^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni	NDS 114, 435 (2013)	1-Apr-2013

Parent: ^{150}Tb: E=0; J$^\pi$=(2$^-$); T$_{1/2}$=3.48 h *16*; Q(ε)=4658 *8*; %ε+%β^+ decay=100.0

The 3.48-h ^{150}Tb was produced by ^{151}Eu(^{3}He,4n) reaction at 35 MeV; the decay was studied by γ ray and ce spectroscopy using Ge(Li) and cooled Si(Li) detectors. α decay scheme was proposed containing all but 35 of 256 γ rays assigned to ^{150}Gd. Criteria for placing γ rays in the scheme are given in detail in 1977Ha31.

Decay scheme is that of 1987HeZH which is based on that of 1977Ha31.

Others: 1976Ba18, 1973Vy01, 1973Vy02.

^{150}Gd Levels

Levels with question marks were considered to be tentative by the authors.

E(level)	J$^\pi$†	E(level)	J$^\pi$†	E(level)	J$^\pi$†	E(level)	J$^\pi$†
0	0$^+$	2426.20 *3*	1$^-$,2$^+$	3269.31? *10*		4235.2? *6*	(1$^-$,2$^+$)
638.047 *14*	2$^+$	2434.35 *9*		3298.34 *22*		4246.2? *3*	(1,2$^+$)
1134.304 *17*	3$^-$	2521.57 *6*	(2$^+$,3,4$^+$)	3329.33 *15*		4258.0 *3*	(1$^-$,2$^+$)
1207.139 *19*	0$^+$	2558.51 *20*	1,2$^+$	3344.68 *6*	(2$^+$)	4264.6 *3*	2$^+$
1288.42 *3*	4$^+$	2564.97 *12*	(1$^-$,2$^-$,3$^-$)	3375.73 *13*		4283.1? *10*	(1,2$^+$)
1430.471 *18*	(2)$^+$	2593.9 *7*		3378.11 *11*		4289.4? *3*	(1,2$^+$)
1518.368 *21*	2$^+$	2628.00? *8*		3389.2 *4*		4296.7 *10*	
1592.440 *23*	1	2654.40 *7*		3461.7 *4*	2$^+$	4303.2 *3*	
1699.915 *24*	5$^-$	2678.46 *12*	(1,2$^+$)	3510.72 *16*	(1$^-$,2$^+$)	4314.0 *3*	1,2$^+$
1814.14 *6*	3$^-$	2686.88 *4*	1$^-$,2,3	3522.4 *6*		4322.0 *3*	2$^+$
1947.37 *3*	2$^-$,3$^-$,4$^-$	2754.59 *5*	2$^+$,3,4	3631.4 *3*		4343.9 *3*	(1,2$^+$)
1955.373 *22*	2$^+$	2786.49 *5*	1$^-$,2$^+$	3657.36 *19*		4378.6? *6*	(1,2$^+$)
1970.00 *10*		2827.82 *7*		3712.41 *21*		4405.3 *3*	(1,2$^+$)
1987.93 *3*	2$^+$,3$^+$,4$^+$	2845.42 *5*	1,2$^+$	3726.63 *15*		4435.2 *6*	
2080.61 *9*	(2$^+$,3$^+$,4$^+$)	2868.28 *9*		3772.04 *19*		4445.9 *3*	1,2$^+$
2083.97 *3*	2$^-$,3$^-$	2956.20 *4*		3828.4? *3*	(1,2$^+$)	4462.3 *8*	
2091.625 *24*	2$^+$	2984.95 *10*	1,2$^+$	3840.05 *17*		4492.8 *7*	
2157.5 *7*	6$^+$	3024.7 *3*		3963.64 *23*		4499.8 *8*	
2179.909 *21*	2$^+$	3035.64 *5*	(1$^-$,2$^+$)	4021.2? *3*	(1,2$^+$)	4522.8? *6*	
2209.54 *3*	2$^-$,3$^-$	3042.61 *24*		4111.07? *25*	1$^-$,2$^+$	4529.4? *3*	(1,2$^+$)
2262.22 *4*		3083.77? *17*		4143.8? *3*	(1$^-$,2$^+$)	4545.6 *6*	
2326.31 *4*		3118.76 *8*		4151.0 *4*		4557.2 *10*	
2364.92 *4*	1,2$^+$	3134.15 *5*		4164.0 *3*	2$^+$	4563.3 *10*	
2408.53 *4*	2$^+$	3177.733 *17*		4178.6 *4*		4744.9 *3*	
2416.7? *5*	3	3251.5 *5*		4206.9 *3*	(1,2$^+$)		

† From Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iε#	Log *ft*	I($\varepsilon+\beta^+$)†#	Comments
(−87 *8*)	4744.9			0.32 *7*	
(112 *8*)	4545.6	0.68 *11*	4.92 *13*	0.68 *11*	εK=0.65 *3*; εL=0.263 *20*; εM+=0.086 *8*
(212 *8*)	4445.9	0.13 *3*	6.39 *11*	0.13 *3*	εK=0.770 *4*; εL=0.176 *3*; εM+=0.0539 *11*
(253 *8*)	4405.3	0.13 *3*	6.58 *11*	0.13 *3*	εK=0.7852 *25*; εL=0.1648 *19*; εM+=0.0500 *7*
(279 *8*)	4378.6?	0.19 *5*	6.52 *12*	0.19 *5*	εK=0.7921 *19*; εL=0.1596 *14*; εM+=0.0482 *5*
(314 *8*)	4343.9	0.14 *4*	6.77 *13*	0.14 *4*	εK=0.7990 *15*; εL=0.1545 *11*; εM+=0.0464 *4*

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^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH (continued)

ϵ,β$^+$ radiations (continued)

E(decay)	E(level)	Iβ$^+$ #	Iε#	Log ft	I(ε+β$^+$)†#	Comments
(336 8)	4322.0		0.15 5	6.81 15	0.15 5	εK=0.8025 12; εL=0.1520 9; εM+=0.0455 4
(344 8)	4314.0		0.09 2	7.05 11	0.09 2	εK=0.8036 12; εL=0.1511 9; εM+=0.0452 3
(369 8)	4289.4?		0.10 4	7.08 18	0.10 4	εK=0.8068 10; εL=0.1488 8; εM+=0.04444 25
(375 8)	4283.1?		0.014 8	7.95 25	0.014 8	εK=0.8075 10; εL=0.1483 7; εM+=0.04425 25
(393 8)	4264.6		0.14 3	6.99 10	0.14 3	εK=0.8095 9; εL=0.1468 7; εM+=0.04374 22
(400 8)	4258.0		0.12 4	7.08 15	0.12 4	εK=0.8101 8; εL=0.1463 6; εM+=0.04357 21
(412 8)	4246.2?		0.04 2	7.58 22	0.04 2	εK=0.8112 8; εL=0.1455 6; εM+=0.04329 20
(423 8)	4235.2?		0.07 1	7.36 7	0.07 1	εK=0.8122 7; εL=0.1448 6; εM+=0.04304 18
(451 8)	4206.9		0.44 8	6.63 9	0.44 8	εK=0.8144 6; εL=0.1431 5; εM+=0.04246 16
(479 8)	4178.6		0.11 4	7.29 16	0.11 4	εK=0.8164 6; εL=0.1417 4; εM+=0.04196 14
(494 8)	4164.0		0.12 4	7.28 15	0.12 4	εK=0.8173 5; εL=0.1410 4; εM+=0.04172 13
(514 8)	4143.8?		0.07 3	7.55 19	0.07 3	εK=0.8184 5; εL=0.1401 4; εM+=0.04143 12
(818 8)	3840.05		0.5 1	7.13 9	0.5 1	εK=0.8284 2; εL=0.1327 2; εM+=0.03886 5
(830 8)	3828.4?		0.08 2	7.94 11	0.08 2	εK=0.8287 2; εL=0.1325 2; εM+=0.03880 4
(931 8)	3726.63		0.25 5	7.55 9	0.25 5	εK=0.8304 2; εL=0.13126 9; εM+=0.03836 3
(1001 8)	3657.36		0.10 2	8.01 9	0.10 2	εK=0.8313 1; εL=0.13054 8; εM+=0.03811 3
(1147 8)	3510.72		0.17 6	7.91 16	0.17 6	εK=0.8330; εL=0.12933 6; εM+=0.03769 2
(1196 8)	3461.7		0.14 4	8.03 13	0.14 4	εK=0.8334; εL=0.12899 6; εM+=0.03758 2
(1280 8)	3378.11		0.32 9	7.73 13	0.32 9	εK=0.8340; εL=0.12846 5; εM+=0.03740 2
(1282 8)	3375.73		0.20 5	7.94 11	0.20 5	εK=0.8340; εL=0.12844 5; εM+=0.03739 2
(1313 8)	3344.68		1.02 21	7.25 10	1.02 21	εK=0.8341; εL=0.12826 5; εM+=0.03733 2
(1329 8)	3329.33		0.29 5	7.81 8	0.29 5	εK=0.8342; εL=0.12817 5; εM+=0.03730 2
(1480 8)	3177.733	0.0014 3	0.68 12	7.53 8	0.68 12	av Eβ=219.6 36; εK=0.8337; εL=0.12724 6; εM+=0.03699 2
(1539 8)	3118.76	0.0012 3	0.35 10	7.86 13	0.35 10	av Eβ=245.7 37; εK=0.8330 2; εL=0.12684 6; εM+=0.03686 2
(1574 8)	3083.77?	0.0012 3	0.27 6	7.99 10	0.27 6	av Eβ=261.1 36; εK=0.8323 2; εL=0.12658 6; εM+=0.03678 2
(1622 8)	3035.64	0.013 2	2.2 4	7.11 9	2.2 4	av Eβ=282.3 36; εK=0.8312 3; εL=0.12620 7; εM+=0.03666 2
(1673 8)	2984.95	0.010 2	1.3 3	7.36 11	1.3 3	av Eβ=304.5 36; εK=0.8297 3; εL=0.12576 8; εM+=0.03652 3
(1702 8)	2956.20	0.0106 17	1.11 17	7.44 7	1.12 17	av Eβ=317.1 36; εK=0.8286 4; εL=0.12549 8; εM+=0.03644 3
(1813 8)	2845.42	0.026 4	1.53 23	7.36 7	1.56 23	av Eβ=365.7 35; εK=0.8232 5; εL=0.1243 1; εM+=0.03607 3
(1830 8)	2827.82	0.0032 9	0.18 5	8.31 13	0.18 5	av Eβ=373.5 35; εK=0.8221 5; εL=0.1241 1; εM+=0.03601 3
(1872 8)	2786.49	0.030 4	1.4 2	7.44 7	1.4 2	av Eβ=391.6 35; εK=0.8194 6; εL=0.1235 1; εM+=0.03585 4
(1903 8)	2754.59	0.014 2	0.57 9	7.84 7	0.58 9	av Eβ=405.6 36; εK=0.8171 7; εL=0.1231 2; εM+=0.03571 4
(1971 8)	2686.88	0.032 5	0.99 15	7.63 7	1.02 15	av Eβ=435.3 36; εK=0.8114 8; εL=0.12204 14; εM+=0.03540 4
(1980 8)	2678.46	0.015 3	0.45 8	7.97 8	0.47 8	av Eβ=439.0 36; εK=0.8106 8; εL=0.12190 14; εM+=0.03536 4
(2004 8)	2654.40	0.028 7	0.78 18	7.74 11	0.81 19	av Eβ=449.6 36; εK=0.8084 8; εL=0.12149 14; εM+=0.03524 5
(2030 8)	2628.00?	0.0042 15	0.11 4	8.62 16	0.11 4	av Eβ=461.2 36; εK=0.8057 9; εL=0.12103 15; εM+=0.03510 5
(2093 8)	2564.97	0.025 8	0.51 16	7.96 14	0.54 17	av Eβ=488.9 36; εK=0.7987 10; εL=0.11983 16; εM+=0.03475 5
(2136 8)	2521.57	0.039 8	0.69 14	7.85 10	0.73 15	av Eβ=508.0 36; εK=0.7934 11; εL=0.11893 18; εM+=0.03448 5
(2232 8)	2426.20	0.29 4	3.9 6	7.14 7	4.2 6	av Eβ=550.1 36; εK=0.7803 12; εL=0.11677 20; εM+=0.03385 6
(2241 8)	2416.7?	0.04 1	0.5 1	8.07 9	0.5 1	av Eβ=554.3 36; εK=0.7789 12; εL=0.11654 20;

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^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ #	Iε#	Log *ft*	I(ε+β+)†#	Comments
						εM+=0.03378 *6*
(2249 *8*)	2408.53	0.094 *15*	1.2 *2*	7.66 *7*	1.3 *2*	av Eβ=557.9 *36*; εK=0.7777 *13*; εL=0.11634 *20*; εM+=0.03372 *6*
(2293 *8*)	2364.92	0.093 *15*	1.06 *17*	7.73 *8*	1.15 *19*	av Eβ=577.1 *36*; εK=0.7709 *13*; εL=0.11523 *21*; εM+=0.03340 *7*
(2332 *8*)	2326.31	0.060 *12*	0.62 *12*	7.98 *9*	0.68 *13*	av Eβ=594.2 *36*; εK=0.7645 *14*; εL=0.11421 *22*; εM+=0.03310 *7*
(2396 *8*)	2262.22	0.044 *10*	0.39 *9*	8.21 *11*	0.43 *10*	av Eβ=622.6 *36*; εK=0.7532 *15*; εL=0.11241 *24*; εM+=0.03257 *7*
(2448 *8*)	2209.54	0.082 *14*	0.64 *11*	8.01 *8*	0.72 *12*	av Eβ=646.0 *36*; εK=0.7433 *16*; εL=0.11085 *25*; εM+=0.03211 *8*
(2478 *8*)	2179.909	0.24 *4*	1.8 *3*	7.58 *7*	2.0 *3*	av Eβ=659.1 *36*; εK=0.7375 *16*; εL=0.10994 *25*; εM+=0.03185 *8*
(2566 *8*)	2091.625	0.94 *13*	5.7 *8*	7.10 *7*	6.6 *9*	av Eβ=698.5 *36*; εK=0.7194 *18*; εL=0.1071 *3*; εM+=0.03102 *8*
(2574 *8*)	2083.97	0.16 *3*	0.94 *17*	7.88 *9*	1.1 *2*	av Eβ=701.9 *36*; εK=0.7177 *18*; εL=0.1068 *3*; εM+=0.03095 *8*
(2577 *8*)	2080.61	0.08 *3*	0.45 *17*	8.20 *17*	0.53 *20*	av Eβ=703.4 *36*; εK=0.7170 *18*; εL=0.1067 *3*; εM+=0.03091 *8*
(2670 *8*)	1987.93	0.24 *7*	1.2 *3*	7.82 *13*	1.4 *4*	av Eβ=744.7 *36*; εK=0.6964 *19*; εL=0.1035 *3*; εM+=0.02999 *9*
(2703‡ *8*)	1955.373	0.61 *7*	2.8 *3*	7.45 *6*	3.4 *4*	av Eβ=759.3 *36*; εK=0.6888 *19*; εL=0.1024 *3*; εM+=0.02965 *9*
(2711 *8*)	1947.37	0.10 *3*	0.44 *15*	8.26 *15*	0.54 *18*	av Eβ=762.8 *36*; εK=0.6870 *19*; εL=0.1021 *3*; εM+=0.02956 *9*
(2844 *8*)	1814.14	0.11 *2*	0.37 *8*	8.37 *10*	0.48 *10*	av Eβ=822.5 *36*; εK=0.6547 *20*; εL=0.0972 *3*; εM+=0.02813 *9*
(2958 *8*)	1699.915	0.39 *6*	1.13 *17*	7.93 *7*	1.52 *23*	av Eβ=873.9 *36*; εK=0.6258 *21*; εL=0.0928 *4*; εM+=0.02685 *9*
(3066 *8*)	1592.440	0.44 *7*	1.08 *17*	7.98 *8*	1.52 *24*	av Eβ=922.3 *37*; εK=0.5979 *21*; εL=0.0885 *4*; εM+=0.02562 *10*
(3140 *8*)	1518.368	1.0 *1*	2.3 *3*	7.68 *6*	3.3 *4*	av Eβ=955.7 *37*; εK=0.5784 *21*; εL=0.0856 *4*; εM+=0.02477 *10*
(3228 *8*)	1430.471	0.58 *17*	1.1 *3*	8.01 *13*	1.7 *5*	av Eβ=995.5 *37*; εK=0.5553 *21*; εL=0.0821 *4*; εM+=0.02376 *10*
(3370 *8*)	1288.42	0.30 *5*	1.4 *2*	9.57^{1u} *8*	1.7 *3*	av Eβ=1062.5 *36*; εK=0.6904 *14*; εL=0.10476 *23*; εM+=0.03043 *7*
(3451 *8*)	1207.139	0.42 *9*	0.60 *14*	8.33 *10*	1.02 *23*	av Eβ=1096.9 *37*; εK=0.4974 *21*; εL=0.0734 *3*; εM+=0.02124 *9*
(3524 *8*)	1134.304	1.5 *3*	1.9 *3*	7.85 *8*	3.4 *6*	av Eβ=1130.1 *37*; εK=0.4791 *20*; εL=0.0707 *3*; εM+=0.02045 *9*
(4020 *8*)	638.047	14 *2*	11 *2*	7.21 *8*	25 *4*	av Eβ=1357.5 *37*; εK=0.3654 *17*; εL=0.05375 *25*; εM+=0.01554 *7*
(4658 *8*)	0	8 *5*	8 *6*	9.4^{1u} *3*	16 *11*	av Eβ=1636.7 *36*; εK=0.4393 *15*; εL=0.06568 *23*; εM+=0.01904 *7*

† The ε decay feeding of each level was calculated from transition intensity imbalances and the assumption that 72 keV *9* decays per 100 result in a 638.05-keV γ ray, as reported by 1973Vy01.
‡ Measured E(β+)=1810 *100*.
\# Absolute intensity per 100 decays.

γ(^{150}Gd)

Iγ normalization: From Iγ(638 γ)=72 *9* per 100 decays (1973Vy01).

Experimental B(E2) ratios for transitions from a common initial level were calculated from γ branching ratios and compared with model-dependent theoretical ratios by the authors of 1977Ha31.

E_γ	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	α[d]	Comments
[x]99.5 *1*	0.05 *2*							
[x]122	0.03							
[x]126	0.02							
154.07[e] *6*	0.10[e] *2*	1288.42	4^+	1134.304	3^-			
[x]165	0.1							
[x]191.1 *3*	0.08 *3*							
224.4 *1*	0.07 *2*	2179.909	2^+	1955.373	2^+			
[x]229.3 *1*	0.04 *2*							
[x]241	0.06							
[x]257	0.02							
[x]297 *1*	0.08							
[x]311.2 *1*	0.04 *2*							
[x]314	0.05							
322.0 *1*	0.10 *2*	2686.88	1^-,2,3	2364.92	1,2^+			
[x]324	0.2							
328 *1*	0.05 *3*	2408.53	2^+	2080.61	(2^+,3^+,4^+)			
338.36 *5*	0.18 *3*	2326.31		1987.93	2^+,3^+,4^+			
377.82 *15*	0.10 *3*	1970.00		1592.440	1			
[x]380	0.1							
384.06[a] *4*	0.54	1518.368	2^+	1134.304	3^-			
385.35[@a]	0.06	1592.440	1	1207.139	0^+			
[x]399	0.07							
[x]406	0.04							
411.490 *15*	1.20 *6*	1699.915	5^-	1288.42	4^+	M1	0.0417	α(K)exp=0.032 *7* α(K)=0.0354 *5*; α(L)=0.00495 *7*; α(M)=0.001071 *15*; α(N)=0.000247 *4*; α(N+..)=0.000288 *4* Mult.: from α(K)exp for 411.7+412.4 double peak and assumption that mult(412.4γ)=E1.
[x]427	0.06							
436.980 *25*	1.29 *6*	1955.373	2^+	1518.368	2^+	M1+E2	0.028 *8*	α(K)exp=0.022 *2* α(K)=0.023 *8*; α(L)=0.0037 *6*; α(M)=0.00080 *12*; α(N)=0.00018 *3*; α(N+..)=0.00021 *4*
450	0.06	1970.00		1518.368	2^+			
[x]472.1 *1*	0.06 *3*							
[x]478 *1*	0.03 *2*							
491.57 *5*	0.03 *3*	2083.97	2^-,3^-	1592.440	1			
492.35 *5*	0.1	2754.59	2^+,3,4	2262.22				

γ(^{150}Gd) (continued)

E_γ	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	α[d]	Comments
496.242 *15*	20.3 *10*	1134.304	3^-	638.047	2^+	E1	0.00479	α(K)exp=0.0042 *5* α(K)=0.00409 *6*; α(L)=0.000552 *8*; α(M)=0.0001189 *17*; α(N)=2.72×10^{-5} *4*; α(N+..)=3.17×10^{-5} *5*
^{x}507	0.1							
^{x}511	62.4 *31*							
524.90 *20*	0.75	1955.373	2^+	1430.471	$(2)^+$	(M1)	0.0224	α(K)=0.0190 *3*; α(L)=0.00263 *4*; α(M)=0.000570 *8*; α(N)=0.0001312 *19* α(N+..)=0.0001530 *22* Mult.: from α(K)exp for (525.0+526.0) double peak and assumption that mult(526.0γ)=E1.
525.70[a] *20*	0.25	1814.14	3^-	1288.42	4^+	[E1]	0.00421	α(K)=0.00360 *5*; α(L)=0.000484 *7*; α(M)=0.0001042 *15*; α(N)=2.39×10^{-5} *4*; α(N+..)=2.78×10^{-5} *4*
539.26 *15*	0.06 *3*	1970.00		1430.471	$(2)^+$			
557.45 *3*	0.46 *2*	1987.93	$2^+,3^+,4^+$	1430.471	$(2)^+$	E2	0.01053	α(K)exp=0.0088 *13* α(K)=0.00864 *12*; α(L)=0.001480 *21*; α(M)=0.000327 *5*; α(N)=7.46×10^{-5} *11* α(N+..)=8.63×10^{-5} *12*
560	0.07	2080.61	$(2^+,3^+,4^+)$	1518.368	2^+			
565.64 *2*	1.56	1699.915	5^-	1134.304	3^-	E1	0.00359	α(K)exp=0.0051 *5* α(K)=0.00306 *5*; α(L)=0.000411 *6*; α(M)=8.84×10^{-5} *13*; α(N)=2.03×10^{-5} *3*; α(N+..)=2.36×10^{-5} *4* Mult.: from α(K)exp for 565.7+566.7+569.1 γ′s mixed peak and from mult of 566.7 determined to be E2 in 5.8 min ^{150}Tb decay and the assumption that the mult(569.1γ)=E2.
565.71	0.17	2083.97	$2^-,3^-$	1518.368	2^+			
569.083 *15*	3.47 *17*	1207.139	0^+	638.047	2^+	[E2]	0.01000	α(K)=0.00821 *12*; α(L)=0.001396 *20*; α(M)=0.000308 *5*; α(N)=7.03×10^{-5} *10* α(N+..)=8.14×10^{-5} *12* Mult.: α(K)exp for 565.7+566.7+569.1 γ′s mixed peak was measured. The mult of 566.7 was determined to be E2 in 5.8 min ^{150}Tb decay and the mult(569.1γ) was assumed to be E2 to determine mult(565.7).
573.30	0.51	2091.625	2^+	1518.368	2^+	M1	0.0179	α(K)exp=0.017 *4* α(K)=0.01521 *22*; α(L)=0.00210 *3*; α(M)=0.000455 *7*; α(N)=0.0001047 *15* α(N+..)=0.0001221 *17*
574.1 *5*	0.06	2521.57	$(2^+,3,4^+)$	1947.37	$2^-,3^-,4^-$			
^{x}583	0.1							
587	0.05	2179.909	2^+	1592.440	1			
^{x}600	0.1							
602.78 *6*	0.24 *2*	2686.88	$1^-,2,3$	2083.97	$2^-,3^-$			
^{x}608	0.1							
^{x}615	0.08							
626.47 *10*	0.12 *3*	2326.31		1699.915	5^-			

$^{150}_{64}$Gd$_{86}$-5

^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH (continued)

γ(^{150}Gd) (continued)

E_γ	I_γ [†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	α [d]	Comments
638.050 16	100 5	638.047	2^+	0	0^+	E2	0.00754	α(K)=0.00624 9; α(L)=0.001017 15; α(M)=0.000224 4; α(N)=5.11×10^{-5} 8; α(N+..)=5.92×10^{-5} 9
[x]641	0.1							
650.33	0.3	2080.61	$(2^+,3^+,4^+)$	1430.471	$(2)^+$	(E2)	0.00720	α(K)=0.00597 9; α(L)=0.000967 14; α(M)=0.000213 3; α(N)=4.86×10^{-5} 7; α(N+..)=5.63×10^{-5} 8 Assigned to 3.48-h ^{150}Tb from $\gamma\gamma$-coin results.
650.36	5.6	1288.42	4^+	638.047	2^+	E2	0.00720	α(K)exp=0.0055 7 α(K)=0.00597 9; α(L)=0.000967 14; α(M)=0.000212 3; α(N)=4.86×10^{-5} 7; α(N+..)=5.63×10^{-5} 8
[x]653.53 2	0.14 4							
661.18 4	0.08	2091.625	2^+	1430.471	$(2)^+$			
661.55 4	0.08	2179.909	2^+	1518.368	2^+			
666.49[#] 8	0.10 3	2654.40		1987.93	$2^+,3^+,4^+$			
[x]672	0.08							
[x]680.9 2	0.07 3							
[x]686.9 1	0.07 3							
[x]689	0.2							
699.03	0.19	2654.40		1955.373	2^+			
699.47	0.28	1987.93	$2^+,3^+,4^+$	1288.42	4^+			Component of double peak at 699.42 3. Iγ from 1987HeZH.
[x]714.7 2	0.03 2							
739.6 3	0.04 3	2686.88	1^-,2,3	1947.37	$2^-,3^-,4^-$			
743.84 6	0.10	2827.82		2083.97	$2^-,3^-$			
743.86 6	0.10	2262.22		1518.368	2^+			
746	0.08	2956.20		2209.54	$2^-,3^-$			
748.23[a]	0.66	1955.373	2^+	1207.139	0^+			
749.43 2	0.07	2179.909	2^+	1430.471	$(2)^+$			
753.8 3	0.03 2	2845.42	$1,2^+$	2091.625	2^+			
772.52 8	0.28 3	2364.92	$1,2^+$	1592.440	1			
779.09 4	0.40 4	2209.54	$2^-,3^-$	1430.471	$(2)^+$			
792.38	0.3	2080.61	$(2^+,3^+,4^+)$	1288.42	4^+	(E2)	0.00456	α(K)=0.00381 6; α(L)=0.000582 9; α(M)=0.0001272 18; α(N)=2.91×10^{-5} 4; α(N+..)=3.38×10^{-5} 5
792.385 20	6.1	1430.471	$(2)^+$	638.047	2^+	E2	0.00456	α(K)=0.00381 6; α(L)=0.000582 9; α(M)=0.0001272 18; α(N)=2.91×10^{-5} 4; α(N+..)=3.38×10^{-5} 5
803	0.05	2091.625	2^+	1288.42	4^+			
807.71[#] 15	0.10 2	2326.31		1518.368	2^+			
813.06 2	0.76 4	1947.37	$2^-,3^-,4^-$	1134.304	3^-	(E2)	0.00430	α(K)=0.00360 5; α(L)=0.000546 8; α(M)=0.0001194 17; α(N)=2.73×10^{-5} 4; α(N+..)=3.17×10^{-5} 5 Mult.: assigned by 1973Vy01.
821.067 20	1.95 10	1955.373	2^+	1134.304	3^-	E1[&]	1.66×10^{-3}	α(K)=0.001420 20; α(L)=0.000187 3; α(M)=4.02×10^{-5} 6; α(N)=9.22×10^{-6} 13 α(N+..)=1.074×10^{-5} 15
826.34 15	0.07 1	3035.64	$(1^-,2^+)$	2209.54	$2^-,3^-$			

From ENSDF

γ(^{150}Gd) (continued)

E_γ	I_γ[†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[d]	Comments
831.18 *7*	0.07	2786.49	$1^-,2^+$	1955.373	2^+			
831.73 *7*	0.07	2262.22		1430.471	$(2)^+$			
839.2 *2*	0.07 *2*	2786.49	$1^-,2^+$	1947.37	$2^-,3^-,4^-$			
846.5 *2*	0.05 *3*	2364.92	$1,2^+$	1518.368	2^+			
^{x}861 *1*	0.03 *2*							
864.41	0.04	2678.46	$(1,2^+)$	1814.14	3^-			
864.55	0.08	2956.20		2091.625	2^+			
871.9 *2*	0.06 *2*	2956.20		2083.97	$2^-,3^-$			
874		2827.82		1955.373	2^+			
^{x}878	0.06							
880.27 *3*	4.1 *2*	1518.368	2^+	638.047	2^+	M1+(E2+E0)	0.0049 *13*	α(K)exp=0.0051 *5* α(K)=0.0042 *12*; α(L)=0.00059 *14*; α(M)=0.00013 *3*; α(N)=2.9×10^{-5} *7*; α(N+..)=3.4×10^{-5} *8* Mult.: from adopted gammas.
884.45 *5*	0.31 *2*	2091.625	2^+	1207.139	0^+	[E2]	0.00358	α(K)=0.00301 *5*; α(L)=0.000447 *7*; α(M)=9.73×10^{-5} *14*; α(N)=2.23×10^{-5} *4*; α(N+..)=2.59×10^{-5} *4* Mult.: assumed E2 to resolve multiple peak.
^{x}890.5 *4*	0.06 *3*							
895.86 *5*	0.24 *2*	2326.31		1430.471	$(2)^+$			
908.1 *3*	0.05 *3*	2426.20	$1^-,2^+$	1518.368	2^+			
^{x}911	0.1							
916.1 *3*	0.06 *2*	2434.35		1518.368	2^+			
^{x}922	0.4							
^{x}925.0 *4*	0.04 *2*							
935.4 *2*	0.04 *2*	3344.68	(2^+)	2408.53	2^+			
945.7 *2*	0.12 *3*	2080.61	$(2^+,3^+,4^+)$	1134.304	3^-			
949.90 *5*	1.30 *6*	2083.97	$2^-,3^-$	1134.304	3^-	(M1)	0.00517	α(K)exp=0.0041 *12* α(K)=0.00441 *7*; α(L)=0.000599 *9*; α(M)=0.0001293 *19*; α(N)=2.98×10^{-5} *5*; α(N+..)=3.47×10^{-5} *5*
952	0.3	3035.64	$(1^-,2^+)$	2083.97	$2^-,3^-$			
954.46 *4*	1.66 *8*	1592.440	1	638.047	2^+	E1	1.24×10^{-3}	α(K)exp=0.0008 *3* α(K)=0.001063 *15*; α(L)=0.0001391 *20*; α(M)=2.99×10^{-5} *5*; α(N)=6.86×10^{-6} *10* α(N+..)=7.99×10^{-6} *12*
957.33 *4*	1.06 *6*	2091.625	2^+	1134.304	3^-	E1	1.23×10^{-3}	α(K)exp=0.0011 *3* α(K)=0.001057 *15*; α(L)=0.0001383 *20*; α(M)=2.97×10^{-5} *5*; α(N)=6.82×10^{-6} *10* α(N+..)=7.94×10^{-6} *12*
^{x}961 *1*	0.03 *2*							
968.3 *5*	0.20 *5*	2956.20		1987.93	$2^+,3^+,4^+$			
972.7 *2*	0.06 *3*	2564.97	$(1^-,2^-,3^-)$	1592.440	1			
977.78 *8*	0.17 *2*	2408.53	2^+	1430.471	$(2)^+$			
987.3 *3*	0.04 *2*	2686.88	$1^-,2,3$	1699.915	5^-			

$^{150}_{64}$Gd$_{86}$-7

γ(^{150}Gd) (continued)

E_γ	I_γ [†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	α [d]	Comments
995.38 *10*	0.28 *5*	2426.20	1⁻,2⁺	1430.471	(2)⁺			
[x]997.8 *2*	0.14 *4*							
997.8 *24*	0.14 *4*	2984.95	1,2⁺	1987.93	2⁺,3⁺,4⁺			
1001.0 *2*	0.17 *4*	2956.20		1955.373	2⁺			
1003.2[e] *2*	0.1[e]	2521.57	(2⁺,3,4⁺)	1518.368	2⁺			
1003.8 *2*	0.03	2434.35		1430.471	(2)⁺			
[x]1006. *1*	0.08 *5*							
1008.1 *3*	0.12 *4*	2956.20		1947.37	2⁻,3⁻,4⁻			
[x]1013.7 *3*	0.07 *4*							
1023	0.04	2157.5	6⁺	1134.304	3⁻			
[x]1028.8 *4*	0.08 *4*							
1035.8 *3*	0.07 *3*	2628.00?		1592.440	1			
1037.9 *3*	0.07 *3*	2326.31		1288.42	4⁺			
[x]1043	0.06							
1045.60 *3*	1.78 *8*	2179.909	2⁺	1134.304	3⁻	E1	1.05×10^{-3}	α(K)exp=0.0012 *6* α(K)=0.000897 *13*; α(L)=0.0001169 *17*; α(M)=2.51×10^{-5} *4*; α(N)=5.76×10^{-6} *8* α(N+..)=6.71×10^{-6} *10*
1049.3 *4*	0.07 *4*	3375.73		2326.31				
[x]1053.1 *3*	0.05 *3*							
1061.52[#] *10*	0.23 *4*	1699.915	5⁻	638.047	2⁺			
[x]1069.5 *2*	0.10 *3*							
1075.25 *3*	0.86 *4*	2209.54	2⁻,3⁻	1134.304	3⁻	M1	0.00384	α(K)=0.00328 *5*; α(L)=0.000444 *7*; α(M)=9.57×10^{-5} *14*; α(N)=2.20×10^{-5} *3*; α(N+..)=2.57×10^{-5} *4*
[x]1081.2 *4*	0.07 *3*							
[x]1086.5 *3*	0.06 *3*							
1089.4 *1*	0.06	3269.31?		2179.909	2⁺			
1091.0 *1*	0.18	2521.57	(2⁺,3,4⁺)	1430.471	(2)⁺			
1094.19 *5*	0.08	3177.733		2083.97	2⁻,3⁻			
1094.41 *5*	0.32	2686.88	1⁻,2,3	1592.440	1			
[x]1112	0.05							
1120.1 *5*	0.13 *6*	2408.53	2⁺	1288.42	4⁺			
1127.7 *1*	0.31 *2*	2262.22		1134.304	3⁻			
1130.4 *7*	0.06 *4*	3083.77?		1955.373	2⁺			
1134	0.2	2564.97	(1⁻,2⁻,3⁻)	1430.471	(2)⁺			
[x]1149	0.2							
1157.76 *8*	0.26 *2*	2364.92	1,2⁺	1207.139	0⁺			
[x]1163	0.07							
1168.64 *6*	0.61 *4*	2686.88	1⁻,2,3	1518.368	2⁺			
1176.08 *6*	0.71 *4*	1814.14	3⁻	638.047	2⁺	E1	8.60×10^{-4}	α(K)=0.000724 *11*; α(L)=9.40×10^{-5} *14*; α(M)=2.02×10^{-5} *3*; α(N)=4.63×10^{-6} *7*; α(N+..)=2.13×10^{-5} *3* Mult.: from adopted gammas.
[x]1185.3 *5*	0.10 *3*							

$^{150}_{64}Gd_{86}$-8

γ(^{150}Gd) (continued)

E_γ	I_γ [†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	α [d]	$I_{(\gamma+ce)}$ [c]	Comments
1193.9 *1*	0.13 *3*	2786.49	$1^-,2^+$	1592.440	1				
[x]1203.7 *4*	0.07 *4*								
1207.2 *2*		1207.139	0^+	0	0^+	E0		0.036 *5*	$I_{(\gamma+ce)}$: this is from I(ce(K))=0.032 *4*, corrected by evaluators to include ce(L), using theoretical ratios given by 1969Ha61. E_γ: transition energy calculated from observed conversion electron energies.
[x]1213.9 *4*	0.04 *2*								
1223.8[e] *5*	0.08[e] *3*	2654.40		1430.471	$(2)^+$				
1231	0.03	2364.92	$1,2^+$	1134.304	3^-				
1233.2 *2*	0.20 *3*	2521.57	$(2^+,3,4^+)$	1288.42	4^+				
1247.9 *2*	0.09 *2*	2678.46	$(1,2^+)$	1430.471	$(2)^+$				
1253.0[e] *1*	0.13[e] *2*	3344.68	(2^+)	2091.625	2^+				
1256.4	0.08 *3*	2686.88	$1^-,2,3$	1430.471	$(2)^+$				
1260.5 *2*	0.06 *3*	3344.68	(2^+)	2083.97	$2^-,3^-$				
[x]1264.9 *2*	0.05 *2*								
1267	0.07	2786.49	$1^-,2^+$	1518.368	2^+				
1274.51 *10*	0.37 *3*	2408.53	2^+	1134.304	3^-				
[x]1283.0 *4*	0.06 *3*								
1291.66 *3*	2.28 *11*	2426.20	$1^-,2^+$	1134.304	3^-				
[x]1299.6 *8*	0.04 *3*								
[x]1303	0.06								
1317.50 *6*	0.58 *3*	1955.373	2^+	638.047	2^+				
1326.7 *2*	0.13 *3*	2845.42	$1,2^+$	1518.368	2^+				
1332.3 *4*	0.12 *4*	1970.00		638.047	2^+				
[x]1343.1 *4*	0.19 *4*								
1349.83	1.26	1987.93	$2^+,3^+,4^+$	638.047	2^+	E2	1.53×10^{-3}		α(K)=0.001278 *18*; α(L)=0.0001763 *25*; α(M)=3.81×10^{-5} *6*; α(N)=8.75×10^{-6} *13* α(N+..)=4.06×10^{-5} *6* Component of triple peak at 1349.96 *5*. Iγ from 1987HeZH. Mult.: from adopted gammas.
1351.2	0.07	2558.51	$1,2^+$	1207.139	0^+				Component of a triple peak at 1349.96 *5*. Iγ is from 1987HeZH.
1351.7	0.1	3298.34		1947.37	$2^-,3^-,4^-$				
1356.01 *10*	0.25 *3*	2786.49	$1^-,2^+$	1430.471	$(2)^+$				
1365.3 *3*	0.10 *3*	2956.20		1592.440	1				
[x]1375.1 *3*	0.09 *3*								
1387.2	0.08 *5*	2521.57	$(2^+,3,4^+)$	1134.304	3^-				
1387.3	0.04 *5*	2593.9		1207.139	0^+				
1389.6 *4*	0.17 *4*	3344.68	(2^+)	1955.373	2^+				
1392.4[#] *4*	0.12 *4*	2984.95	$1,2^+$	1592.440	1				
[x]1397.3 *3*	0.09 *3*								
[x]1399	0.15								

γ(^{150}Gd) (continued)

Eγ	Iγ[†c]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[‡]	α[d]	Comments
[x]1403.6 3	0.14 3							
1414.95 6	0.50 3	2845.42	1,2+	1430.471	(2)+			
1430.46 4	3.4 2	1430.471	(2)+	0	0+	(E2)	1.39×10−3	α(K)=0.001143 16; α(L)=0.0001566 22; α(M)=3.38×10−5 5; α(N)=7.77×10−6 11 α(N+..)=6.12×10−5 9
1430.5[@] 04	0.2 2	2564.97	(1−,2−,3−)	1134.304	3−	(E2)	1.39×10−3	α(K)exp=0.0012 2 α(K)=0.001143 16; α(L)=0.0001566 22; α(M)=3.38×10−5 5; α(N)=7.77×10−6 11 α(N+..)=6.12×10−5 9
1442.7 1	<0.4	2080.61	(2+,3+,4+)	638.047	2+			
1443.3 1	>0.4	3035.64	(1−,2+)	1592.440	1			
1446.1 1	0.66 6	2083.97	2−,3−	638.047	2+			
1453.55 4	5.4 3	2091.625	2+	638.047	2+	(M1)	0.00196	α(K)=0.001618 23; α(L)=0.000217 3; α(M)=4.67×10−5 7; α(N)=1.076×10−5 15 α(N+..)=7.91×10−5 11
1459	0.08	2593.9		1134.304	3−			
1466.1 3	0.03 5	2754.59	2+,3,4	1288.42	4+			
1466.6 3	0.07 5	2984.95	1,2+	1518.368	2+			
[x]1485.1 3	0.06 3							
1493.67 8	0.23 3	2628.00?		1134.304	3−			
[x]1502	0.1							
[x]1505.1 3	0.08 3							
1517.4[@]	0.1	3035.64	(1−,2+)	1518.368	2+			
1518.24	0.4	3726.63		2209.54	2−,3−			
1518.34	3.8	1518.368	2+	0	0+	E2[&]	1.28×10−3	α(K)=0.001021 15; α(L)=0.0001389 20; α(M)=3.00×10−5 5; α(N)=6.89×10−6 10 α(N+..)=8.85×10−5 13
1519.6	0.1	2157.5	6+	638.047	2+			
1525.70 5	0.62 3	2956.20		1430.471	(2)+			
1530.5 3	0.07 3	3344.68	(2+)	1814.14	3−			
[x]1536.6 8	0.03 2							
1541.94 6	0.706 4	2179.909	2+	638.047	2+			
1541.94 6	0.07 4	3134.15		1592.440	1			
1544.1 5	0.17 8	2678.46	(1,2+)	1134.304	3−			
1552.3[e] 5	0.13[e] 6	2686.88	1−,2,3	1134.304	3−			
1554.4 4	0.27 6	2984.95	1,2+	1430.471	(2)+			
[x]1561	0.4							
1563.96 10	0.24 3	3378.11		1814.14	3−			
[x]1567	0.1							
1571.26[#] 12	0.18 3	2209.54	2−,3−	638.047	2+			
1579.92 10	0.25 5	2868.28		1288.42	4+			
1585.19 14	0.07 3	3177.733		1592.440	1			

From ENSDF

$^{150}_{64}Gd_{86}$-10

γ(^{150}Gd) (continued)

E_γ	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	α[d]	Comments
1592.51 *4*	2.73 *5*	1592.440	1	0	0^+	M1[&]	1.66×10^{-3}	α(K)=0.001312 *19*; α(L)=0.0001754 *25*; α(M)=3.78×10^{-5} *6*; α(N)=8.70×10^{-6} *13* α(N+..)=0.0001319 *19*
1596	0.06	3024.7		1430.471	$(2)^+$			
1600.10 *15*	0.18 *3*	3118.76		1518.368	2^+			
1605.44 *11*	0.22 *3*	3035.64	$(1^-,2^+)$	1430.471	$(2)^+$			
1615.37 *10*	0.15 *3*	3134.15		1518.368	2^+			
1620.30 *10*	0.21 *3*	2754.59	2^+,3,4	1134.304	3^-			
1624.20 *6*	0.48 *3*	2262.22		638.047	2^+			
1631.7 *2*	0.09 *3*	3712.41		2080.61	$(2^+,3^+,4^+)$			
1638.06[#] *10*	0.26 *4*	2845.42	$1,2^+$	1207.139	0^+			
1645.5 *2*	0.13 *3*	3344.68	(2^+)	1699.915	5^-			
1652.26	0.22 *3*	2786.49	$1^-,2^+$	1134.304	3^-			
1652.6	0.06 *3*	3083.77?		1430.471	$(2)^+$			
1659.9	0.11 *3*	3177.733		1518.368	2^+			
1660.0	0.16 *3*	3251.5		1592.440	1			
1668.8[#] *3*	0.10 *3*	3657.36		1987.93	$2^+,3^+,4^+$			
^{x}1684.2 *5*	0.06 *4*							
1688.23[@] *10*	0.50 *5*	2326.31		638.047	2^+			
1688.27 *10*	0.16 *5*	3118.76		1430.471	$(2)^+$			
^{x}1695.8 *3*	0.08 *3*							
1702.5 *3*	0.08 *3*	3134.15		1430.471	$(2)^+$			
^{x}1714.1 *2*	0.16 *4*							
1726.85 *15*	0.39 *4*	2364.92	$1,2^+$	638.047	2^+			
1733.7 *2*	0.22 *4*	2868.28		1134.304	3^-			
1737.2 *6*	0.07 *4*	3329.33		1592.440	1			
1747.3	0.3	3035.64	$(1^-,2^+)$	1288.42	4^+			
1747.8	0.1	3177.733		1430.471	$(2)^+$			
1752.1 *2*	0.19 *3*	3344.68	(2^+)	1592.440	1			
1770.45 *6*	0.83 *4*	2408.53	2^+	638.047	2^+			
1778.6 *5*	0.7	2416.7?	3	638.047	2^+			
1778.8[@#]	0.2	2984.95	$1,2^+$	1207.139	0^+			
1788.91 *5*	2.68 *13*	2426.20	$1^-,2^+$	638.047	2^+			
1796.29 *10*	0.32 *3*	2434.35		638.047	2^+			
1811.9 *3*	0.10 *3*	3329.33		1518.368	2^+			
1822.2 *5*	0.10 *4*	2956.20		1134.304	3^-			
1826.2 *5*	0.14 *5*	3344.68	(2^+)	1518.368	2^+			
1830.7 *5*	0.09 *4*	3118.76		1288.42	4^+			
^{x}1833.3 *5*	0.13 *5*							
^{x}1849	0.1							
1852 *2*	0.1	3840.05		1987.93	$2^+,3^+,4^+$			
^{x}1855 *2*	0.1							

$^{150}_{64}$Gd$_{86}$-11

γ(^{150}Gd) (continued)

E$_\gamma$	I$_\gamma$[†c]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
[x]1860.9 3	0.10 3				
[x]1866.0 4	0.04 3				
[x]1871	0.2				
1876.6 4	0.06 3	3083.77?		1207.139	0^+
1883.6 1	0.38 3	2521.57	$(2^+,3,4^+)$	638.047	2^+
[x]1894.7 4	0.04 3				
1901.74 10	0.96 5	3035.64	$(1^-,2^+)$	1134.304	3^-
1908.6 4	0.11 4	3042.61		1134.304	3^-
1914.3 2	0.59 6	3344.68	(2^+)	1430.471	$(2)^+$
1918	0.07	3510.72	$(1^-,2^+)$	1592.440	1
1926.6 2	0.22 3	2564.97	$(1^-,2^-,3^-)$	638.047	2^+
[x]1929	0.10				
[x]1939.0 8	0.04 3				
1943	0.08	3461.7	2^+	1518.368	2^+
1947	0.08	3378.11		1430.471	$(2)^+$
1949.3 2	0.30 3	3083.77?		1134.304	3^-
1955.3[e#] 2	0.14[e] 3	1955.373	2^+	0	0^+
[x]1971.3 5	0.07 3				
1984.9 2	0.23 4	3118.76		1134.304	3^-
1989.6 8	0.11 5	2628.00?		638.047	2^+
[x]1993.8 8	0.04 3				
[x]1997.7 8	0.07 4				
[x]2008.	0.1				
[x]2009.9 10	0.07 5				
2016.30 10	1.49 7	2654.40		638.047	2^+
[x]2025.6 8	0.10 4				
[x]2030.4 5	0.13 4				
2040.4 2	0.55 4	2678.46	$(1,2^+)$	638.047	2^+
2043.7 10	0.11 7	3177.733		1134.304	3^-
[x]2048.1 8	0.03 2				
2056.3 2	0.12 3	3344.68	(2^+)	1288.42	4^+
[x]2064.6 10	0.03 2				
2091.56 10	2.59 13	2091.625	2^+	0	0^+
[x]2104.5 5	0.06 3				
2116.8 2	0.64 3	2754.59	$2^+,3,4$	638.047	2^+
[x]2136.7 5	0.07 3				
2148.44 10	1.63 8	2786.49	$1^-,2^+$	638.047	2^+
[x]2164.3 3	0.13 4				
[x]2169.2 2	0.19 4				
2173.4 5	0.20 6	3461.7	2^+	1288.42	4^+
2179.9[e] 2	0.59[e] 3	2179.909	2^+	0	0^+
[x]2186	0.08				
[x]2189.9 8	0.06 3				
2194.6 2	0.41 3	3329.33		1134.304	3^-
2201.4 8	0.14 5	3631.4		1430.471	$(2)^+$
2207.58 10	1.82 9	2845.42	$1,2^+$	638.047	2^+
2210	0.2	3344.68	(2^+)	1134.304	3^-
[x]2230.2 5	0.12 5				
[x]2233.8 8	0.08 4				
2241.42[#] 15	0.23 3	3375.73		1134.304	3^-
[x]2253.7 10	0.03 2				
[x]2259.4 10	0.04 3				
[x]2262.7 3	0.15 3				
[x]2275.4 8	0.06 3				
[x]2283	0.1				
2296.9[e#] 8	0.03[e] 2	3726.63		1430.471	$(2)^+$
2318.14 10	0.63 3	2956.20		638.047	2^+
[x]2328.8 10	0.06 4				
[x]2341.0 8	0.06 3				
2346.9 2	0.27 3	2984.95	$1,2^+$	638.047	2^+
[x]2359.7 8	0.11 6				
2364.93 10	1.63 8	2364.92	$1,2^+$	0	0^+
2372	0.05	3963.64		1592.440	1
2376.6[#] 2	0.33 3	3510.72	$(1^-,2^+)$	1134.304	3^-
[x]2394	0.03				
2397.04 10	0.99 5	3035.64	$(1^-,2^+)$	638.047	2^+
[x]2403.9 10	0.09 5				
2409.36[b] 20	0.61 3	3840.05		1430.471	$(2)^+$
2425.98 10	1.70 8	2426.20	$1^-,2^+$	0	0^+
[x]2442.9 10	0.10 5				
2446.1 10	0.15 5	3083.77?		638.047	2^+
2450.2 10	0.08 4	3657.36		1207.139	0^+
[x]2459.6 2	0.14 3				
[x]2462	0.04				
[x]2476	0.08				
[x]2480.1 3	0.08 3				
[x]2490.0 10	0.13 6				
[x]2492.3 8	0.17 5				
2494.7 8	0.26 5	3134.15		638.047	2^+
2498	0.04	3631.4		1134.304	3^-
[x]2511.6 8	0.03 2				
[x]2517.0 8	0.03 2				
2532.5 3	0.18 5	3963.64		1430.471	$(2)^+$
2539.645 10	0.79 4	3177.733		638.047	2^+
[x]2552.9 4	0.10 3				
2558.49 20	0.42 4	2558.51	$1,2^+$	0	0^+

From ENSDF

γ(^{150}Gd) (continued)

E_γ	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f
2565.4 *3*	0.11 *3*	2564.97	$(1^-,2^-,3^-)$	0	0^+
2579.5 *8*	0.08 *3*	3712.41		1134.304	3^-
^{x}2587.7 *10*	0.06 *4*				
2592.25 *15*	0.47 *3*	3726.63		1134.304	3^-
^{x}2596.0 *10*	0.03 *2*				
^{x}2600.2 *10*	0.04 *3*				
^{x}2603.9 *10*	0.05 *4*				
2614.3 *10*	0.13 *5*	3251.5		638.047	2^+
2621.8[e#] *5*	0.15[e] *5*	3828.4?	$(1,2^+)$	1207.139	0^+
^{x}2625.2 *5*	0.09 *5*				
2636.8 *5*	0.05 *3*	3772.04		1134.304	3^-
^{x}2646.8 *10*	0.05 *3*				
^{x}2655.8 *10*	0.08 *4*				
2661.20 *25*	0.24 *3*	3298.34		638.047	2^+
^{x}2669.55 *30*	0.21 *3*				
2678.6[e] *3*	0.22[e] *3*	2678.46	$(1,2^+)$	0	0^+
2691.0[#] *5*	0.18 *3*	3329.33		638.047	2^+
^{x}2701.8 *10*	0.03 *2*				
2706.86 *15*	0.52 *3*	3344.68	(2^+)	638.047	2^+
^{x}2727.2 *10*	0.03 *2*				
^{x}2734.0 *3*	0.08 *4*				
2737.8 *5*	0.43 *8*	3375.73		638.047	2^+
2740.3 *4*	0.48 *8*	3378.11		638.047	2^+
2751.0 *10*	0.05 *4*	3389.2		638.047	2^+
2754.6 *8*	0.16 *5*	2754.59	$2^+,3,4$	0	0^+
^{x}2769.6 *10*	0.020 *15*				
^{x}2774.3 *4*	0.19 *2*				
^{x}2785.7 *8*	0.05 *2*				
^{x}2788.4 *8*	0.06 *2*				
^{x}2796.6 *5*	0.04 *2*				
^{x}2803.6 *10*	0.03 *2*				
^{x}2808.07 *25*	0.16 *2*				
2822.7[#] *6*	0.04 *2*	4111.07?	$1^-,2^+$	1288.42	4^+
2828.5 *6*	0.06 *3*	3963.64		1134.304	3^-
^{x}2832.6 *8*	0.03 *2*				
^{x}2839.9 *10*	0.06 *3*				
^{x}2843	0.05				
2845.65[e#] *25*	0.35[e] *5*	2845.42	$1,2^+$	0	0^+
^{x}2848.8 *10*	0.11 *5*				
2872.2 *3*	0.39 *5*	3510.72	$(1^-,2^+)$	638.047	2^+
2876.6 *6*	0.22 *5*	4164.0	2^+	1288.42	4^+
^{x}2894.4 *10*	0.06 *3*				
^{x}2898.4 *10*	0.05 *3*				
^{x}2910.0 *10*	0.04 *3*				
2913.7 *4*	0.10 *2*	4343.9	$(1,2^+)$	1430.471	$(2)^+$
^{x}2921.2 *8*	0.020 *15*				
2935.6[#] *4*	0.10 *2*	4529.4?	$(1,2^+)$	1592.440	1
^{x}2938.9 *10*	0.04 *3*				
^{x}2944.9 *6*	0.04 *2*				
^{x}2952.6 *4*	0.10 *2*				
^{x}2956.9 *10*	0.03 *2*				
2971.7 *10*	0.03 *2*	4178.6		1207.139	0^+
2975.9[e#] *6*	0.06[e] *2*	4111.07?	$1^-,2^+$	1134.304	3^-
2984.90 *15*	0.72 *4*	2984.95	$1,2^+$	0	0^+
2993.2 *3*	0.10 *2*	3631.4		638.047	2^+
3008.9 *3*	0.06 *1*	4143.8?	$(1^-,2^+)$	1134.304	3^-
3024.5 *3*	0.06 *1*	3024.7		0	0^+
3034.86 *15*	0.52 *3*	3035.64	$(1^-,2^+)$	0	0^+
3042.4 *3*	0.22 *2*	3042.61		0	0^+
^{x}3055.9 *4*	0.04 *1*				
3096.1 *3*	0.19 *2*	4303.2		1207.139	0^+
^{x}3102.3 *4*	0.11 *3*				
^{x}3107.7 *10*	0.03 *2*				
3124.0[#] *3*	0.15 *2*	4258.0	$(1^-,2^+)$	1134.304	3^-
3133.6 *2*	0.15 *2*	3134.15		0	0^+
3134.1 *2*	0.1	3772.04		638.047	2^+
3152.4 *3*	0.14 *2*	4744.9		1592.440	1
^{x}3168.6 *3*	0.12 *1*				
^{x}3191.5 *4*	0.08 *1*				
^{x}3197.5 *10*	0.06 *3*				
3202.4 *3*	0.12 *2*	3840.05		638.047	2^+
^{x}3212.1 *8*	0.04 *2*				
^{x}3217.4 *6*	0.08 *3*				
^{x}3230	0.04				
3239.2 *5*	0.10 *1*	4445.9	$1,2^+$	1207.139	0^+
3250.8 *6*	0.06 *2*	3251.5		0	0^+
^{x}3256.3 *10*	0.03 *2*				
^{x}3262.2 *5*	0.11 *2*				
^{x}3273.4 *10*	0.03 *2*				
^{x}3288.2 *8*	0.03 *2*				
3314.5[#] *6*	0.04 *1*	4744.9		1430.471	$(2)^+$
^{x}3321.1 *10*	0.04 *2*				
3327.7 *5*	0.12 *1*	3963.64		638.047	2^+
3344.3 *5*	0.08 *1*	3344.68	(2^+)	0	0^+
^{x}3351.8 *5*	0.06 *1*				
^{x}3355.2 *7*	0.03 *1*				

From ENSDF

γ(^{150}Gd) (continued)

E$_\gamma$	I$_\gamma$ †c	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
^{x}3372.2 *7*	0.06 *2*				
3375.5 *7*	0.06 *2*	3375.73		0	0$^+$
^{x}3383.4 *5*	0.10 *2*				
3383.6# *5*	8 *4*	4021.2?	(1,2$^+$)	638.047	2$^+$
3389.2 *5*	0.08 *1*	3389.2		0	0$^+$
^{x}3408.7 *7*	0.03 *1*				
^{x}3411.7 *7*	0.02 *1*				
^{x}3420.4 *10*	0.03 *1*				
^{x}3440.8 *5*	0.07 *1*				
^{x}3455.3 *10*	0.011 *8*				
^{x}3460.3 *6*	0.04 *1*				
^{x}3471.5 *5*	0.04 *1*				
^{x}3484.5 *6*	0.10 *1*				
^{x}3489.6 *6*	0.10 *1*				
^{x}3500.8 *10*	0.012 *8*				
^{x}3508.6 *7*	0.09 *2*				
3512.1 *7*	0.06 *2*	4151.0		638.047	2$^+$
3522.4 *6*	0.12 *2*	3522.4		0	0$^+$
3525.7 *8*	0.05 *2*	4164.0	2$^+$	638.047	2$^+$
^{x}3534.6 *10*	0.008 *5*				
^{x}3540.7 *10*	0.017 *10*				
^{x}3544.9 *10*	0.03 *2*				
^{x}3549.9 *10*	0.05 *2*				
^{x}3553.3 *6*	0.07 *2*				
^{x}3556.7 *10*	0.021 *10*				
3570.6# *6*	0.07 *1*	4206.9	(1,2$^+$)	638.047	2$^+$
3609.4 *8*	0.04 *1*	4246.2?	(1,2$^+$)	638.047	2$^+$
^{x}3623.7 *20*	0.008 *6*				
^{x}3627.4 *8*	0.015 *10*				
^{x}3648.0 *10*	0.013 *6*				
3657.74 *25*	0.18 *1*	3657.36		0	0$^+$
^{x}3672.3 *10*	0.05 *2*				
3675.3 *5*	0.09 *2*	4314.0	1,2$^+$	638.047	2$^+$
3684.3# *4*	0.06 *1*	4322.0	2$^+$	638.047	2$^+$
^{x}3734.0 *4*	0.16 *3*				
^{x}3757.3 *8*	0.022 *7*				
3768.4 *10*	0.06 *3*	4405.3	(1,2$^+$)	638.047	2$^+$
^{x}3773.0 *5*	0.09 *3*				
^{x}3782.6 *10*	0.015 *10*				
3797.4 *7*	0.021 *7*	4435.2		638.047	2$^+$
^{x}3816.9 *4*	0.05 *1*				
3828.0 *4*	0.05 *1*	3828.4?	(1,2$^+$)	0	0$^+$
^{x}3834.7 *3*	0.12 *1*				
^{x}3844.7 *4*	0.05 *1*				
3854.5 *8*	0.017 *8*	4492.8		638.047	2$^+$
3884.7# *6*	0.025 *8*	4522.8?		638.047	2$^+$
^{x}3887.5 *10*	0.017 *10*				
3907.5 *6*	0.016 *5*	4545.6		638.047	2$^+$
^{x}3927.2 *3*	0.051 *5*				
^{x}3965.3 *10*	0.014 *8*				
^{x}3968.1 *10*	0.013 *8*				
^{x}3977.9 *7*	0.012 *5*				
^{x}4005.1 *6*	0.017 *4*				
4020.8 *4*	0.057 *5*	4021.2?	(1,2$^+$)	0	0$^+$
^{x}4106.8 *3*	0.22 *2*				
4111.2 *3*	0.15 *2*	4111.07?	1$^-$,2$^+$	0	0$^+$
^{x}4116.8 *10*	0.010 *5*				
4145.4 *5*	0.040 *5*	4143.8?	(1$^-$,2$^+$)	0	0$^+$
4151.3 *5*	0.024 *5*	4151.0		0	0$^+$
4163.3 *5*	0.030 *5*	4164.0	2$^+$	0	0$^+$
4178.5 *5*	0.024 *5*	4178.6		0	0$^+$
4206.4 *3*	0.134 *7*	4206.9	(1,2$^+$)	0	0$^+$
4235.1# *6*	0.012 *5*	4235.2?	(1$^-$,2$^+$)	0	0$^+$
4246.0 *3*	0.094 *5*	4246.2?	(1,2$^+$)	0	0$^+$
4256.5 *6*	0.021 *5*	4258.0	(1$^-$,2$^+$)	0	0$^+$
4264.5 *3*	0.079 *5*	4264.6	2$^+$	0	0$^+$
4283.0 *10*	0.029 *8*	4283.1?	(1,2$^+$)	0	0$^+$
4289.3 *3*	0.214 *11*	4289.4?	(1,2$^+$)	0	0$^+$
4296.6 *10*	0.010 *5*	4296.7		0	0$^+$
4302.4 *8*	0.014 *5*	4303.2		0	0$^+$
4314.2 *3*	0.063 *5*	4314.0	1,2$^+$	0	0$^+$
4321.6 *4*	0.093 *5*	4322.0	2$^+$	0	0$^+$
4343.3# *6*	0.010 *3*	4343.9	(1,2$^+$)	0	0$^+$
4378.5# *6*	0.010 *3*	4378.6?	(1,2$^+$)	0	0$^+$
4405.1 *3*	0.091 *5*	4405.3	(1,2$^+$)	0	0$^+$
4434.4 *10*	0.004 *2*	4435.2		0	0$^+$
4445.7 *3*	0.163 *8*	4445.9	1,2$^+$	0	0$^+$
4462.2 *8*	0.004 *2*	4462.3		0	0$^+$
4493.3 *15*	0.0020 *15*	4492.8		0	0$^+$
4499.7 *8*	0.004 *2*	4499.8		0	0$^+$
4531.5# *5*	0.009 *2*	4529.4?	(1,2$^+$)	0	0$^+$
4557.1 *10*	0.004 *2*	4557.2		0	0$^+$
4563.2 *10*	0.004 *2*	4563.3		0	0$^+$

γ(^{150}Gd) (continued)

† γ-ray intensities are normalized to 100 for the 638.05-keV 2^+ to g.s. transition.

‡ Transition multipolarities were determined from K-conversion coefficients deduced from ce(K) and Iγ, relative to α(K)exp=0.00625 for the 638.05-keV transition. This has been reported to be E2 on the basis of measurements by 1971Ke06 who normalized to the 344-keV transition in ^{152}Gd, determined from internal and external ce measurements (1962Ha36) to be E2.

Authors tentatively assigned this γ ray to 3.48-h ^{150}Tb decay on basis of singles data.

@ Assigned to 3.48-h ^{150}Tb from $\gamma\gamma$-coincidence results.

& From α(K)exp (1973Vy01).

[a] From 1977Ha31.

[b] 1973Vy02 report a 2409.0-keV γ but place it as a g.s. transition from the 2408.8-keV level.

[c] For absolute intensity per 100 decays, multiply by 0.72 *9*.

[d] 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.

[e] Multiply placed with undivided intensity.

[x] γ ray not placed in level scheme.

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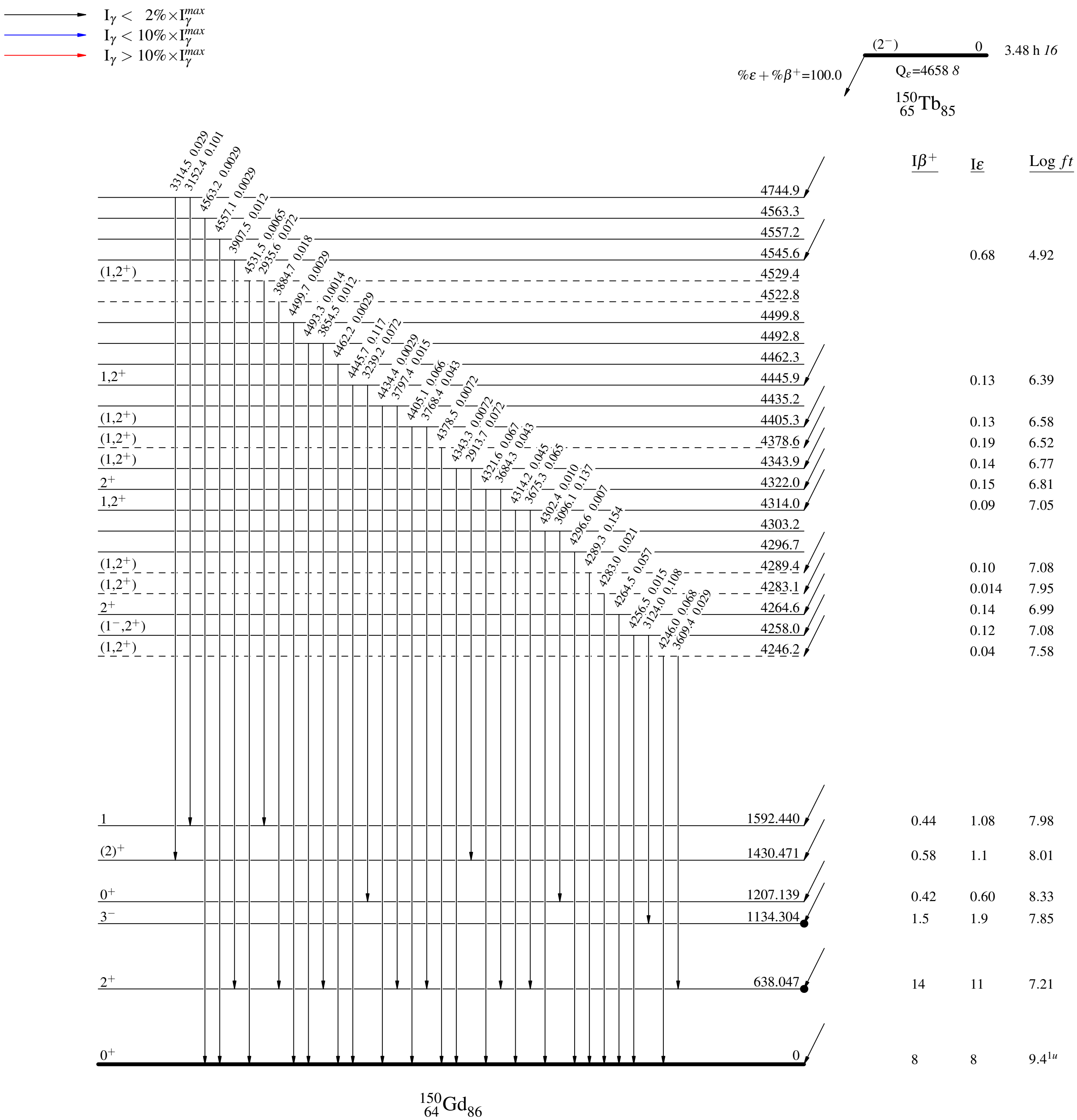
^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme

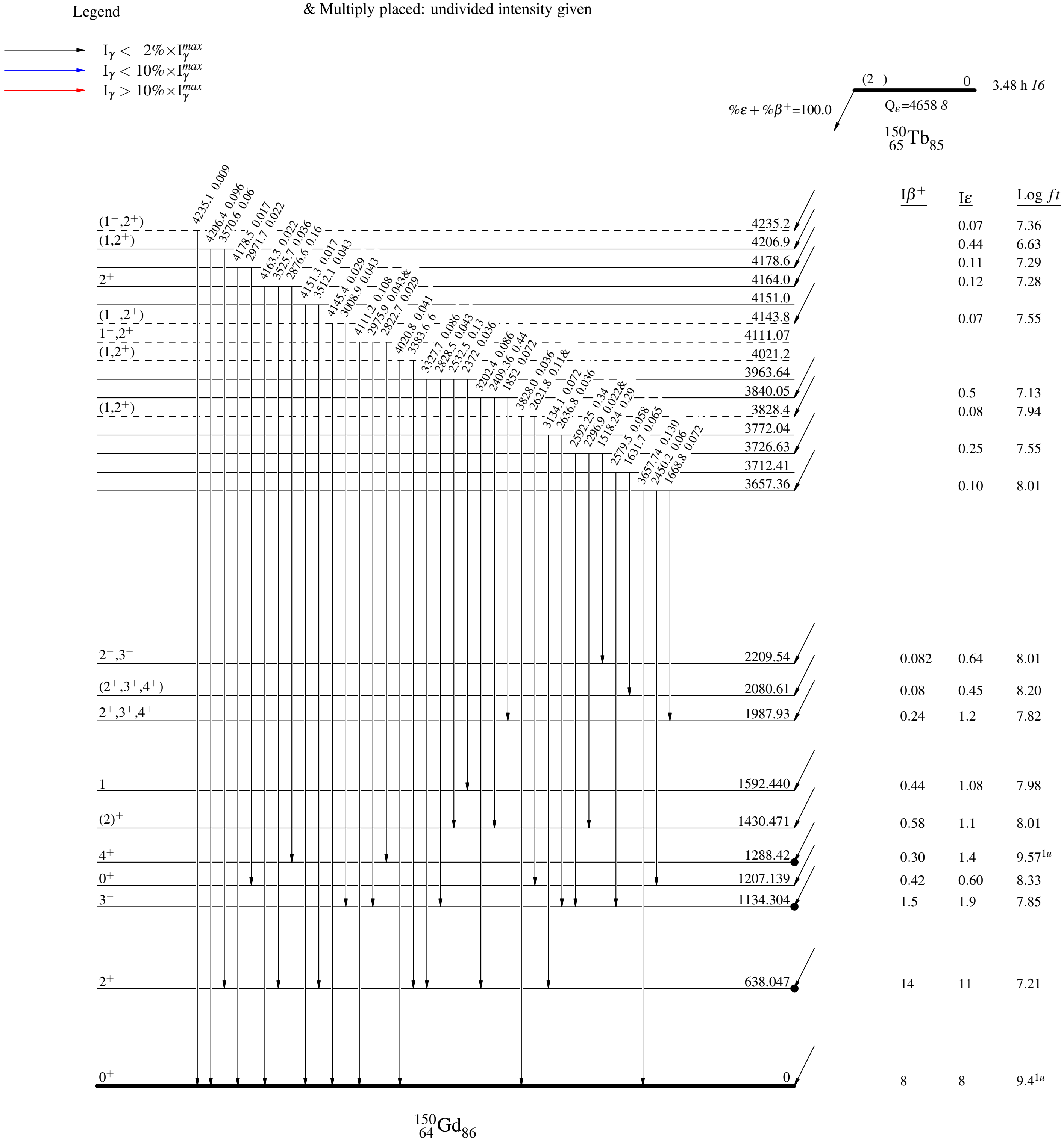
Intensities: I_γ per 100 parent decays



^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

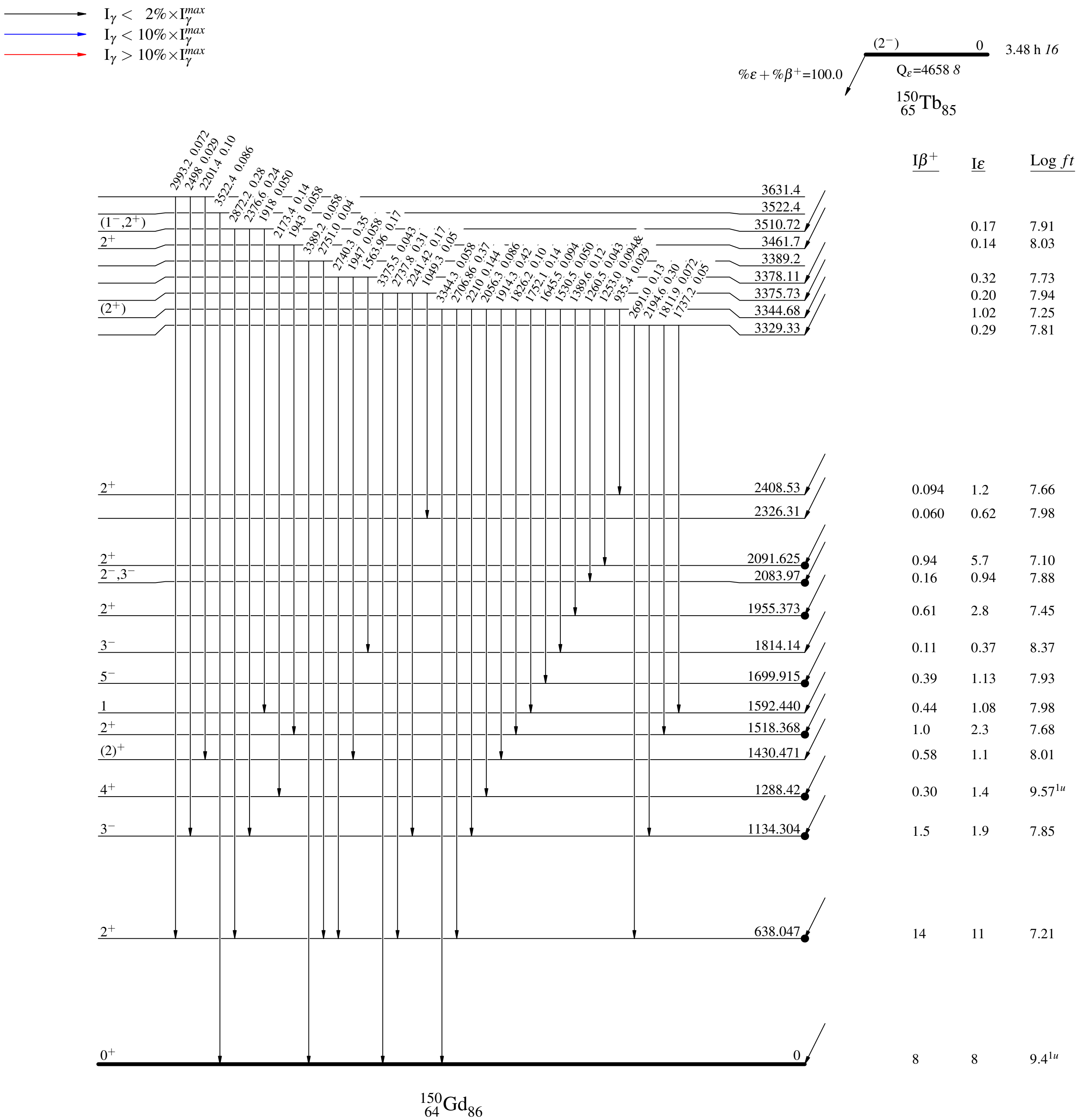


^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays

& Multiply placed: undivided intensity given

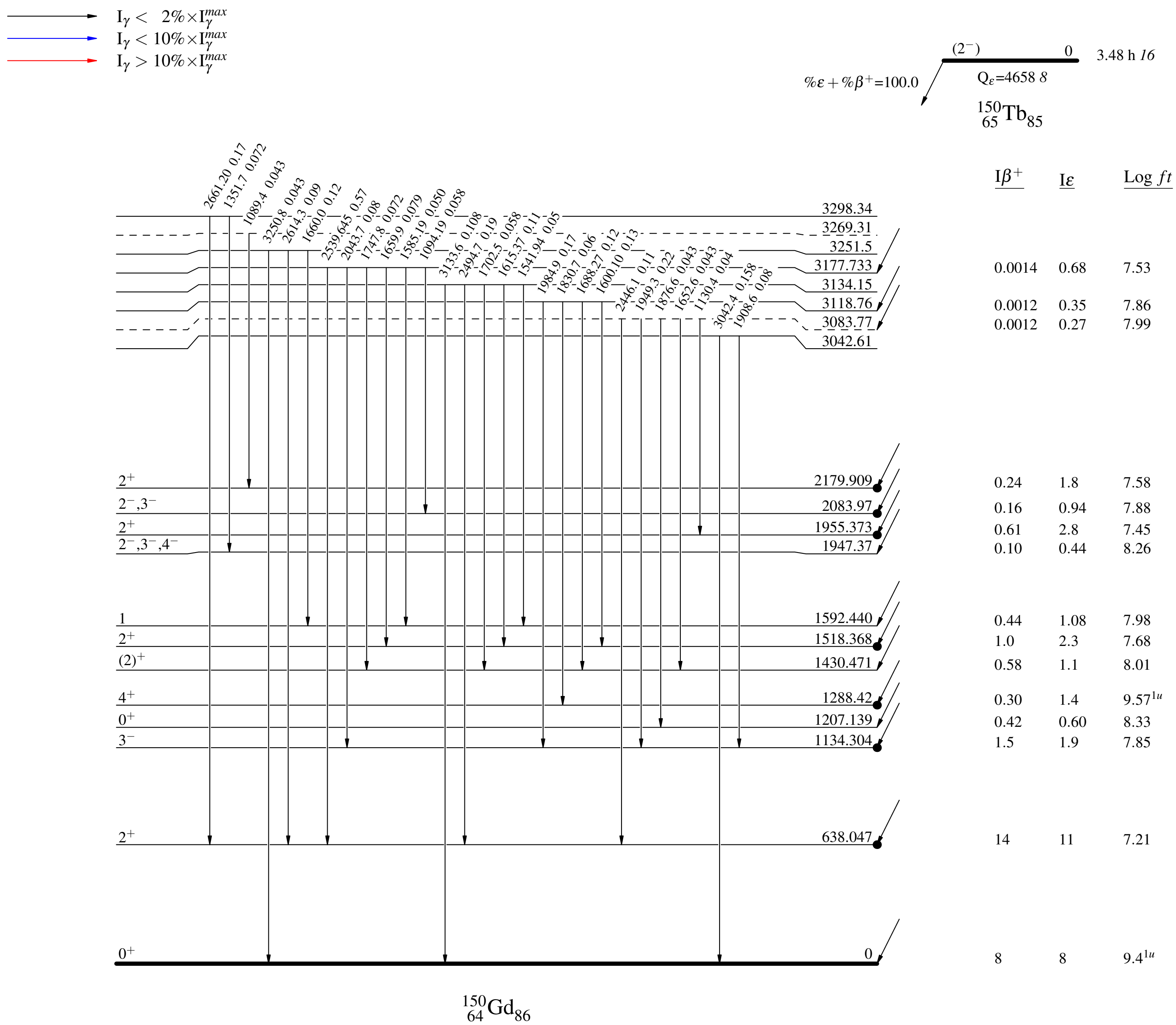


^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

Legend



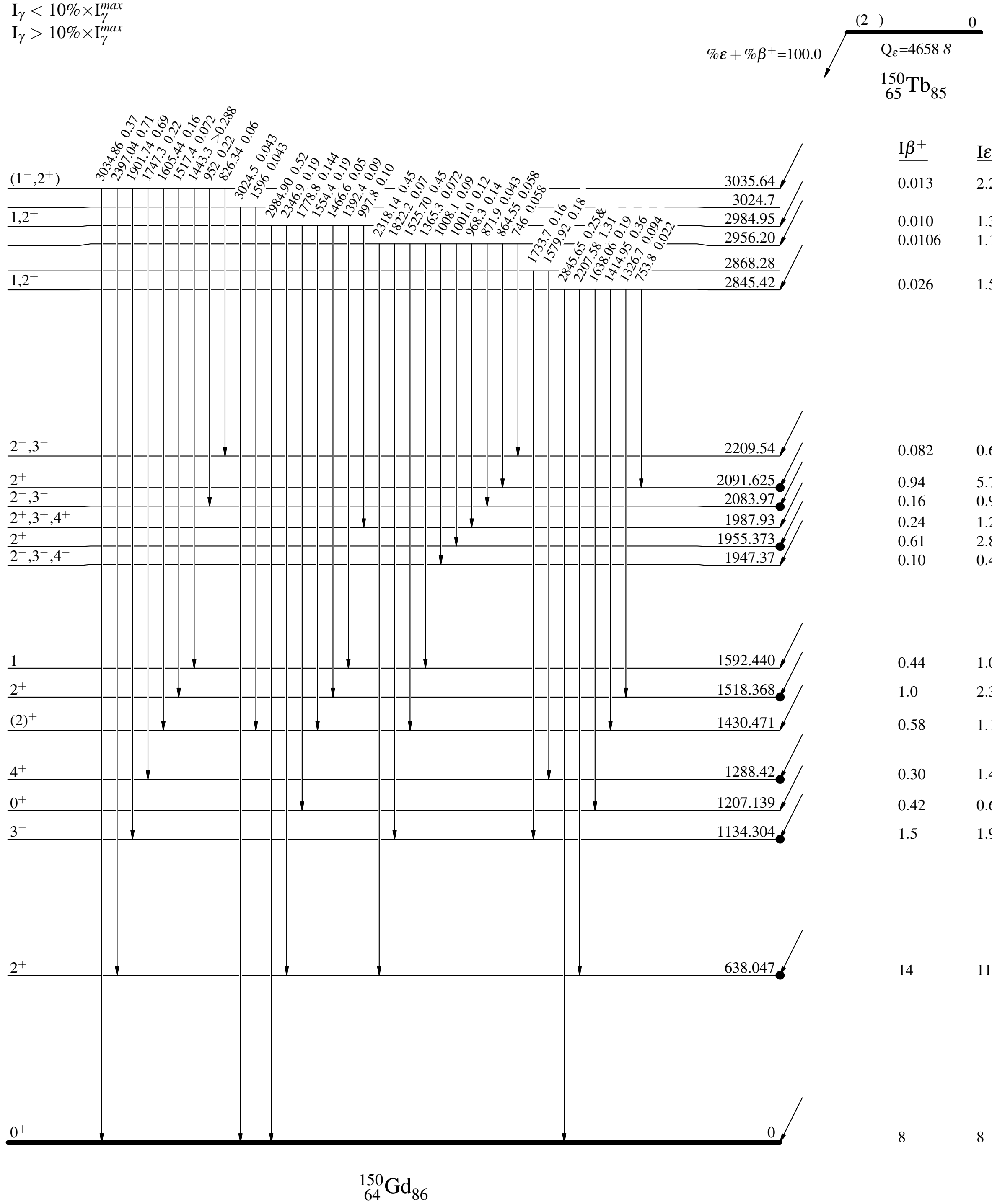
^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



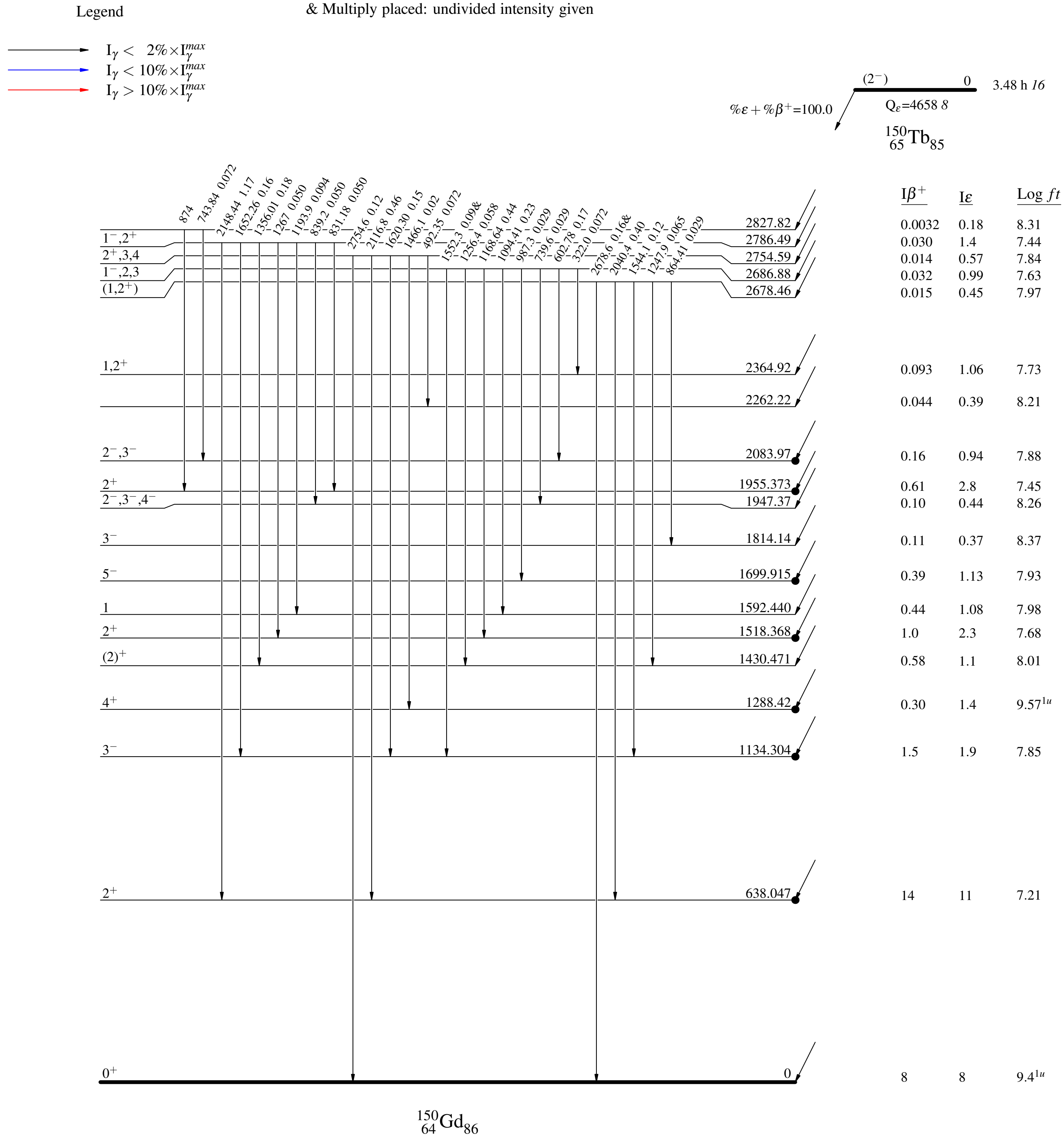
Level	$I\beta^+$	$I\varepsilon$	Log ft
3035.64	0.013	2.2	7.11
2984.95	0.010	1.3	7.36
2956.20	0.0106	1.11	7.44
2845.42	0.026	1.53	7.36
2209.54	0.082	0.64	8.01
2091.625	0.94	5.7	7.10
2083.97	0.16	0.94	7.88
1987.93	0.24	1.2	7.82
1955.373	0.61	2.8	7.45
1947.37	0.10	0.44	8.26
1592.440	0.44	1.08	7.98
1518.368	1.0	2.3	7.68
1430.471	0.58	1.1	8.01
1288.42	0.30	1.4	9.57[1u]
1207.139	0.42	0.60	8.33
1134.304	1.5	1.9	7.85
638.047	14	11	7.21
0	8	8	9.4[1u]

^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays

& Multiply placed: undivided intensity given



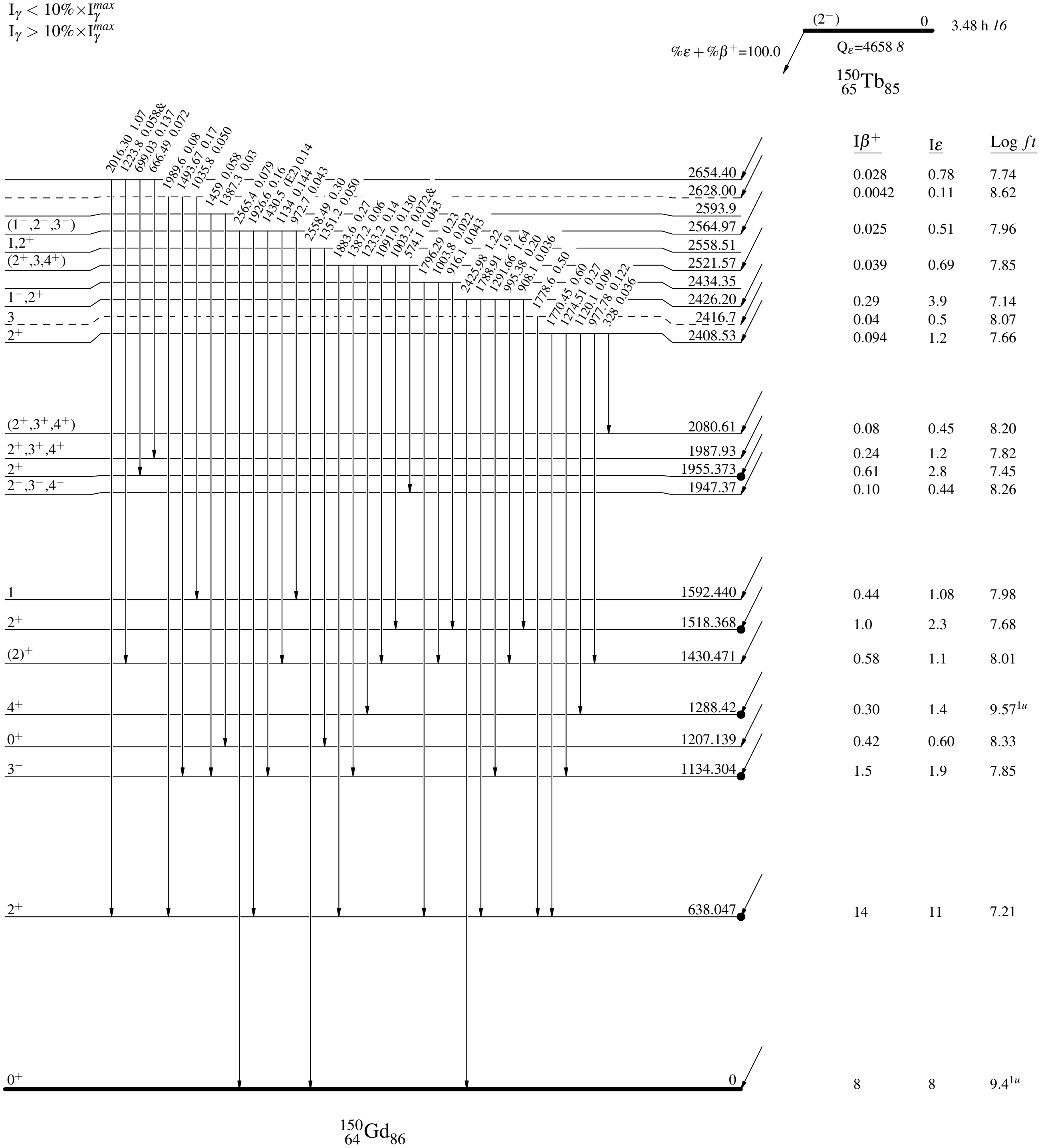
^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



Level	Iβ+	Iε	Log *ft*
2654.40	0.028	0.78	7.74
2628.00	0.0042	0.11	8.62
2564.97	0.025	0.51	7.96
2521.57	0.039	0.69	7.85
2426.20	0.29	3.9	7.14
2416.7	0.04	0.5	8.07
2408.53	0.094	1.2	7.66
2080.61	0.08	0.45	8.20
1987.93	0.24	1.2	7.82
1955.373	0.61	2.8	7.45
1947.37	0.10	0.44	8.26
1592.440	0.44	1.08	7.98
1518.368	1.0	2.3	7.68
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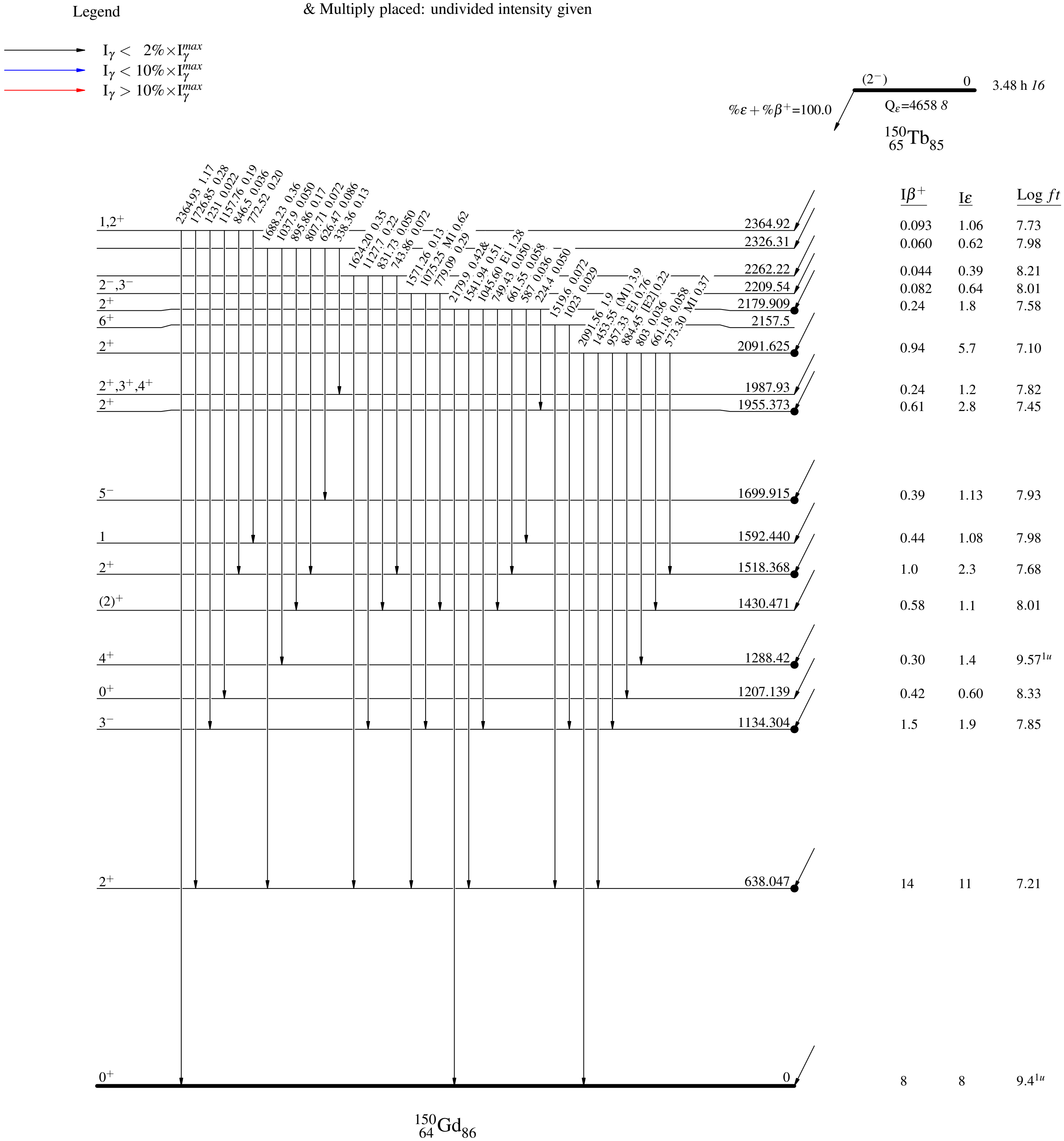
^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

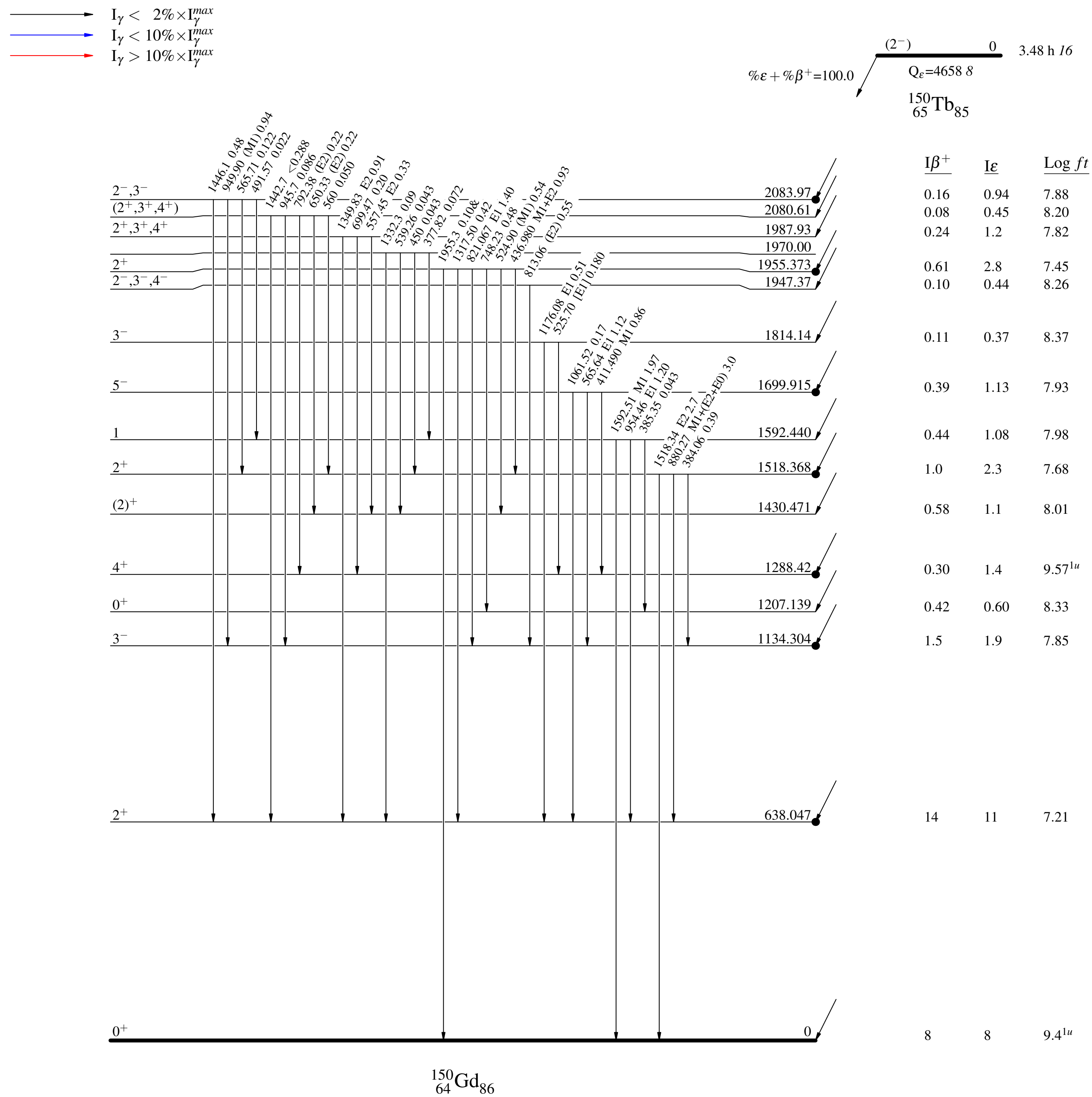
Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given



^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

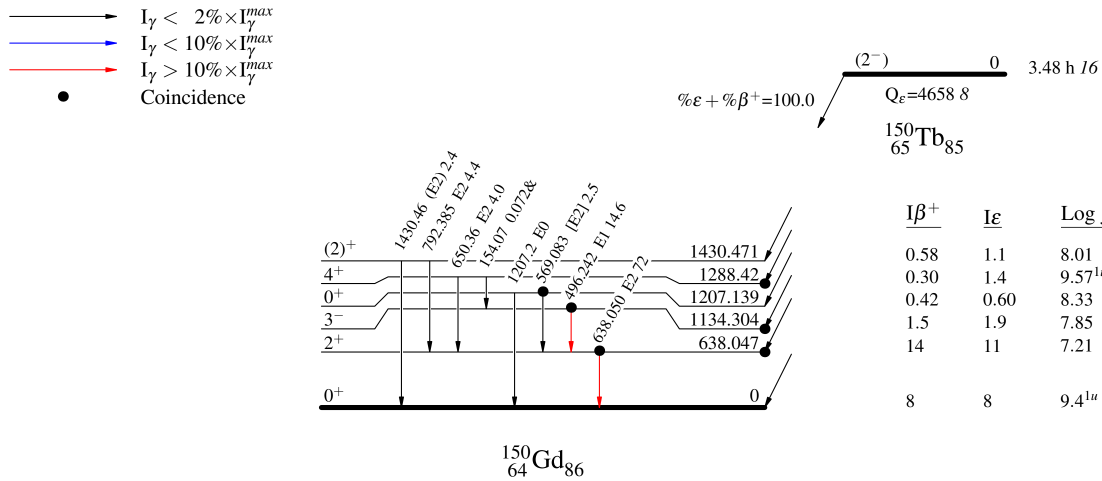
Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given



^{150}Tb ε decay (3.48 h) 1977Ha31,1987HeZH

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given



Iβ⁺	Iε	Log ft
0.58	1.1	8.01
0.30	1.4	9.57[1u]
0.42	0.60	8.33
1.5	1.9	7.85
14	11	7.21
8	8	9.4[1u]