×10^{-6} *8*; α(O)=7.88×10^{-7} *11*; α(P)=5.34×10^{-8} *8*; α(IPF)=3.50×10^{-6} *5*
1132.0 *3*	0.12 *4*	1131.72	5/2$^+$	0.0	3/2$^-$				
[x]1136.0[a] *6*	0.28 *14*								
1138.90 *15*	2.17 *12*	1180.49	5/2$^+$	41.549	5/2$^-$	E1		9.01×10^{-4}	α(K)=0.000767 *11*; α(L)=9.97×10^{-5} *14*; α(M)=2.14×10^{-5} *3* α(N)=4.91×10^{-6} *7*; α(O)=7.62×10^{-7} *11*; α(P)=5.17×10^{-8} *8*; α(IPF)=6.44×10^{-6} *10*
1144.30[je] *20*	0.45[j] *5*	1272.70	5/2$^+$	129.201	3/2$^-$				
1144.30[j] *20*	0.45[j] *5*	1328.12	5/2$^+$	183.413	5/2$^+$				
[x]1153.25[a] *25*	0.23 *4*								E_γ: 1974Pe16 has doublet with Eγ=1151.6 *8* and 1154.7 *5*.
1157.7 *1*	0.20 *4*	1199.02	(7/2,9/2)$^+$	41.549	5/2$^-$				
1173.24[ae] *22*	0.34 *10*	1422.69	(3/2,5/2)$^-$	249.562	5/2$^-$				
1179.2	0.4	1272.70	5/2$^+$	93.331	7/2$^-$				E_γ,I_γ: From 1982Al24.
1179.64[e] *13*	0.43 *10*	1180.49	5/2$^+$	0.0	3/2$^-$	E1		8.56×10^{-4}	α(K)=0.000720 *10*; α(L)=9.35×10^{-5} *13*; α(M)=2.01×10^{-5} *3* α(N)=4.60×10^{-6} *7*; α(O)=7.15×10^{-7} *10*; α(P)=4.85×10^{-8} *7*; α(IPF)=1.706×10^{-5} *25* I_γ: From Iγ(doublet)=0.83 *10* and Iγ(component from 1272 level) as given by 1982Al24.
1199.06[j] *5*	1.83[j] *7*	1328.12	5/2$^+$	129.201	3/2$^-$	E1(+M2)	0.08 *8*	0.00088 *12*	α(K)=0.00073 *10*; α(L)=9.6×10^{-5} *15*; α(M)=2.1×10^{-5} *4* α(N)=4.7×10^{-6} *8*; α(O)=7.3×10^{-7} *12*; α(P)=5.0×10^{-8} *8*; α(IPF)=2.42×10^{-5} *6* I_γ: From Iγ(doublet)=2.23 *7* and Iγ(component from 1199 level) as given by 1982Al24.
1199.2[l]	0.4	1199.02	(7/2,9/2)$^+$	0.0	3/2$^-$				E_γ,I_γ: From 1982Al24.
1203.0[d] *3*	0.17 *3*	1452.39	(3/2,5/2)$^+$	249.562	5/2$^-$	E1		8.36×10^{-4}	α(K)=0.000696 *10*; α(L)=9.02×10^{-5} *13*; α(M)=1.93×10^{-5} *3* α(N)=4.44×10^{-6} *7*; α(O)=6.90×10^{-7} *10*; α(P)=4.69×10^{-8} *7*; α(IPF)=2.60×10^{-5} *4*
1210.2[d] *4*	0.18 *3*	1426.56	(1/2,3/2)$^+$	215.977	7/2$^-$				Mult.: Assigned M1, but J^π's require E1.
[x]1212.8[a] *6*	0.14 *7*								
1218.45 *8*	1.14 *7*	1328.12	5/2$^+$	109.742	(5)/2$^-$	E1+M2	0.12 *12*	9.1×10^{-4} *25*	α(K)=7.5×10^{-4} *21*; α(L)=9.9×10^{-5} *30*;

$^{153}_{64}Gd_{89}$-31

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ[†]	I_γ[‡ i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[# h]	α[g]	$I_{(\gamma+ce)}$[i]	Comments
										α(M)=2.12×10^{-5} *65* α(N)=4.9×10^{-6} *15*; α(O)=7.6×10^{-7} *24*; α(P)=5.1×10^{-8} *16*; α(IPF)=3.23×10^{-5} *14*
1231.05 *5*	1.46 *9*	1272.70	5/2$^+$	41.549	5/2$^-$	(E1)		8.16×10^{-4}		α(K)=0.000668 *10*; α(L)=8.65×10^{-5} *13*; α(M)=1.86×10^{-5} *3* α(N)=4.26×10^{-6} *6*; α(O)=6.62×10^{-7} *10*; α(P)=4.50×10^{-8} *7*; α(IPF)=3.84×10^{-5} *6*
1233.7[ae] *8*	0.24 *12*	1328.12	5/2$^+$	95.124	(9/2)$^+$					
1272.50[k] *8*	0.85[k]	1272.70	5/2$^+$	0.0	3/2$^-$	E1		7.92×10^{-4}		α(K)=0.000630 *9*; α(L)=8.15×10^{-5} *12*; α(M)=1.748×10^{-5} *25* α(N)=4.01×10^{-6} *6*; α(O)=6.23×10^{-7} *9*; α(P)=4.25×10^{-8} *6*; α(IPF)=5.82×10^{-5} *9* I_γ: From Iγ(doublet)=1.38 *11* and Iγ(component from 1401 level) as given by 1982Al24.
1272.50[k] *8*	0.5[k]	1401.43	(3/2$^+$)	129.201	3/2$^-$					I_γ: From 1982Al24.
1291.5[&d] *3*	0.2 *1*	1401.43	(3/2$^+$)	109.742	(5/2)$^-$					
1294.5[d] *3*	0.46 *4*	1387.48		93.331	7/2$^-$	E1		7.81×10^{-4}		α(K)=0.000611 *9*; α(L)=7.90×10^{-5} *11*; α(M)=1.695×10^{-5} *24* α(N)=3.89×10^{-6} *6*; α(O)=6.05×10^{-7} *9*; α(P)=4.12×10^{-8} *6*; α(IPF)=6.93×10^{-5} *10*
[x]1299.9[a] *4*	0.18 *5*									
[x]1314.1[a] *3*	0.09 *4*									
1322.8[d] *3*	0.37 *5*	1452.39	(3/2,5/2)$^+$	129.201	3/2$^-$	E1		7.70×10^{-4}		α(K)=0.000588 *9*; α(L)=7.60×10^{-5} *11*; α(M)=1.631×10^{-5} *23* α(N)=3.75×10^{-6} *6*; α(O)=5.82×10^{-7} *9*; α(P)=3.97×10^{-8} *6*; α(IPF)=8.48×10^{-5} *12*
1328.7[d] *4*	0.07 *3*	1328.12	5/2$^+$	0.0	3/2$^-$					
[x]1332.90[a] *20*	0.12 *5*									
1342.8[d] *3*	0.137 *17*	1452.39	(3/2,5/2)$^+$	109.742	(5/2)$^-$	E1		7.64×10^{-4}		α(K)=0.000573 *8*; α(L)=7.40×10^{-5} *11*; α(M)=1.588×10^{-5} *23* α(N)=3.65×10^{-6} *6*; α(O)=5.67×10^{-7} *8*; α(P)=3.87×10^{-8} *6*; α(IPF)=9.67×10^{-5} *14*
1347.1[d] *4*	0.15 *5*	1387.48		41.549	5/2$^-$					
[x]1350.6[a] *3*	0.105 *15*									
1359.76 *15*	0.81 *6*	1401.43	(3/2$^+$)	41.549	5/2$^-$	E1		7.60×10^{-4}		α(K)=0.000561 *8*; α(L)=7.24×10^{-5} *11*; α(M)=1.553×10^{-5} *22* α(N)=3.57×10^{-6} *5*; α(O)=5.54×10^{-7} *8*; α(P)=3.78×10^{-8} *6*; α(IPF)=0.0001073 *15*
1381.6 *2*	0.069 *21*	1422.69	(3/2,5/2)$^-$	41.549	5/2$^-$					

$^{153}_{64}Gd_{89}$-32

^{153}Tb ε decay (continued)

γ(^{153}Gd) (continued)

E_γ [†]	I_γ [‡] [i]	E_i(level)	J_i^π	E_f	J_f^π	$I_{(\gamma+ce)}$ [i]	Comments
1401.5 *2*	0.108 *22*	1401.43	(3/2$^+$)	0.0	3/2$^-$		
[x] 1408.1 [c] *8*							
1421.9 [e] *10*	0.4	1422.69	(3/2,5/2)$^-$	0.0	3/2$^-$	0.4	$I_{(\gamma+ce)}$: From 1982Al24.
1426.6 [d] *3*	0.12 *5*	1426.56	(1/2,3/2)$^+$	0.0	3/2$^-$		
[x] 1496.0 [b] *8*	0.06 *3*						
[x] 1509.6 [c] *12*							

[†] From evaluator's consideration of the values from 1991Gr21, 1975Vy01, 1974Tu01, and 1974Pe16. γ's are reported in at least two of these references, unless otherwise noted. For more precise values for many of these γ rays, see the ^{152}Gd(n,γ) data or the ^{153}Gd Adopted γ radiations.

[‡] From weighted average of values from 1991Gr21, 1975Vy01, and 1974Pe16 using the rules of the Limitation of Relative Statistical Weight method for adjustment of the input and output uncertainties.

[#] From ^{153}Gd Adopted γ radiations and based on measured angular distributions from ^{153}Tb ε decay (1983Pr07) and ^{152}Gd(n,γ) data.

[@] From ^{153}Gd Adopted γ radiations and based on ^{152}Gd(n,γ) data and ^{153}Tb ε decay from 1975Vy01 with relative Iγ and Ice(K) normalized so that α_K(212 γ) = 0.034 (E1,theory). Values quoted by 1982Al24 are based on Iγ of those authors and Ice(K) of 1975Vy01.

[&] Only reported by 1991Gr21.

[a] Only reported by 1975Vy01.

[b] Only reported by 1974Pe16.

[c] Only reported by 1974Tu01.

[d] This placement from 1991Gr21 only.

[e] This placement omitted in 1991Gr21.

[f] The second placement of this γ is from 1991Gr21 only.

[g] Additional information 2.

[h] If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.

[i] For absolute intensity per 100 decays, multiply by 0.0285 *13*.

[j] Multiply placed with undivided intensity.

[k] Multiply placed with intensity suitably divided.

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

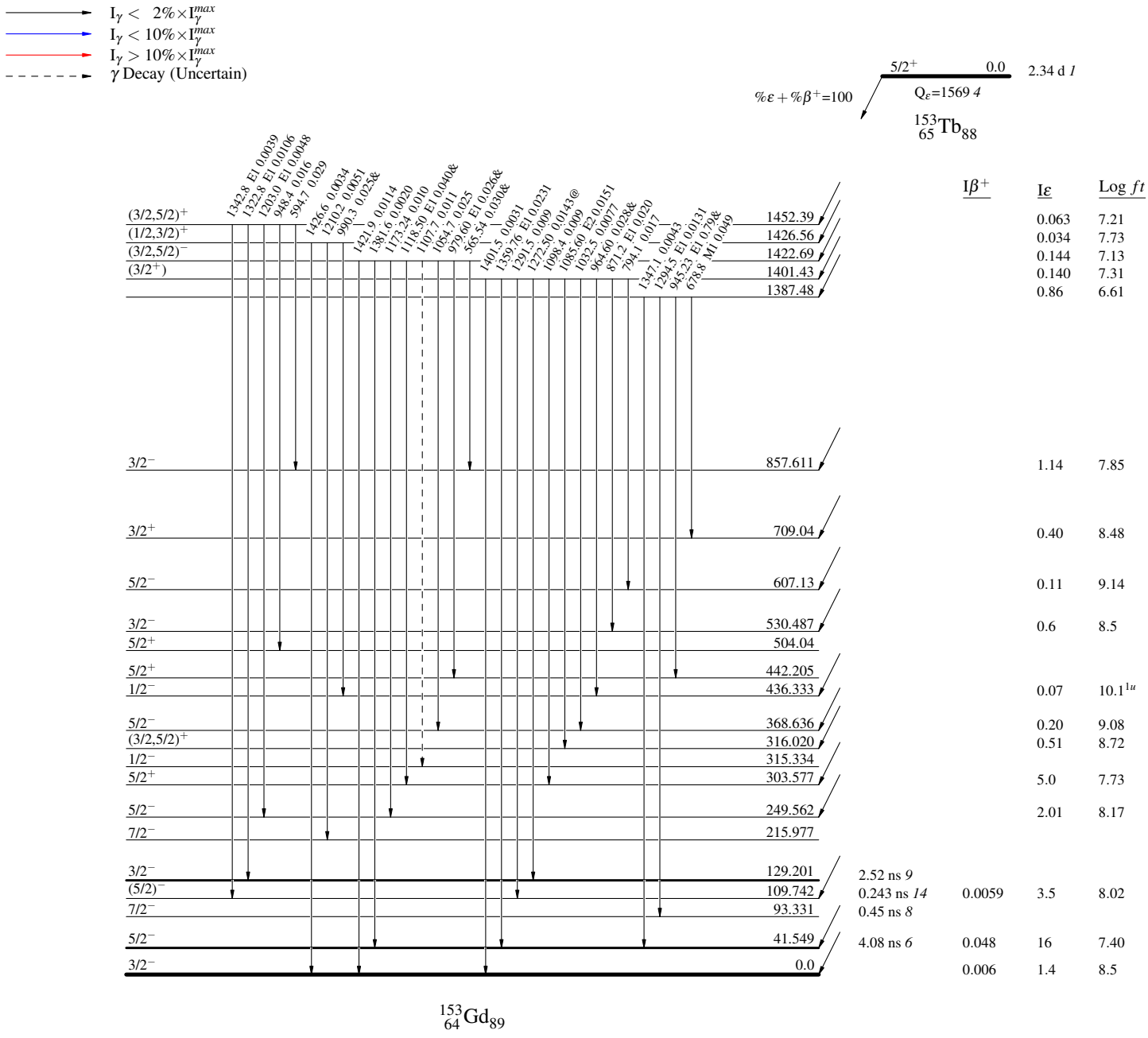
[x] γ ray not placed in level scheme.

$^{153}_{64}Gd_{89}$-33

^{153}Tb ε decay

Decay Scheme

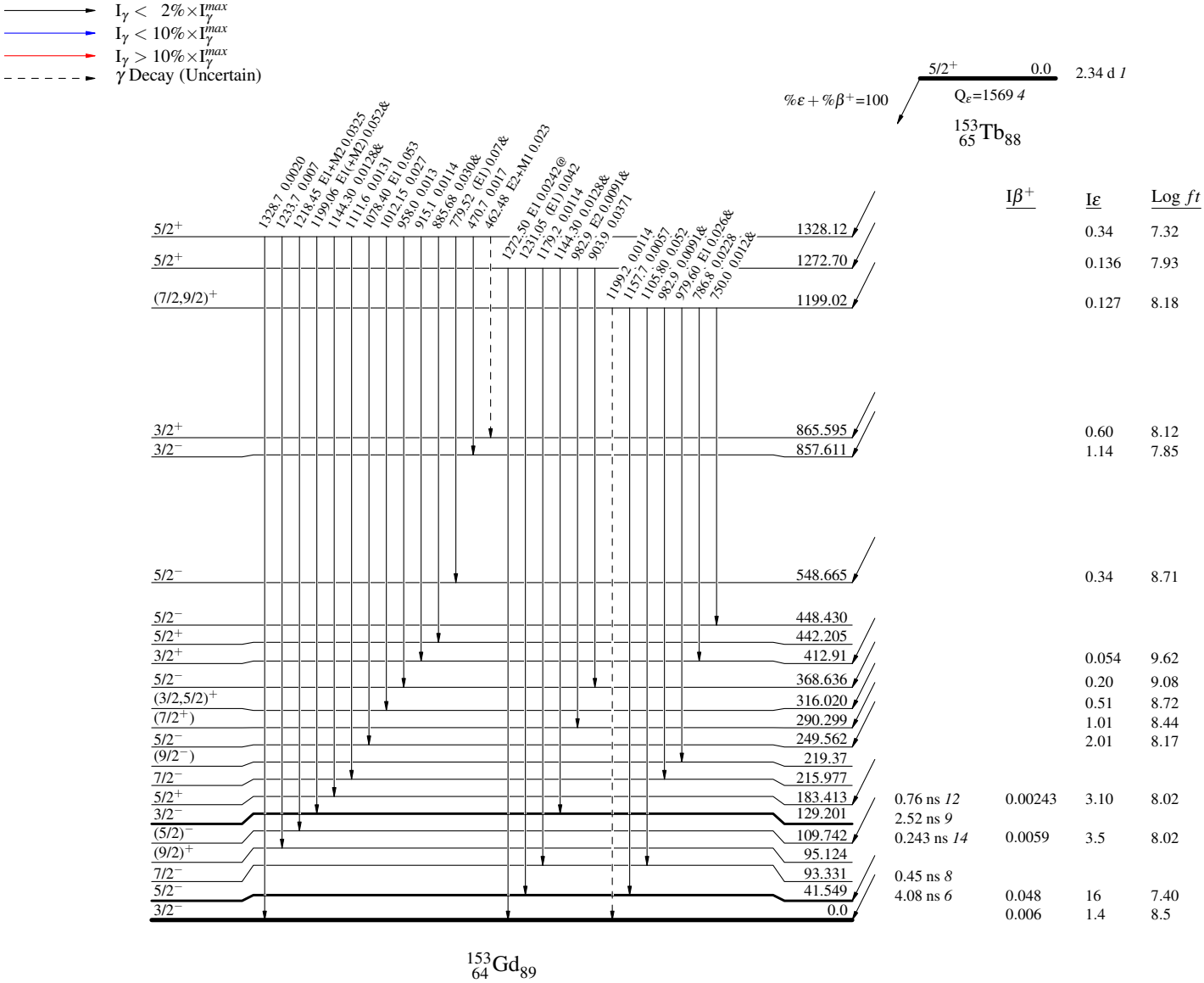
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{153}Tb ε decay

Decay Scheme (continued)

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



	Iβ+	Iε	Log *ft*
1328.12		0.34	7.32
1272.70		0.136	7.93
1199.02		0.127	8.18
865.595		0.60	8.12
857.611		1.14	7.85
548.665		0.34	8.71
448.430			
442.205			
412.91		0.054	9.62
368.636		0.20	9.08
316.020		0.51	8.72
290.299		1.01	8.44
249.562		2.01	8.17
219.37			
215.977			
183.413	0.00243	3.10	8.02
129.201 (0.76 ns *12*; 2.52 ns *9*)			
109.742 (0.243 ns *14*)	0.0059	3.5	8.02
95.124			
93.331 (0.45 ns *8*)			
41.549 (4.08 ns *6*)	0.048	16	7.40
0.0	0.006	1.4	8.5

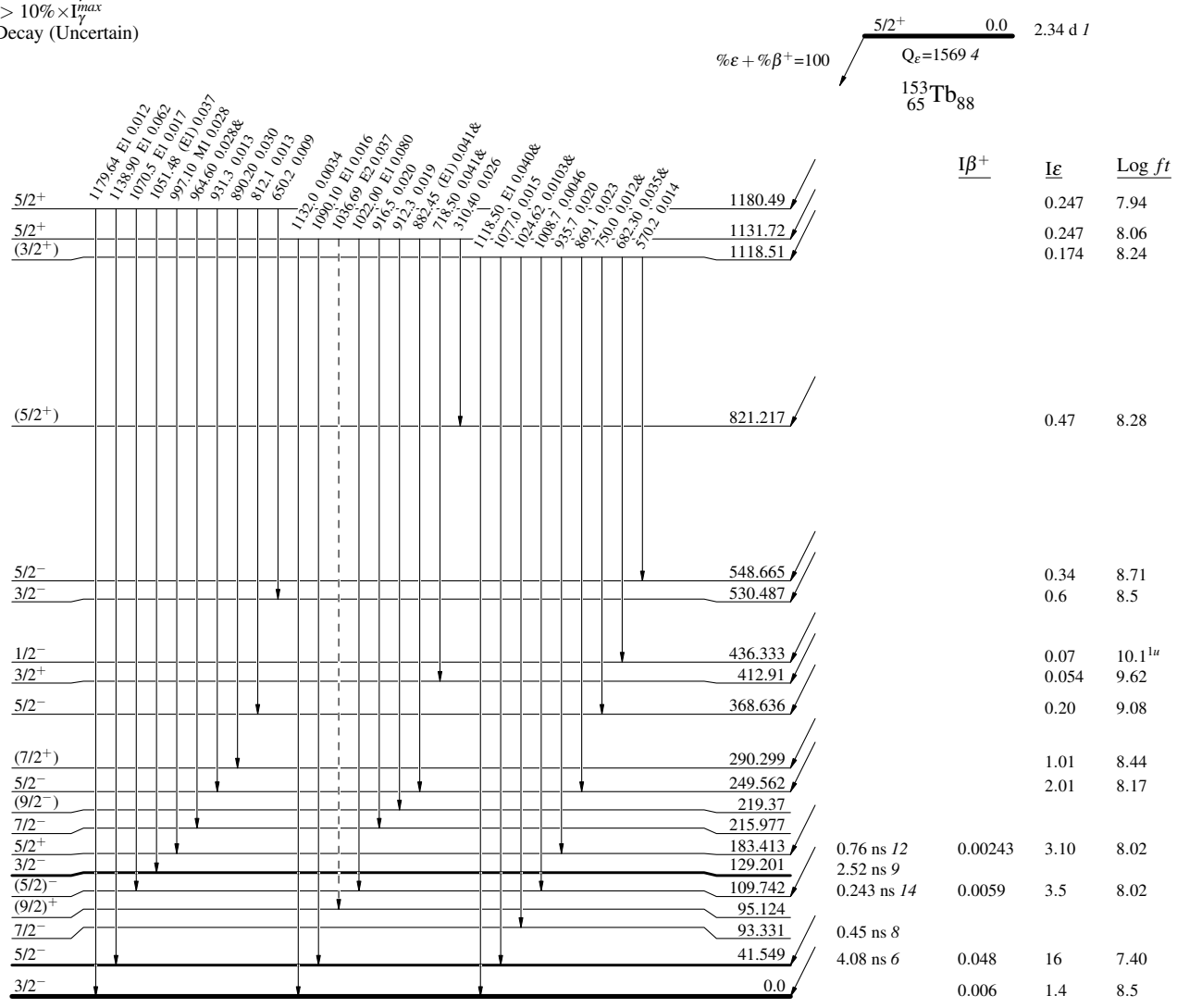
$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

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

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



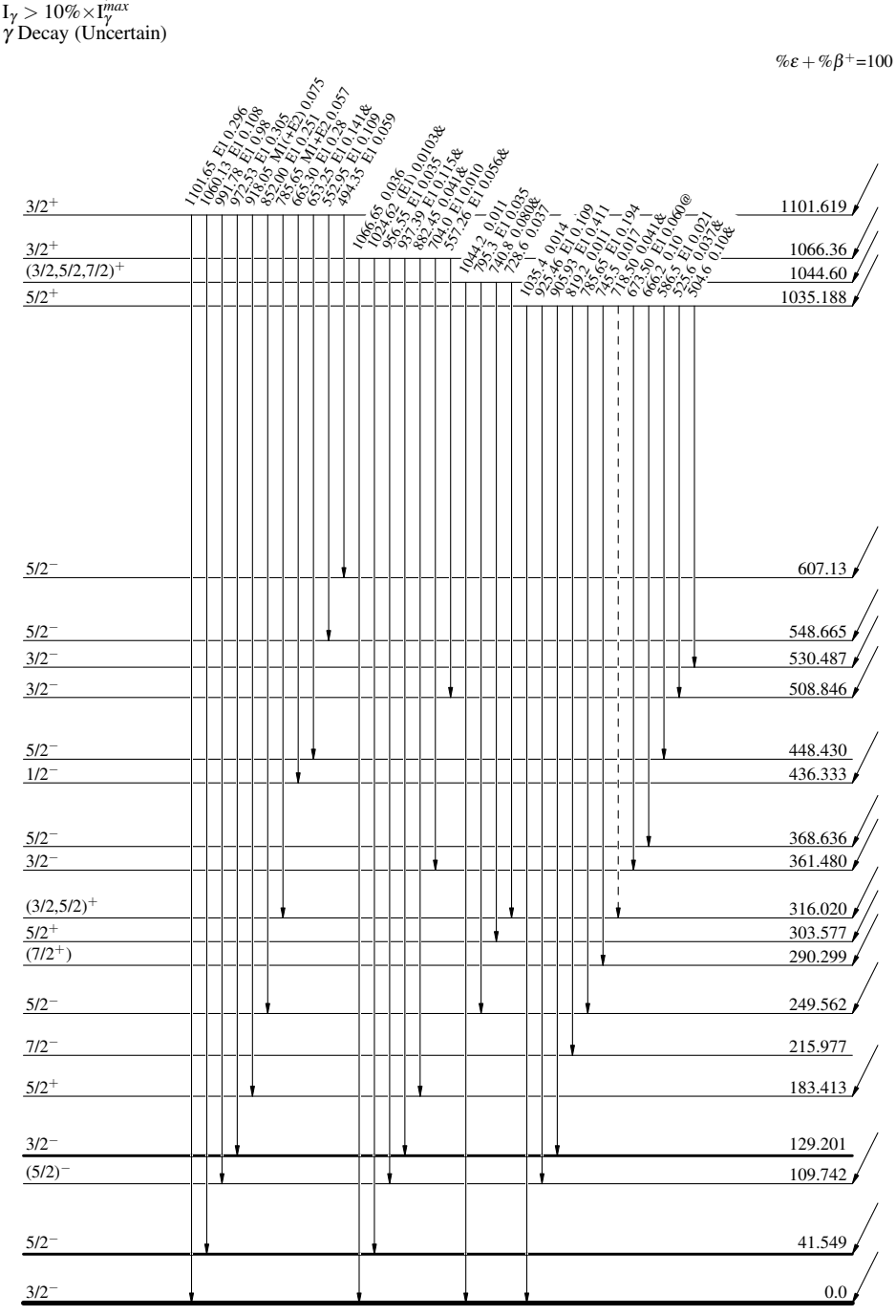
	Iβ+	Iε	Log ft
1180.49		0.247	7.94
1131.72		0.247	8.06
1118.51		0.174	8.24
821.217		0.47	8.28
548.665		0.34	8.71
530.487		0.6	8.5
436.333		0.07	10.1[1u]
412.91		0.054	9.62
368.636		0.20	9.08
290.299		1.01	8.44
249.562		2.01	8.17
219.37			
215.977			
183.413	0.00243	3.10	8.02
129.201			
109.742	0.0059	3.5	8.02
95.124			
93.331			
41.549	0.048	16	7.40
0.0	0.006	1.4	8.5

^{153}Tb ε decay

Decay Scheme (continued)

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

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
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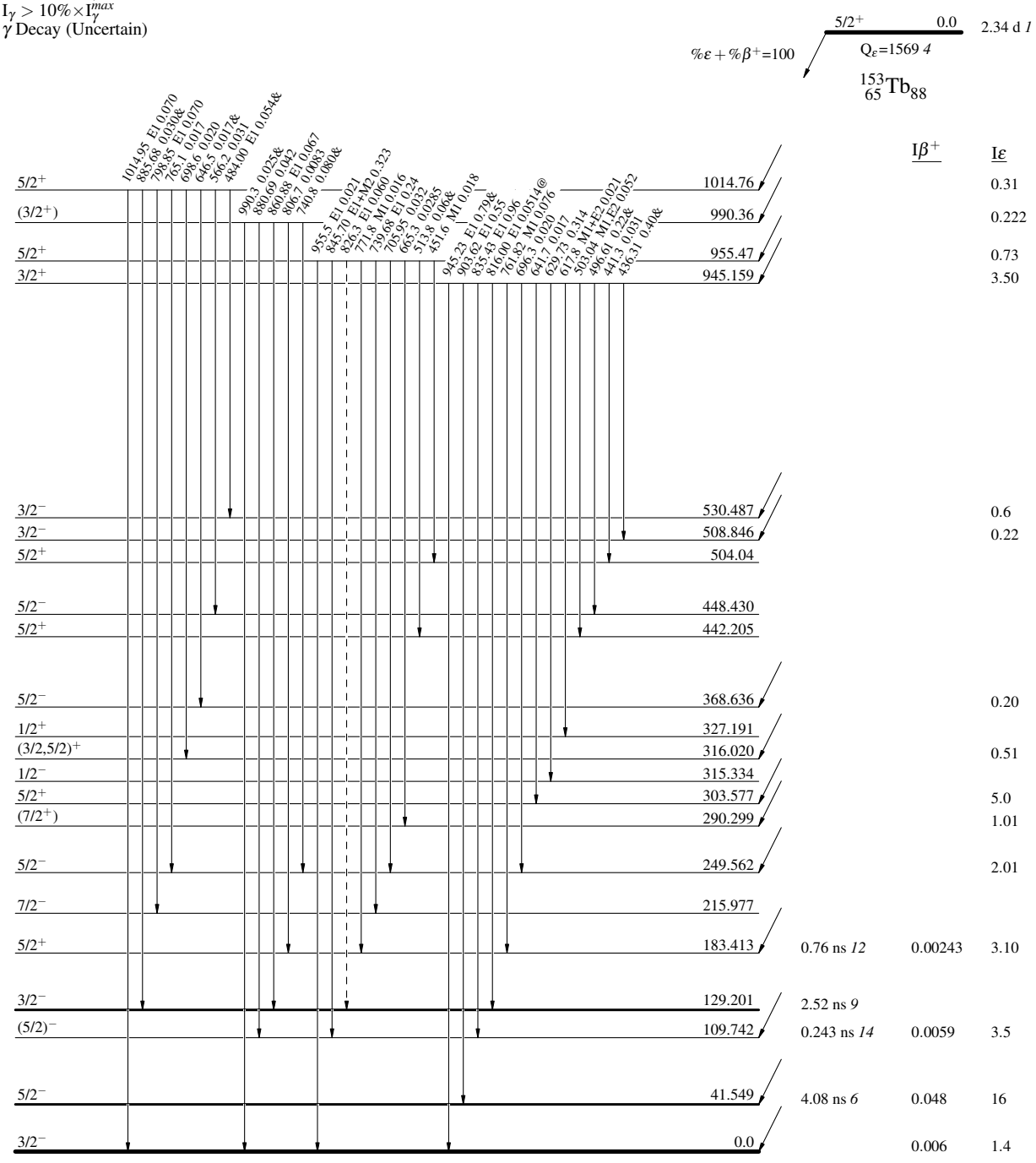
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)

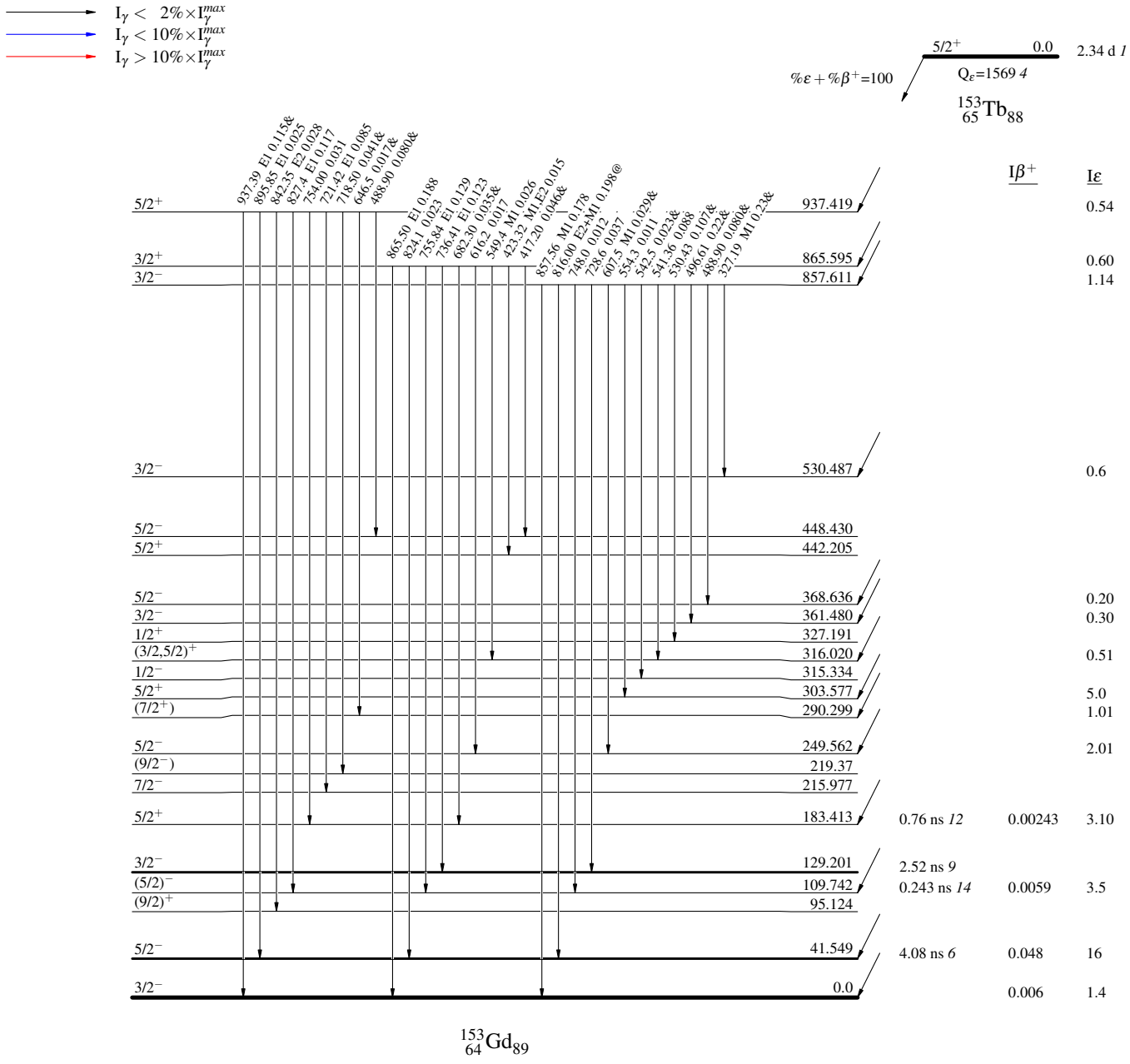


$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

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



^{153}Tb ε decay

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
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Legend
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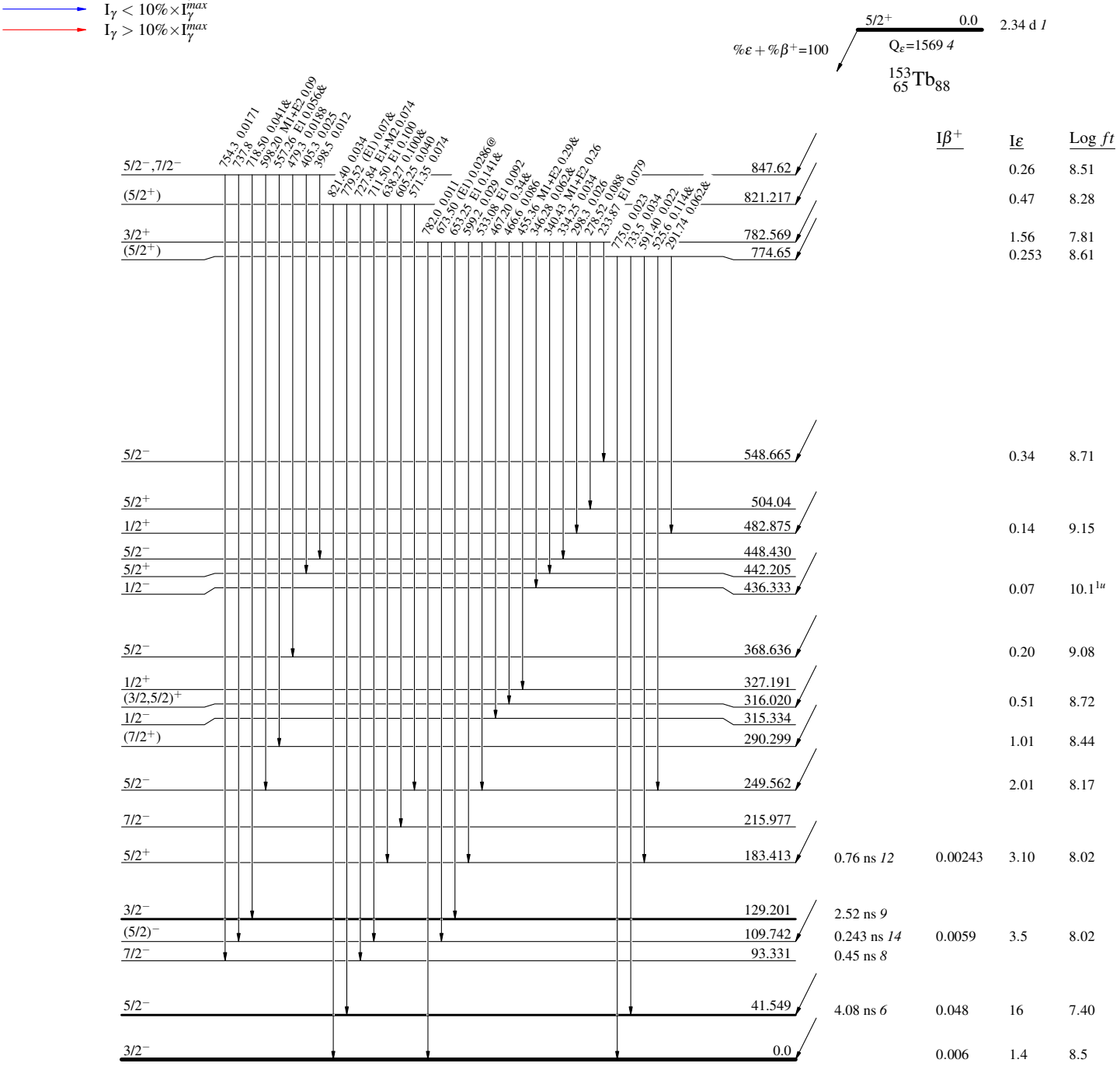
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
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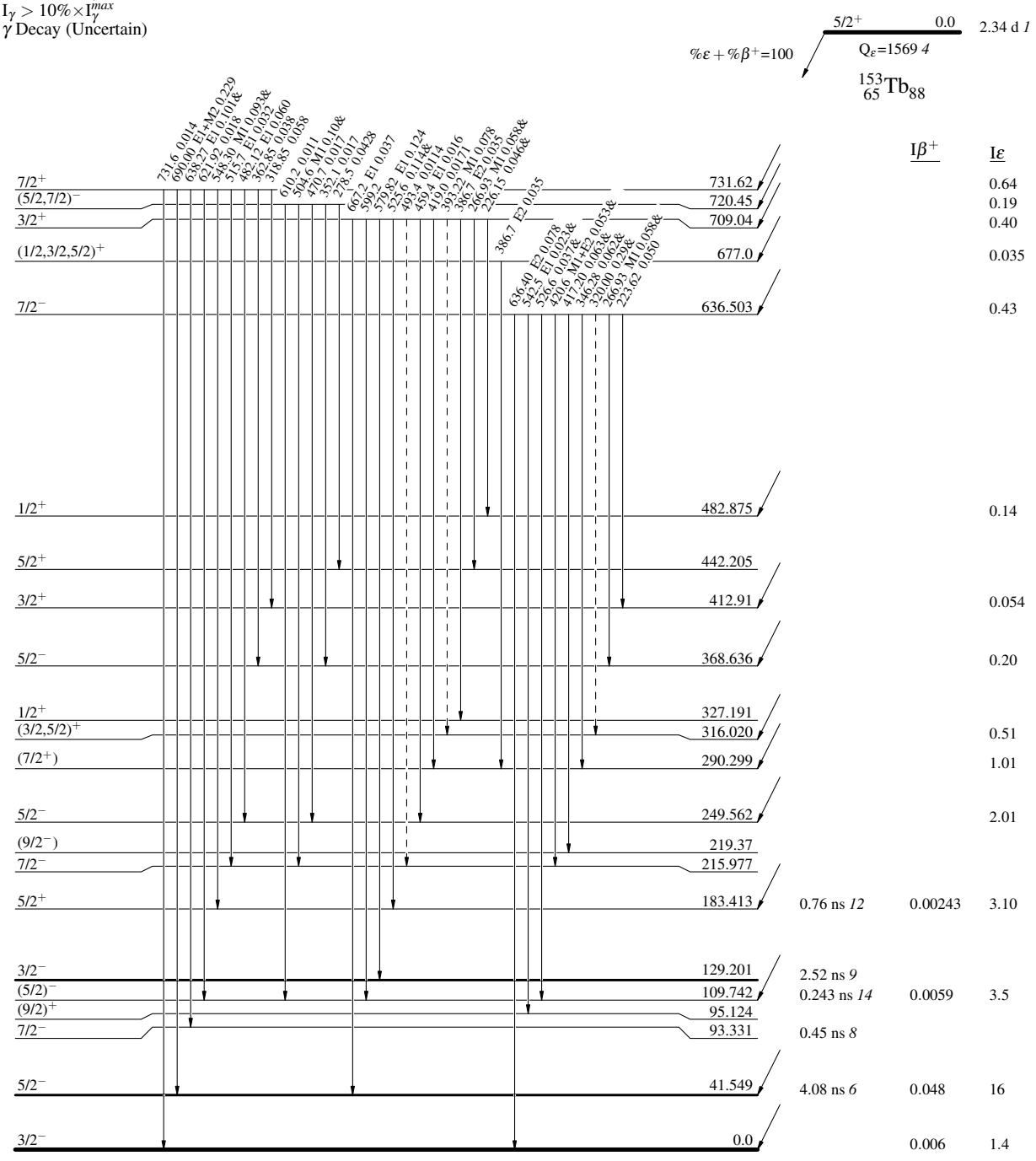
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
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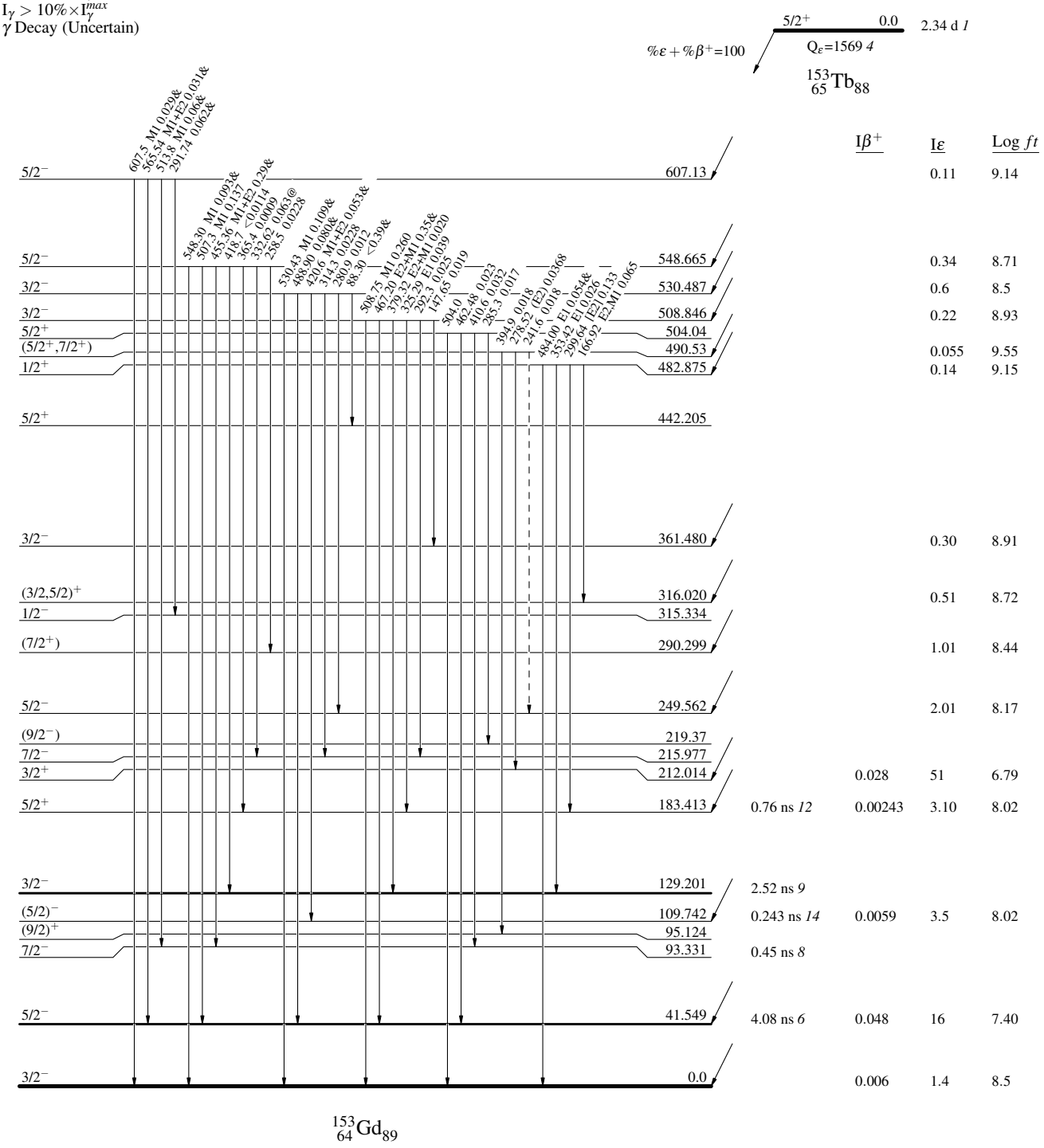
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
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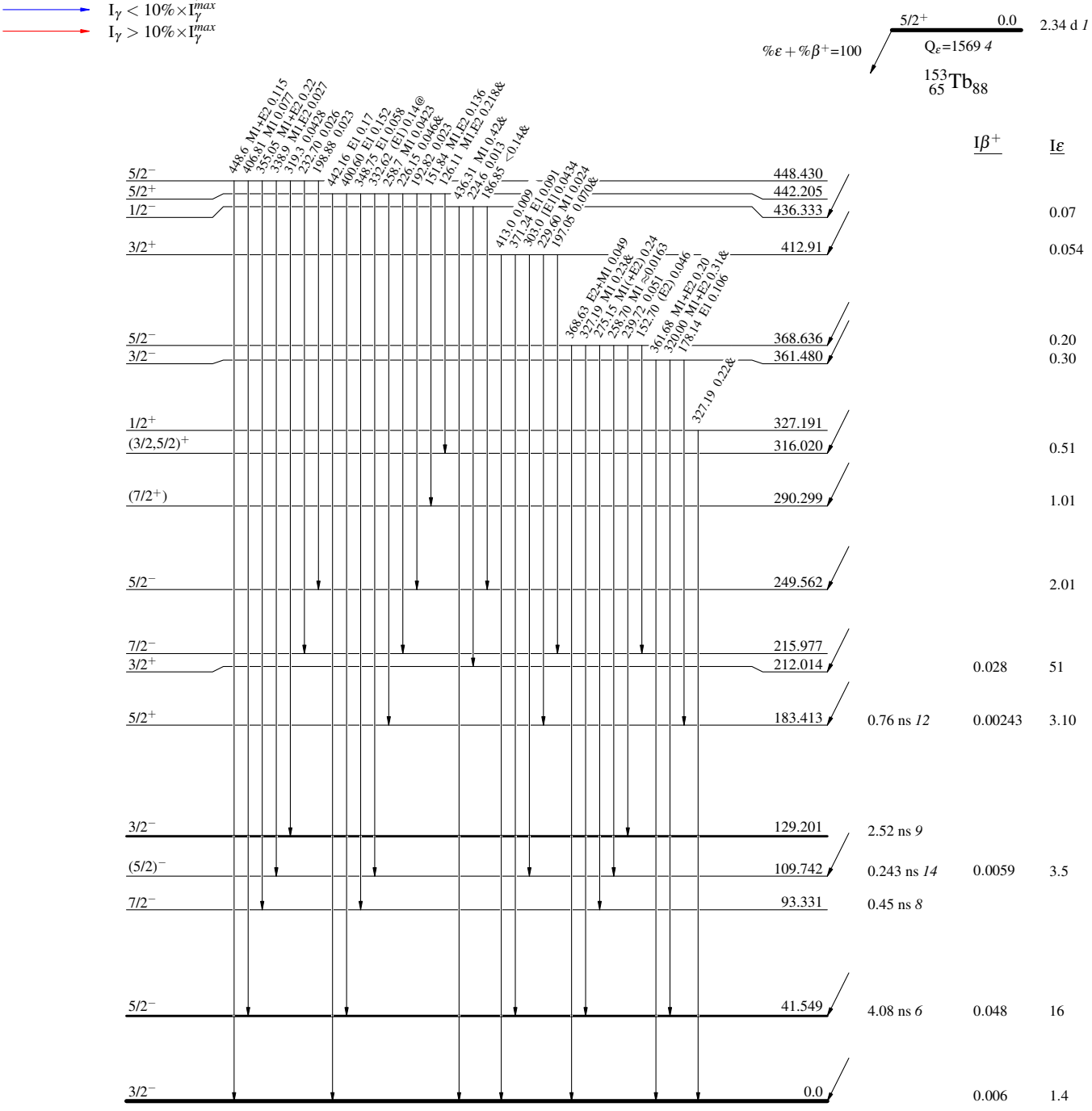
$I_\gamma > 10\% \times I_\gamma^{max}$

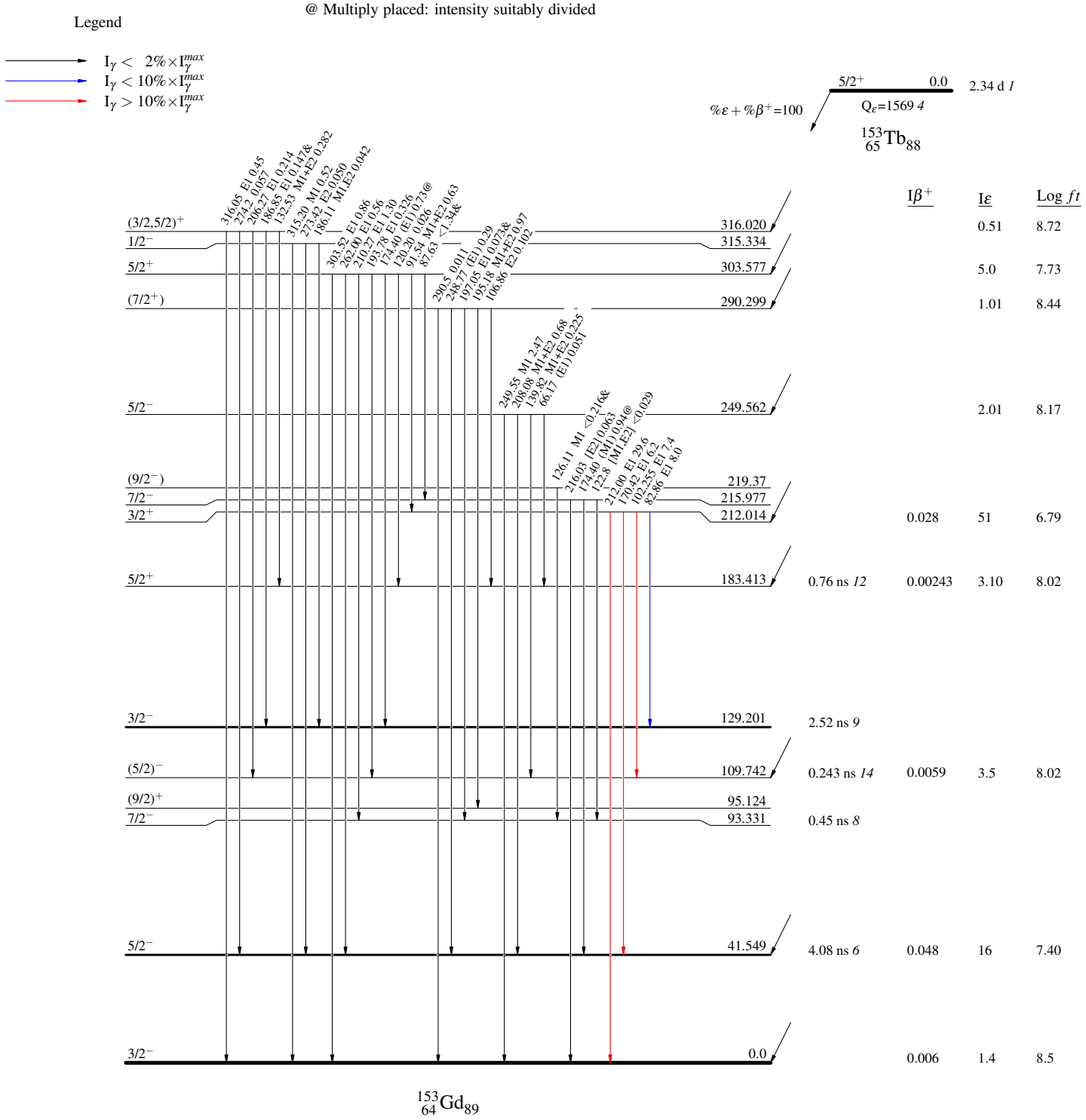


$^{153}_{64}Gd_{89}$

^{153}Tb ε decay

Decay Scheme (continued)

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



^{153}Tb ε decay

Decay Scheme (continued)

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