^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09

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

Parent: ^{154}Nd: E=0.0; $J^\pi=0^+$; $T_{1/2}$=25.9 s *2*; Q(β^-)=2687 *25*; %β^- decay=100

^{154}Nd-Q(β^-): From 2021Wa16.

The decay scheme, Eγ, Iγ are from 1993GrZZ and the measured β^- data are from 1995Gr19 and 1997Gr09 (all by the same authors), unless otherwise noted. Other: 1985Ka17. Activity also identified by 1974Bu09. Earlier articles by the same authors as 1993GrZZ are 1990An31, 1988GrZY, 1987Gr12, 1986GrZW, and 1986GrZZ.

Additional information 1.

1974Bu09: Produced by ^{235}U(th n,F), followed by chemical separation. Established parentage.

1985Ka17: Produced by ^{235}U(th n,F), followed by isotope separation. Parentage of ^{154}Pm (1.7 min) established; and 19 γ's reported.

1986GrZW, 1993GrZZ: Produced by spontaneous fission of ^{252}Cf, followed by isotope separation. γ's measured with Ge detectors. 50 γ's reported. (Both references are private communications.).

1987Gr12: Produced by spontaneous fission of ^{252}Cf, followed by isotope separation. Parent half-life and 13 γ energies reported.

1990An31: Produced by spontaneous fission of ^{252}Cf, followed by isotope separation. Level scheme is shown.

1995Gr19, 1997Gr09: Produced by spontaneous fission of ^{252}Cf, followed by isotope separation. Deduced Iβ^- to excited states and ground state from total absorption γ spectra.

^{154}Pm Levels

E(level)[†‡]	J^{π}[#]	$T_{1/2}$	Comments
0	(4^+)	2.68 min *7*	J^π,$T_{1/2}$: From Adopted Levels (level not observed in this dataset).
0+x	(1^-)	1.73 min *10*	Additional information 2. J^π,$T_{1/2}$: From Adopted Levels where this isomer is most likely the first "x" excited state of ^{154}Pm.
50.688+x *14*	(2^-)		
68.006+x *16*	(2^-)		
79.382+x *23*	(1^-)		
105.690+x *34*	(2^-)		
151.702+x *14*	(1^+)		
154.93+x *6*			
173.81+x *5*	(2^-)		
180.689+x *16*	(1^+)		
185.492+x *27*	(0^+,1^+)		
194.192+x *34*	(0^+,1^+)		
244.615+x *32*	(0^+,1^+)		
268.78+x *26*			
505.49+x? *23*			
597.39+x *30*			
633.85+x *9*	(0,1)		
652.36+x *27*			
682.31+x *8*	(0,1)		
699.99+x? *30*			
831.55+x *8*	(1^+)		
850.227+x *29*	(1^+)		
906.96+x *5*	(0,1)		
1049.64+x *8*	(1^+)		
1060.53+x *8*	(0,1)		
1204.50+x *11*	(0,1)		
1389.21+x *10*	(0,1)		
1662.70+x *20*	(0,1)		
1689.99+x *31*	(0,1)		

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^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09 (continued)

^{154}Pm Levels (continued)

† Additional information 3.
‡ From least-squares fit to γ energies, with questionable γ's omitted.
# From Adopted Levels.

β^- radiations

This decay scheme is given here with its lowest (1$^-$) level shown as being at 0+x keV. This level is more likely an isomer, as discussed in the ^{154}Pm Adopted Levels, with the (4$^+$) state as g.s. Consequently the E(decay) values are smaller by the “x” value (based on the estimates in Adopted Levels this is of the order of 30 keV *10*), which also can slightly affect the log *ft* calculations (more importantly for the higher excited levels) From this reason the calculated β-decay parameters shown in the table should be used rather prudently.

The Iβ^- to the excited levels have been deduced, independently of the γ data, from the total absorption γ spectrometer, TAGS, data of 1997Gr09. When necessary, new levels, called “pseudolevels”, and associated decay γ's are included in the analysis. Since the resolution of the TAGS system is typically 50-100 keV, the intensity assigned to a pseudolevel may thus represent the β^- feeding to a single level or to a group of levels in that region.

av Eβ: Additional information 4.

E(decay)	E(level)	Iβ^-†‡#	Log *ft*	Comments
(997 *25*)	1689.99+x	0.34	5.6	av Eβ=338 *10* Iβ^-: TAGS value (1997Gr09) is 0.24.
(1024 *25*)	1662.70+x	0.34	5.6	av Eβ=349 *10* Iβ^-: TAGS value (1997Gr09) is 0.39.
(1298 *25*)	1389.21+x	1.9	5.3	av Eβ=462 *11* Iβ^-: TAGS value (1997Gr09) is 2.81; this may include other levels that have not been observed.
(1482 *25*)	1204.50+x	2.2	5.4	av Eβ=541 *11* Iβ^-: TAGS value (1997Gr09) is 2.91; this may include other levels that have not been observed.
(1626 *25*)	1060.53+x	3.7	5.3	av Eβ=602 *11*
(1637 *25*)	1049.64+x	5.0	5.2	av Eβ=607 *11*
(1780 *25*)	906.96+x	5.3	5.3	av Eβ=670 *11* Iβ^-: TAGS value (1997Gr09) is 6.31.
(1837 *25*)	850.227+x	20.5	4.8	av Eβ=695 *11*
(1855 *25*)	831.55+x	3.7	5.6	av Eβ=703 *11*
(2005 *25*)	682.31+x	0.22	6.9	av Eβ=769 *11* Iβ^-: TAGS value (1997Gr09) is 0.39.
(2053 *25*)	633.85+x	0.28	6.9	av Eβ=790 *11* Iβ^-: TAGS value (1997Gr09) is 0.194.
(2181 *25*)	505.49+x?	0.27	7.0	av Eβ=848 *11* Iβ^-: TAGS value (1997Gr09) is 0.194.
(2442 *25*)	244.615+x	1.1	6.6	av Eβ=965 *11* Iβ^-: TAGS value (1997Gr09) is 0.0.
(2493 *25*)	194.192+x	0.76	6.8	av Eβ=988 *11* Iβ^-: TAGS value (1997Gr09) is 0.0.
(2501 *25*)	185.492+x	0.64	6.9	av Eβ=992 *11* Iβ^-: TAGS value (1997Gr09) is 0.0.
(2506 *25*)	180.689+x	11.4	5.6	av Eβ=994 *11* Iβ^-: TAGS value (1997Gr09) is 9.80.
(2535 *25*)	151.702+x	26.4	5.3	av Eβ=1007 *11*
(2608 *25*)	79.382+x	11.9	5.7	av Eβ=1040 *11*
(2687 *25*)	0+x	≤5.4	≥6.1	av Eβ=1076 *11* Iβ^-: Based on upper limit of measured value of Iβ(0+50+68+79+105)=13.7 *36*, from 4$\pi\beta\gamma$ (1995Gr19), and Iβ(79)=11.9, from γ intensity balance with Iβ(50+68+105)≈0.

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^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09 (continued)

β^- radiations (continued)

† Values are from γ intensity balances, except those for the 0- and 79-keV levels, which are from measurements of 1995Gr19. The Iβ^- values from the TAGS data (1997Gr09) are generally in excellent agreement with those from the intensity balances. The TAGS value is given in a comment if it differs by more than 10%. Since the scheme is not complete, values less than 0.2% are not given. Values for levels at 50, 68, and 105 keV are assumed to be 0.

‡ The pseudolevels and the associated Iβ^- from the TAGS data analysis are 1270 keV, 0.4%; 1470, 0.6; 1550, 0.8%; 1800, 0.3%; and 1900, 0.3%.

Absolute intensity per 100 decays.

^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09 (continued)

$\gamma(^{154}$Pm)

Iγ normalization, I(γ+ce) normalization: Calculated to give 100% feeding of ground state from γ and β^- transitions.
Iγ normalization: Additional information 6.

E_γ[†]	I_γ[‡a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	$I_{(\gamma+ce)}$[a]	Comments
13.5		194.192+x	(0$^+$,1$^+$)	180.689+x	(1$^+$)			≈2.5	$I_{(\gamma+ce)}$: Deduced from γγ coincidence intensities.
17.3		68.006+x	(2$^-$)	50.688+x	(2$^-$)			≈26	$I_{(\gamma+ce)}$: From γγ coincidence intensities.
28.7 *3*	2.6	79.382+x	(1$^-$)	50.688+x	(2$^-$)	M1	9.07 *31*		%Iγ≈0.34 α(L)=7.15 *25*; α(M)=1.53 *5* α(N)=0.344 *12*; α(O)=0.0517 *18*; α(P)=0.00324 *11* α: Deduced from γγ coincidence intensities. Theoretical value for pure M1 is 9.1 *4*.
30.8 *3*	0.26	185.492+x	(0$^+$,1$^+$)	154.93+x					%Iγ≈0.034
33.8 *2*	2.5	185.492+x	(0$^+$,1$^+$)	151.702+x	(1$^+$)	M1(+E2)	1.0×10^2 *9*		%Iγ≈0.33 α(L)=8; α(M)=17 *16* α(N)=4 *4*; α(O)=0.5 *4*; α(P)=0.0012 *8* α: From γγ coincidence intensities. For mult=M1, α=5.6; for mult=E2, α=189.
37.63 *6*	7.6	105.690+x	(2$^-$)	68.006+x	(2$^-$)	M1(+E2)	6.×10^1 *5*		%Iγ≈0.99 α(L)=4; α(M)=10 *10* α(N)=2.2 *21*; α(O)=0.28 *25*; α(P)=9 δ: The deduced α implies < 2% E2. For %E2=1, α is calculated to be 5.1 *11*.
45.99 *4*	11.7	151.702+x	(1$^+$)	105.690+x	(2$^-$)				%Iγ≈1.5
50.691 *22*	8.4	50.688+x	(2$^-$)	0+x	(1$^-$)	E2	30.4 *4*		%Iγ≈1.1 α(K)=4.44 *6*; α(L)=20.17 *29*; α(M)=4.66 *7* α(N)=1.011 *14*; α(O)=0.1253 *18*; α(P)=0.0002406 *34*
63.94 *5*	1.49	244.615+x	(0$^+$,1$^+$)	180.689+x	(1$^+$)	M1	5.62 *8*		%Iγ≈0.19 α(K)=4.77 *7*; α(L)=0.675 *10*; α(M)=0.1442 *20* α(N)=0.0325 *5*; α(O)=0.00489 *7*; α(P)=0.000308 *4*
68.000 *22*	26.4	68.006+x	(2$^-$)	0+x	(1$^-$)	M1	4.71 *7*		%Iγ≈3.4 α(K)=3.99 *6*; α(L)=0.564 *8*; α(M)=0.1205 *17* α(N)=0.0271 *4*; α(O)=0.00409 *6*; α(P)=0.000257 *4*
70.78 *4*	1.10	244.615+x	(0$^+$,1$^+$)	173.81+x	(2$^-$)	E1	0.681 *10*		%Iγ≈0.14 α(K)=0.571 *8*; α(L)=0.0870 *12*; α(M)=0.01853 *26* α(N)=0.00408 *6*; α(O)=0.000572 *8*; α(P)=2.67×10^{-5} *4*
72.319 *22*	10.4	151.702+x	(1$^+$)	79.382+x	(1$^-$)	E1	0.643 *9*		%Iγ≈1.4 α(K)=0.539 *8*; α(L)=0.0819 *11*; α(M)=0.01743 *24* α(N)=0.00384 *5*; α(O)=0.000539 *8*; α(P)=2.529×10^{-5} *35*
79.38 *15*	21.3	79.382+x	(1$^-$)	0+x	(1$^-$)	M1,E2	4.1 *11*		%Iγ≈2.8 α(K)=2.38 *18*; α(L)=1.4 *10*; α(M)=0.31 *24*

γ(^{154}Pm) (continued)

E_γ [†]	I_γ [‡a]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	α [&]	Comments
								α(N)=0.07 5; α(O)=0.009 6; α(P)=1.3×10^{-4} 4 α computed assuming δ=1.
79.75 25	1.9	185.492+x	(0$^+$,1$^+$)	105.690+x	(2$^-$)			%Iγ≈0.25
83.697 20	53	151.702+x	(1$^+$)	68.006+x	(2$^-$)	E1	0.434 6	%Iγ≈6.9 α(K)=0.365 5; α(L)=0.0542 8; α(M)=0.01152 16 α(N)=0.00255 4; α(O)=0.000360 5; α(P)=1.748×10^{-5} 25
87.7 [@] 3	0.014	154.93+x		68.006+x	(2$^-$)			%Iγ≈0.0018
89.69 8	0.84	244.615+x	(0$^+$,1$^+$)	154.93+x				%Iγ≈0.11
95.0 [@] 3	0.08	173.81+x	(2$^-$)	79.382+x	(1$^-$)			%Iγ≈0.01
101.019 20	45	151.702+x	(1$^+$)	50.688+x	(2$^-$)			%Iγ≈5.9
104.20 9	2.0	154.93+x		50.688+x	(2$^-$)			%Iγ≈0.26
105.7 3	0.9	105.690+x	(2$^-$)	0+x	(1$^-$)			%Iγ≈0.12
106.4 3	0.5	185.492+x	(0$^+$,1$^+$)	79.382+x	(1$^-$)			%Iγ≈0.065
114.81	7.6	194.192+x	(0$^+$,1$^+$)	79.382+x	(1$^-$)	(E1)	0.1835 26	%Iγ≈0.99 α(K)=0.1554 22; α(L)=0.02219 31; α(M)=0.00472 7 α(N)=0.001047 15; α(O)=0.0001504 21; α(P)=7.78×10^{-6} 11
117.481 25	17.1	185.492+x	(0$^+$,1$^+$)	68.006+x	(2$^-$)	E1	0.1723 24	%Iγ≈2.2 α(K)=0.1460 20; α(L)=0.02081 29; α(M)=0.00442 6 α(N)=0.000981 14; α(O)=0.0001412 20; α(P)=7.33×10^{-6} 10
122.95 10	1.74	173.81+x	(2$^-$)	50.688+x	(2$^-$)	M1,E2	0.97 11	%Iγ≈0.23 α(K)=0.69 4; α(L)=0.22 11; α(M)=0.049 27 α(N)=0.011 6; α(O)=0.0014 7; α(P)=3.8×10^{-5} 9 α computed assuming δ=1.
126.15 8	1.24	194.192+x	(0$^+$,1$^+$)	68.006+x	(2$^-$)			%Iγ≈0.16
130.002 20	48	180.689+x	(1$^+$)	50.688+x	(2$^-$)	E1	0.1307 18	%Iγ≈6.2 α(K)=0.1109 16; α(L)=0.01566 22; α(M)=0.00333 5 α(N)=0.000739 10; α(O)=0.0001068 15; α(P)=5.65×10^{-6} 8
134.85 12	0.56	185.492+x	(0$^+$,1$^+$)	50.688+x	(2$^-$)			%Iγ≈0.073
151.703 20	100	151.702+x	(1$^+$)	0+x	(1$^-$)			%Iγ≈13
165.21 5	13.2	244.615+x	(0$^+$,1$^+$)	79.382+x	(1$^-$)			%Iγ≈1.7
167.89 8	2.2	850.227+x	(1$^+$)	682.31+x	(0,1)			%Iγ≈0.29
176.5 [c] 3	1.1 [c]	244.615+x	(0$^+$,1$^+$)	68.006+x	(2$^-$)			%Iγ≈0.14
176.5 [c] 3	0.14 [c]	682.31+x	(0,1)	505.49+x?				%Iγ≈0.018
180.693 22	66	180.689+x	(1$^+$)	0+x	(1$^-$)	E1	0.0535 7	%Iγ≈8.6 α(K)=0.0455 6; α(L)=0.00628 9; α(M)=0.001333 19 α(N)=0.000297 4; α(O)=4.35×10^{-5} 6; α(P)=2.413×10^{-6} 34
185.0 [@] 3	0.6	185.492+x	(0$^+$,1$^+$)	0+x	(1$^-$)			%Iγ≈0.078
193.7 3	1.1	244.615+x	(0$^+$,1$^+$)	50.688+x	(2$^-$)			%Iγ≈0.14
194.3 [@] 3	0.4	194.192+x	(0$^+$,1$^+$)	0+x	(1$^-$)			%Iγ≈0.052
197.9 3	≤0.3	831.55+x	(1$^+$)	633.85+x	(0,1)			%Iγ≤0.039

γ(^{154}Pm) (continued)

E_γ[†]	I_γ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Comments
216.40 *10*	2.52	850.227+x	(1$^+$)	633.85+x	(0,1)	%Iγ≈0.33
218.5 *4*	1.4	268.78+x		50.688+x	(2$^-$)	%Iγ≈0.18
244.70[@] *15*	0.91	244.615+x	(0$^+$,1$^+$)	0+x	(1$^-$)	%Iγ≈0.12
[x]254.4[@] *3*	0.89					%Iγ≈0.12
383.5 *5*	0.3	652.36+x		268.78+x		%Iγ≈0.039
414.0 *4*	0.25	682.31+x	(0,1)	268.78+x		%Iγ≈0.033
416.7 *3*	1.3	597.39+x		180.689+x	(1$^+$)	%Iγ≈0.17
425.2[@] *5*	1	505.49+x?		79.382+x	(1$^-$)	%Iγ≈0.13
453.4 *3*	0.7	633.85+x	(0,1)	180.689+x	(1$^+$)	%Iγ≈0.091
454.8[@] *5*	1.2	505.49+x?		50.688+x	(2$^-$)	%Iγ≈0.16
471.7 *3*	0.6	652.36+x		180.689+x	(1$^+$)	%Iγ≈0.078
482.1 *3*	0.5	633.85+x	(0,1)	151.702+x	(1$^+$)	%Iγ≈0.065
[x]496.4[@] *3*	<1.0					%Iγ<0.13
501.8 *3*	0.5	682.31+x	(0,1)	180.689+x	(1$^+$)	%Iγ≈0.065
505.8[d] *3*	0.2	699.99+x?		194.192+x	(0$^+$,1$^+$)	%Iγ≈0.026
508.7 *4*	0.7	682.31+x	(0,1)	173.81+x	(2$^-$)	%Iγ≈0.091
[x]524.0[@] *3*	<2					%Iγ<0.26
527.3 *4*	0.5	682.31+x	(0,1)	154.93+x		%Iγ≈0.065
554.6 *3*	3.0	633.85+x	(0,1)	79.382+x	(1$^-$)	%Iγ≈0.39
566.2[@] *5*	0.6	633.85+x	(0,1)	68.006+x	(2$^-$)	%Iγ≈0.078
587.0 *4*	0.5	831.55+x	(1$^+$)	244.615+x	(0$^+$,1$^+$)	%Iγ≈0.065
602.8 *3*	1.63	682.31+x	(0,1)	79.382+x	(1$^-$)	%Iγ≈0.21
605.51 *10*	10.8	850.227+x	(1$^+$)	244.615+x	(0$^+$,1$^+$)	%Iγ≈1.4
613.6[@] *4*	0.2	682.31+x	(0,1)	68.006+x	(2$^-$)	%Iγ≈0.026
[x]623.9[@] *3*	<2					%Iγ<0.26
637.4 *3*	2.24	831.55+x	(1$^+$)	194.192+x	(0$^+$,1$^+$)	%Iγ≈0.29
645.9[@] *5*	0.6	831.55+x	(1$^+$)	185.492+x	(0$^+$,1$^+$)	%Iγ≈0.078
650.3 *3*	2.10	831.55+x	(1$^+$)	180.689+x	(1$^+$)	%Iγ≈0.27
662.2 *4*	0.5	906.96+x	(0,1)	244.615+x	(0$^+$,1$^+$)	%Iγ≈0.065
669.7 *4*	1.3	850.227+x	(1$^+$)	180.689+x	(1$^+$)	%Iγ≈0.17
676.6[@] *4*	0.5	850.227+x	(1$^+$)	173.81+x	(2$^-$)	%Iγ≈0.065
695.2[@] *5*	0.5	850.227+x	(1$^+$)	154.93+x		%Iγ≈0.065
698.73 *20*	4.6	850.227+x	(1$^+$)	151.702+x	(1$^+$)	%Iγ≈0.6
[x]717.0[@] *3*	1.2					%Iγ≈0.16
721.46 *5*	16.6	906.96+x	(0,1)	185.492+x	(0$^+$,1$^+$)	%Iγ≈2.2
726.27 *10*	8.9	906.96+x	(0,1)	180.689+x	(1$^+$)	%Iγ≈1.2
[x]735.7[@] *3*	<0.3					%Iγ<0.039
744.45 *25*	9.1	850.227+x	(1$^+$)	105.690+x	(2$^-$)	%Iγ≈1.2

γ(^{154}Pm) (continued)

E_γ[†]	I_γ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Comments
[x]751.8[@] 5	0.85					%Iγ≈0.11
755.34 12	8.2	906.96+x	(0,1)	151.702+x	(1$^+$)	%Iγ≈1.1
763.66 15	1.17	831.55+x	(1$^+$)	68.006+x	(2$^-$)	%Iγ≈0.15
770.90 20	3.0	850.227+x	(1$^+$)	79.382+x	(1$^-$)	%Iγ≈0.39
780.79 15	11.6	831.55+x	(1$^+$)	50.688+x	(2$^-$)	%Iγ≈1.5
782.7 3	1.1	850.227+x	(1$^+$)	68.006+x	(2$^-$)	%Iγ≈0.14
[x]787.3[@] 3	0.7					%Iγ≈0.091
[x]793.0[@] 3	0.74					%Iγ≈0.096
799.55 4	82	850.227+x	(1$^+$)	50.688+x	(2$^-$)	%Iγ≈11
804.96 25	3.5	1049.64+x	(1$^+$)	244.615+x	(0$^+$,1$^+$)	%Iγ≈0.46
815.9 3	0.8	1060.53+x	(0,1)	244.615+x	(0$^+$,1$^+$)	%Iγ≈0.1
827.51 15	1.07	906.96+x	(0,1)	79.382+x	(1$^-$)	%Iγ≈0.14
831.59 15	9.8	831.55+x	(1$^+$)	0+x	(1$^-$)	%Iγ≈1.3
839.0 3	5.8	906.96+x	(0,1)	68.006+x	(2$^-$)	%Iγ≈0.75
850.20 5	40	850.227+x	(1$^+$)	0+x	(1$^-$)	%Iγ≈5.2
855.4 3	1.0	1049.64+x	(1$^+$)	194.192+x	(0$^+$,1$^+$)	%Iγ≈0.13
864.16 15	14.2	1049.64+x	(1$^+$)	185.492+x	(0$^+$,1$^+$)	%Iγ≈1.9
866.4 3	3.5	1060.53+x	(0,1)	194.192+x	(0$^+$,1$^+$)	%Iγ≈0.46
868.95 20	4.4	1049.64+x	(1$^+$)	180.689+x	(1$^+$)	%Iγ≈0.57
875.02 15	6.0	1060.53+x	(0,1)	185.492+x	(0$^+$,1$^+$)	%Iγ≈0.78
908.78 12	14.0	1060.53+x	(0,1)	151.702+x	(1$^+$)	%Iγ≈1.8
944.08 20	4.8	1049.64+x	(1$^+$)	105.690+x	(2$^-$)	%Iγ≈0.62
[x]953.2[@] 3	0.9					%Iγ≈0.12
960.0 3	2.8	1204.50+x	(0,1)	244.615+x	(0$^+$,1$^+$)	%Iγ≈0.36
970.0[@] 3	1.7	1049.64+x	(1$^+$)	79.382+x	(1$^-$)	%Iγ≈0.22
981.2 3	1.4	1060.53+x	(0,1)	79.382+x	(1$^-$)	%Iγ≈0.18
981.4 3	3.0	1049.64+x	(1$^+$)	68.006+x	(2$^-$)	%Iγ≈0.39
992.6 3	2.0	1060.53+x	(0,1)	68.006+x	(2$^-$)	%Iγ≈0.26
999.06 20	4.6	1049.64+x	(1$^+$)	50.688+x	(2$^-$)	%Iγ≈0.6
1010.2 3	0.3	1204.50+x	(0,1)	194.192+x	(0$^+$,1$^+$)	%Iγ≈0.039
1018.85 25	5.6	1204.50+x	(0,1)	185.492+x	(0$^+$,1$^+$)	%Iγ≈0.73
1024.1 3	1.5	1204.50+x	(0,1)	180.689+x	(1$^+$)	%Iγ≈0.2
1049.7[@] 4	1.1	1049.64+x	(1$^+$)	0+x	(1$^-$)	%Iγ≈0.14
1052.79 20	3.8	1204.50+x	(0,1)	151.702+x	(1$^+$)	%Iγ≈0.49
1060.6 3	0.9	1060.53+x	(0,1)	0+x	(1$^-$)	%Iγ≈0.12
1136.5 4	1.4	1204.50+x	(0,1)	68.006+x	(2$^-$)	%Iγ≈0.18
[x]1147.9[@] 5	0.4					%Iγ≈0.052
1153.7[@] 3	1.24	1204.50+x	(0,1)	50.688+x	(2$^-$)	%Iγ≈0.16
1194.7 3	0.25	1389.21+x	(0,1)	194.192+x	(0$^+$,1$^+$)	%Iγ≈0.033
1283.51 15	6.1	1389.21+x	(0,1)	105.690+x	(2$^-$)	%Iγ≈0.79

γ(^{154}Pm) (continued)

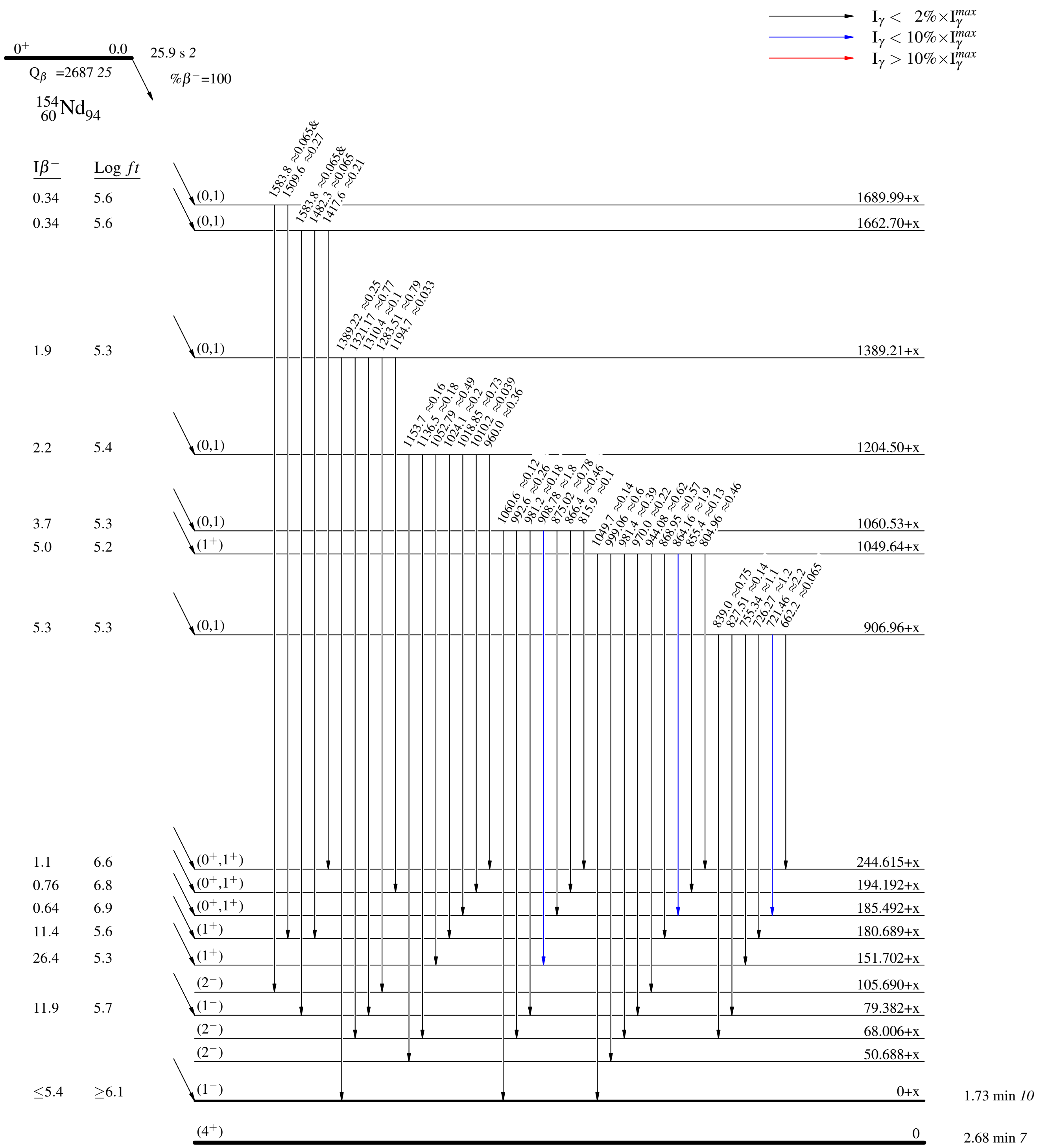
E_γ [†]	I_γ [‡a]	E_i(level)	J^π_i	E_f	J^π_f	Comments
1310.4[@] *4*	0.8	1389.21+x	(0,1)	79.382+x	(1$^-$)	%Iγ≈0.1
1321.17 *20*	5.9	1389.21+x	(0,1)	68.006+x	(2$^-$)	%Iγ≈0.77
1389.22[@] *20*	1.9	1389.21+x	(0,1)	0+x	(1$^-$)	%Iγ≈0.25
1417.6[@] *3*	1.6	1662.70+x	(0,1)	244.615+x	(0$^+$,1$^+$)	%Iγ≈0.21
[x]1457.1 *3*	0.8					%Iγ≈0.1
1482.3 *3*	0.5	1662.70+x	(0,1)	180.689+x	(1$^+$)	%Iγ≈0.065
1509.6 *4*	2.1	1689.99+x	(0,1)	180.689+x	(1$^+$)	%Iγ≈0.27
1583.8[b@] *5*	0.5[b]	1662.70+x	(0,1)	79.382+x	(1$^-$)	%Iγ≈0.065
1583.8[b@] *5*	0.5[b]	1689.99+x	(0,1)	105.690+x	(2$^-$)	%Iγ≈0.065
[x]1706.6 *5*	0.3					%Iγ≈0.039

† From 1993GrZZ.
‡ From 1993GrZZ. Values have not been corrected for coincidence summing, which in the worst cases could be as large as 30%.
\# Same values as the ^{154}Pm Adopted Gammas, based on data of 1993GrZZ, from α_K(exp), from IKx/Iγ ratio or from α(exp) based on intensity balances from γγ coincidence spectra.
@ Existence and placement of γ is questionable.
& Additional information 5.
a For absolute intensity per 100 decays, multiply by ≈0.13.
b Multiply placed with undivided intensity.
c Multiply placed with intensity suitably divided.
d Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09

Decay Scheme

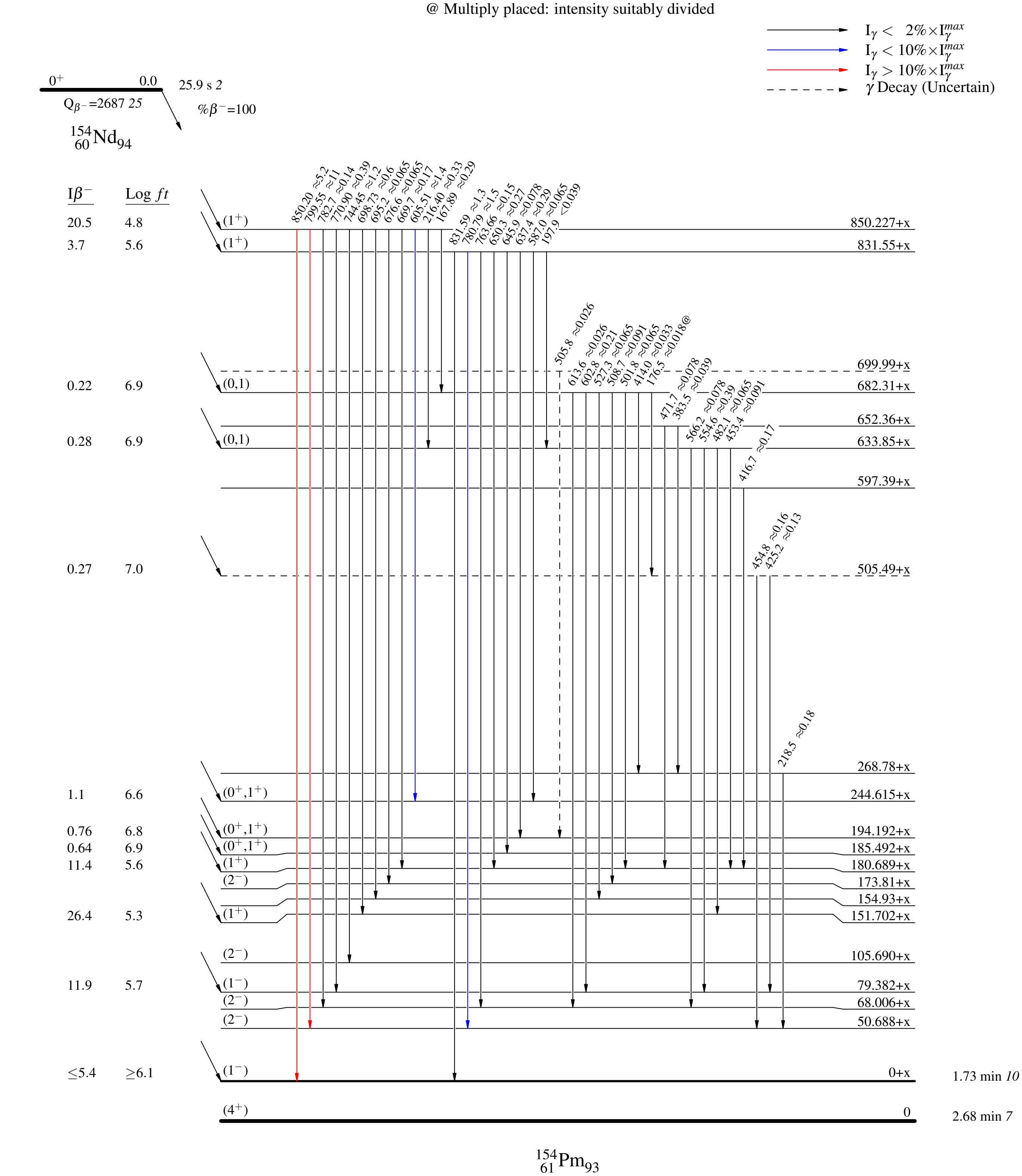
Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given



^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09

Decay Scheme (continued)

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



^{154}Nd β^- decay 1993GrZZ,1995Gr19,1997Gr09

Decay Scheme (continued)

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