^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09

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

Parent: ^{154}Pm: E=0+x; J$^\pi$=(1$^-$); T$_{1/2}$=1.73 min *10*; Q(β^-)=4189 *25*; %β^- decay=100
^{154}Pm-Q(β^-): From 2021Wa16.
^{154}Pm-%β^- decay: 100% β^- decay is assumed, since no IT decay has been reported.
Additional information 1.
Data are primarily from 1993GrZY, a private communication; any conflicts with most complete published sets of data, namely 1971Da28 and 1974Ya07, are noted. Others: 1958Wi42, 1972Ta13, and 1973Pr05.
Experimental methods:
1958Wi42, 1960Wi10: Produced by ^{154}Sm(n,p). Measured T$_{1/2}$ and β^- endpoint, probably for mixture of isomers.
1971Da28: Produced by ^{154}Sm(n,p) with enriched (99.5%) target and E(n)=14.8 MeV. Measured γ singles, $\gamma\gamma$ and $\gamma\beta^-$ coincidences with NaI and Ge detectors.
1972Ta13: Produced by ^{154}Sm(n,p) with enriched (99.5%) target and E(n)=14 MeV. Measured γ singles, $\gamma\gamma$ and $\gamma\beta^-$ coincidences with NaI, Ge, and plastic scintillator detectors.
1973Pr05: Produced by ^{154}Sm(n,p) with enriched target and E(n)=14.8 MeV. Measured γ and β^- spectra with GM tube, NaI, Ge, and Si(Li) detectors.
1974Ya07: Produced by ^{154}Sm(n,p) with enriched (99.54%) target and E(n) $\approx$ 15 MeV. Measured γ singles and $\gamma\gamma$ coincidences with NaI and Ge detectors.
1990Ba57: Produced by ^{252}Cf spontaneous fission with radiochemistry. Level scheme only, no γ data included. See 1993GrZY.
1993GrZY: Produced by ^{252}Cf spontaneous fission with isotope separation. Measured γ singles and $\gamma\gamma$ coincidences. Private communication.
1995Gr19: Produced by ^{252}Cf spontaneous fission with isotope separation. Measured Iβ(0+82) with a 4$\pi\beta\gamma$ system.
1997Gr09: Produced by ^{252}Cf spontaneous fission with isotope separation. Measured Iβ^- as a function excitation energy with a total absorption γ spectrometer.

^{154}Sm Levels

E(level)[†‡]	J$^\pi$[#]	T$_{1/2}$	E(level)[†‡]	J$^\pi$[#]
0.0[@]	0$^+$	stable	1945.52 *7*	
81.994[@] *21*	2$^+$	3.02 ns *4*	1973.73 *5*	1$^-$,2$^+$
266.811[@] *30*	4$^+$	172 ps *4*	2015.37 *5*	(1$^-$,2$^+$)
921.379[&] *29*	1$^-$	21 fs *1*	2069.068 *34*	(2$^+$)
1012.33[&] *7*	3$^-$	23 fs *3*	2131.75 *5*	(2$^+$)
1099.24[a] *6*	0$^+$	0.92 ps *18*	2139.79 *4*	(1,2$^+$)
1177.780[a] *31*	2$^+$	4.3 ps *5*	2196.1? *5*	(1,2$^+$)
1202.36 *4*	0$^+$		2368.80 *13*	(1,2$^+$)
1286.32 *6*	2$^+$		2421.96? *31*	(1,2$^+$)
1440.05 *6*	2$^+$	0.42 ps *3*	2428.49 *10*	
1475.59 *5*	1$^-$		2556.57 *21*	1$^-$
1515.37 *14*	2$^-$		2591.32 *10*	
1614.80 *7*			2618.04 *12*	1$^-$
1673.78 *12*	2		2721.29 *24*	(1,2$^+$)
1754.66 *22*			2779.00 *17*	1
1755.78 *11*	1$^-$,2,3$^-$		2842.82 *31*	1$^-$
1764.40 *31*			3051.23 *14*	
1890.11 *10*	1$^-$		3193.15 *31*	1$^+$

† Additional information 2.
‡ From least-squares fit to γ energies, except γ's with questionable placements are omitted.
\# From ^{154}Sm Adopted Levels.

Continued on next page (footnotes at end of table)

^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09 (continued)

^{154}Sm Levels (continued)

@ Band(A): $K^\pi=0^+$ ground state band.
& Band(B): $K^\pi=0^-$ octupole-vibrational band.
a Band(C): First excited $K^\pi=0^+$ band.

β^- radiations

The Iβ^- to the excited levels have been deduced independently of the γ data from the total absorption γ spectrometer, TAGS, data of 1997Gr09. The measured spectrum represents approximately the β^- feeding intensity as a function of the excitation energy. 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 represent the β^- feeding to a single level or to a group of levels in that region.
av Eβ: Additional information 3.

E(decay)	E(level)	Iβ^- †‡#	Log *ft*	Comments
(996 *25*)	3193.15	<0.32	>6.2	av Eβ=337 *10*
(1138 *25*)	3051.23	<2.0	>5.7	av Eβ=395 *10*
(1346 *25*)	2842.82	<0.27	>6.8	av Eβ=482 *11*
(1410 *25*)	2779.00	0.7 *6*	6.5 *4*	av Eβ=509 *11* Iβ^-: Value from TAGS analysis is 0.67 (1997Gr09).
(1468 *25*)	2721.29	<0.46	>6.7	av Eβ=533 *11* Iβ^-: Value from TAGS analysis is 0.190 (1997Gr09).
(1571 *25*)	2618.04	1.1 *3*	6.4 *1*	av Eβ=578 *11*
(1598 *25*)	2591.32	1.9 *11*	6.2 *3*	av Eβ=589 *11*
(1632 *25*)	2556.57	<0.59	>6.8	av Eβ=604 *11*
(1761 *25*)	2428.49	1.5 *3*	6.5 *1*	av Eβ=660 *11* Iβ^-: Value from TAGS analysis is 2.30 (1997Gr09).
(1820 *25*)	2368.80	1.1 *8*	6.7 *3*	av Eβ=686 *11* Iβ^-: Value from TAGS analysis is 1.49 (1997Gr09).
1.8×10^3 *2*	2139.79	30 *8*	5.5 *1*	av Eβ=787 *11* E(decay): From 1971Da28 $\gamma\beta^-$ coincidences to this level and 2069 level. Other: 1.8×10^3 *2* from $\gamma\beta^-$ coincidences with 2.0-2.2 MeV γ region (1974Ya07).
(2057 *25*)	2131.75	2.0 *9*	6.6 *2*	av Eβ=791 *11* Iβ^-: Value from TAGS analysis is 2.75 (1997Gr09).
1.8×10^3 *2*	2069.068	20 *5*	5.7 *1*	av Eβ=819 *11* E(decay): From 1971Da28 $\gamma\beta^-$ coincidences to this level and 2140 level. Other: 1.8×10^3 *2* from $\gamma\beta^-$ coincidences with 2.0-2.2 MeV γ region (1974Ya07).
(2174 *25*)	2015.37	<0.7	>7.2	av Eβ=843 *11* Iβ^-: Value from TAGS analysis is 0.0 (1997Gr09).
(2215 *25*)	1973.73	<1.1	>7.0	av Eβ=861 *11* Iβ^-: Value from TAGS analysis is 0.134 (1997Gr09).
(2244 *25*)	1945.52	<0.48	>7.4	av Eβ=874 *11*
(2299 *25*)	1890.11	2.7 *10*	6.7 *2*	av Eβ=899 *11*
(2425 *25*)	1764.40	<0.45	>7.6	av Eβ=956 *11*
(2574 *25*)	1614.80	0.72 *25*	7.5 *2*	av Eβ=1023 *11*
2.4×10^3 *2*	1475.59	<43	>5.8	av Eβ=1086 *11* E(decay): From coincidence with 1393 γ (1971Da28), but γ also occurs in decay of the ^{154}Pm (2.68 m) isomer.
(2749 *25*)	1440.05	≈0.3	≈8.0	av Eβ=1102 *11* Iβ^-: Value from TAGS analysis is 0.26 (1997Gr09).
(2903 *25*)	1286.32	<1	>7.5	av Eβ=1173 *11* Iβ^-: Value from TAGS analysis is 0.51 (1997Gr09).
(2987 *25*)	1202.36	<1.6	>7.4	av Eβ=1211 *11* Iβ^-: Value from TAGS analysis is 1.12 (1997Gr09).
(3090 *25*)	1099.24	<1	>7.7	av Eβ=1258 *11*

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^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^- [†‡#]	Log *ft*	Comments
3.0×10^3 *2*	921.379	2 *2*	≥7.0	av Eβ=1340 *11* E(decay): From 1971Da28 and 1974Ya07, from endpoint of singles spectrum and $\gamma\beta^-$ coincidences. Other: 3010 *80* (1973Pr05) as the second component in the singles spectrum.
(4107 *25*)	81.994	3.8 *21*	7.6 *3*	av Eβ=1727 *12* Iβ^-: From Iβ(0+82)=7.6 *30* from a 4$\pi\beta\gamma$ measurement (1995Gr19).
3.95×10^3 *8*	0.0	3.8 *21*	7.6 *3*	av Eβ=1765 *12* E(decay): From endpoint of the singles β^- spectrum (1973Pr05). Others: 1971Da28 and 1974Ya07 give endpoint of highest energy branch as only 3.0 MeV. Decay energy gives 3950 *80*. Iβ^-: From Iβ(0+82)=7.6 *30* from 4$\pi\beta\gamma$ measurement (1995Gr19).

† Values are from γ intensity balances, except those for the 0- and 82-keV levels which are from measurements of 1995Gr19. The quoted uncertainties do not include any contribution from the possible placement of the unplaced γ's. 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 decay scheme is not complete, values below 0.2% are not given.

‡ The pseudolevels and the associated Iβ^- from the TAGS data analysis are 3300 keV, 0.36%; 3400, 0.45; 3500, 0.45; 3600, 0.112; 3700, 0.134; 3800, 0.038; and 3900, 0.013.

Absolute intensity per 100 decays.

γ(^{154}Sm)

Iγ normalization: From requirement of 100% feeding to gs and assuming Iβ(0+82)=7.6 30 (1995Gr19). Calculated normalization factor 0.90 +19−14 is adopted as 0.90 17.

E_γ[†‡]	I_γ[#@c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	α[b]	Comments
62.62[e] 6	<0.08	2131.75	(2$^+$)	2069.068	(2$^+$)			%Iγ<0.072
82.016 25	12.6 15	81.994	2$^+$	0.0	0$^+$	E2	4.86 7	%Iγ=11.3 25 α(K)=1.987 28; α(L)=2.225 31; α(M)=0.517 7 α(N)=0.1132 16; α(O)=0.01412 20; α(P)=8.30×10^{-5} 12 Mult.: From α_K(exp)=2.04 15 (1993GrZY).
95.2[ae] 3	0.04	2069.068	(2$^+$)	1973.73	1$^-$,2$^+$			%Iγ=0.036
[x]104.30[a] 4	≈0.02							%Iγ≈0.018
124.43 4	<0.38	2139.79	(1,2$^+$)	2015.37	(1$^-$,2$^+$)			%Iγ<0.34
[x]138.0[a] 3	<0.08							%Iγ<0.072
166.06 3	<0.62	2139.79	(1,2$^+$)	1973.73	1$^-$,2$^+$	E1	0.0696 10	%Iγ<0.56 α(K)=0.0591 8; α(L)=0.00828 12; α(M)=0.001770 25 α(N)=0.000397 6; α(O)=5.73×10^{-5} 8; α(P)=3.06×10^{-6} 4 Mult.: From α_K(exp) < 0.14 (1993GrZY).
184.810 25	3.1 20	266.811	4$^+$	81.994	2$^+$	E2	0.272 4	%Iγ=2.8 19 α(K)=0.1915 27; α(L)=0.0628 9; α(M)=0.01427 20 α(N)=0.00315 4; α(O)=0.000416 6; α(P)=9.32×10^{-6} 13
194.29 6	<0.32	2139.79	(1,2$^+$)	1945.52				%Iγ<0.29
[x]244.52 15	<0.36							%Iγ<0.32
256.1[a] 4	<0.14	1177.780	2$^+$	921.379	1$^-$	[E1]	0.02206 32	%Iγ<0.13 α(K)=0.01880 27; α(L)=0.00257 4; α(M)=0.000549 8 α(N)=0.0001235 18; α(O)=1.806×10^{-5} 26; α(P)=1.020×10^{-6} 15 E_γ,Mult.: Not adopted. Mult from levels.
273.96 20	<0.20	1286.32	2$^+$	1012.33	3$^-$			%Iγ<0.18
280.1[a] 3	≈0.004	1755.78	1$^-$,2,3$^-$	1475.59	1$^-$			%Iγ≈0.0036 E_γ: γ not included in the Adopted Gammas.
280.96 4	1.23 10	1202.36	0$^+$	921.379	1$^-$			%Iγ=1.11 23
[x]293.1[a] 3	<0.12							%Iγ<0.11
315.77 20	≈0.012	1755.78	1$^-$,2,3$^-$	1440.05	2$^+$			%Iγ≈0.011
[x]354.90 20	<0.34							%Iγ<0.31
364.67 10	0.25 20	1286.32	2$^+$	921.379	1$^-$			%Iγ=0.23 19
384.5[a] 3	<0.14	2139.79	(1,2$^+$)	1755.78	1$^-$,2,3$^-$			%Iγ<0.13
[x]432.6[a] 3	<0.16							%Iγ<0.14
465.8 3	<0.36	2139.79	(1,2$^+$)	1673.78	2			%Iγ<0.32
[x]482.57 20	0.38 30							%Iγ=0.34 28
524.2 3	<0.16	2139.79	(1,2$^+$)	1614.80				%Iγ<0.14
554.25 8	0.60 10	1475.59	1$^-$	921.379	1$^-$			%Iγ=0.54 14

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γ(^{154}Sm) (continued)

E_γ[†‡]	I_γ[#@c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	α[b]	Comments
[x]560.3[a] *3*	<0.24							%Iγ<0.22
603.54 *25*	<0.38	1890.11	1^-	1286.32	2^+			%Iγ<0.34
624.6 *4*	<0.28	2139.79	$(1,2^+)$	1515.37	2^-			%Iγ<0.25
661.7 *3*	0.14 *6*	1673.78	2	1012.33	3^-			%Iγ=0.13 *6*
664.20 *14*	0.52 *10*	2139.79	$(1,2^+)$	1475.59	1^-			%Iγ=0.47 *13*
688.0[a] *4*	<0.38	1890.11	1^-	1202.36	0^+			%Iγ<0.34
693.39 *6*	0.88 *10*	1614.80		921.379	1^-			%Iγ=0.79 *18*
700.0 *3*	<0.44	2139.79	$(1,2^+)$	1440.05	2^+			%Iγ<0.4
[x]721.0[a] *3*	<0.26							%Iγ<0.23
[x]730.1[a] *4*	<0.16							%Iγ<0.14
742.2 *3*	≈0.03	1754.66		1012.33	3^-			%Iγ≈0.027
743.4 *3*	≈0.04	1755.78	$1^-,2,3^-$	1012.33	3^-			%Iγ≈0.036
745.40 *15*	0.27 *20*	1012.33	3^-	266.811	4^+	E1	1.83×10^{-3} *3*	%Iγ=0.24 *19*
								α(K)=0.001571 *22*; α(L)=0.0002044 *29*; α(M)=4.35×10^{-5} *6*
								α(N)=9.83×10^{-6} *14*; α(O)=1.466×10^{-6} *21*; α(P)=9.04×10^{-8} *13*
752.24 *15*	0.17 *7*	1673.78	2	921.379	1^-			%Iγ=0.15 *7*
782.9 *3*	<0.40	2069.068	(2^+)	1286.32	2^+			%Iγ<0.36
833.4 *3*	≈0.04	1754.66		921.379	1^-			%Iγ≈0.036
834.45 *20*	≈0.05	1755.78	$1^-,2,3^-$	921.379	1^-			%Iγ≈0.045
837.4[a]	0.15	2015.37	$(1^-,2^+)$	1177.780	2^+			%Iγ=0.14
								E_γ: Presence of γ deduced from γγ coincidences; Eγ is from level energy difference.
								I_γ: From intensity balance.
839.36 *4*	8.8 *10*	921.379	1^-	81.994	2^+	E1	1.44×10^{-3} *2*	%Iγ=7.9 *18*
								α(K)=0.001240 *17*; α(L)=0.0001605 *22*; α(M)=3.41×10^{-5} *5*
								α(N)=7.72×10^{-6} *11*; α(O)=1.153×10^{-6} *16*; α(P)=7.16×10^{-8} *10*
853.1[e] *5*	<0.22	2139.79	$(1,2^+)$	1286.32	2^+			%Iγ<0.2
853.3	<0.13	2368.80	$(1,2^+)$	1515.37	2^-			%Iγ<0.12
866.5 *3*	0.42 *20*	2069.068	(2^+)	1202.36	0^+			%Iγ=0.38 *20*
891.28 *4*	5.62 *5*	2069.068	(2^+)	1177.780	2^+			%Iγ=5.1 *10*
[x]901.9[a] *3*	0.38 *30*							%Iγ=0.34 *28*
910.93 *6*	3.13 *5*	1177.780	2^+	266.811	4^+	E2	0.00304 *4*	%Iγ=2.8 *5*
								α(K)=0.00257 *4*; α(L)=0.000368 *5*; α(M)=7.92×10^{-5} *11*
								α(N)=1.789×10^{-5} *25*; α(O)=2.64×10^{-6} *4*; α(P)=1.523×10^{-7} *21*
917.0[a] *5*	<0.28	2591.32		1673.78	2			%Iγ<0.25
919.23[a] *20*	<0.58	3051.23		2131.75	(2^+)			%Iγ<0.52
921.36 *6*	6.1 *10*	921.379	1^-	0.0	0^+	E1	1.20×10^{-3} *2*	%Iγ=5.5 *14*
								α(K)=0.001036 *14*; α(L)=0.0001335 *19*; α(M)=2.84×10^{-5} *4*
								α(N)=6.42×10^{-6} *9*; α(O)=9.60×10^{-7} *13*; α(P)=5.99×10^{-8} *8*
930.38 *8*	0.51 *20*	1012.33	3^-	81.994	2^+	E1	1.18×10^{-3} *2*	%Iγ=0.46 *20*

From ENSDF

γ(^{154}Sm) (continued)

E_γ[†‡]	I_γ[#@c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[b]	Comments
								α(K)=0.001016 *14*; α(L)=0.0001310 *18*; α(M)=2.78×10^{-5} *4* α(N)=6.30×10^{-6} *9*; α(O)=9.42×10^{-7} *13*; α(P)=5.88×10^{-8} *8*
933.5 *4*	0.16 *9*	1945.52		1012.33	3$^-$			%Iγ=0.14 *9*
937.30 *12*	0.37 *15*	2139.79	(1,2$^+$)	1202.36	0$^+$			%Iγ=0.33 *15*
953.97 *8*	1.24 *10*	2131.75	(2$^+$)	1177.780	2$^+$			%Iγ=1.12 *23*
961.3[a] *5*	<0.16	1973.73	1$^-$,2$^+$	1012.33	3$^-$			%Iγ<0.14
962.00 *8*	3.38 *5*	2139.79	(1,2$^+$)	1177.780	2$^+$			%Iγ=3.0 *6*
969.79 *6*	4.65 *5*	2069.068	(2$^+$)	1099.24	0$^+$			%Iγ=4.2 *8*
1002.8[a] *10*	<0.16	2015.37	(1$^-$,2$^+$)	1012.33	3$^-$			%Iγ<0.14
1017.21 *12*	6.3 *5*	1099.24	0$^+$	81.994	2$^+$	[E2]	2.40×10^{-3} *3*	%Iγ=5.7 *12* α(K)=0.002035 *28*; α(L)=0.000286 *4*; α(M)=6.14×10^{-5} *9* α(N)=1.387×10^{-5} *19*; α(O)=2.056×10^{-6} *29*; α(P)=1.210×10^{-7} *17*
1019.48 *20*	<0.55	1286.32	2$^+$	266.811	4$^+$			%Iγ<0.5
1022.4[a] *4*	<0.22	2779.00	1	1755.78	1$^-$,2,3$^-$			%Iγ<0.2
1024.3 *3*	0.11 *6*	1945.52		921.379	1$^-$			%Iγ=0.10 *6*
1032.55 *8*	0.85 *10*	2131.75	(2$^+$)	1099.24	0$^+$			%Iγ=0.77 *17*
1040.7[ae] *5*	<0.26	2139.79	(1,2$^+$)	1099.24	0$^+$			%Iγ<0.23
1057.0[a] *5*	<0.16	2069.068	(2$^+$)	1012.33	3$^-$			%Iγ<0.14
^{x}1076.5[a] *5*	<0.14							%Iγ<0.13
1082.0[a] *5*	<0.22	2368.80	(1,2$^+$)	1286.32	2$^+$			%Iγ<0.2
1095.84 *6*	4.42 *5*	1177.780	2$^+$	81.994	2$^+$			%Iγ=4.0 *8*
1096.9[a] *5*	≈0.16	2196.1?	(1,2$^+$)	1099.24	0$^+$			%Iγ≈0.14
1120.41 *8*	0.95 *10*	1202.36	0$^+$	81.994	2$^+$			%Iγ=0.86 *19*
1147.69 *6*	7.9 *5*	2069.068	(2$^+$)	921.379	1$^-$			%Iγ=7.1 *14*
1173.5 *3*	≈0.02	1440.05	2$^+$	266.811	4$^+$			%Iγ≈0.018
1177.75 *6*	3.24 *5*	1177.780	2$^+$	0.0	0$^+$	E2	1.78×10^{-3} *3*	%Iγ=2.9 *6* α(K)=0.001510 *21*; α(L)=0.0002074 *29*; α(M)=4.44×10^{-5} *6* α(N)=1.004×10^{-5} *14*; α(O)=1.494×10^{-6} *21*; α(P)=8.99×10^{-8} *13*; α(IPF)=3.57×10^{-6} *5*
1191.1 *3*	0.22 *20*	2368.80	(1,2$^+$)	1177.780	2$^+$			%Iγ=0.20 *19*
1204.56 *10*	0.50 *20*	1286.32	2$^+$	81.994	2$^+$			%Iγ=0.45 *20*
1210.2 *3*	<0.36	2131.75	(2$^+$)	921.379	1$^-$			%Iγ<0.32
1218.57 *10*	0.63 *10*	2139.79	(1,2$^+$)	921.379	1$^-$			%Iγ=0.57 *14*
^{x}1231.5[a] *3*	<0.38							%Iγ<0.34
^{x}1297.9[a] *3*	<0.16							%Iγ<0.14
^{x}1341.2[a] *3*	<0.18							%Iγ<0.16
^{x}1344.6 *5*	<0.22							%Iγ<0.2
1358.05 *6*	≈0.28	1440.05	2$^+$	81.994	2$^+$			%Iγ≈0.25
1389.3 *3*	<0.56	2591.32		1202.36	0$^+$			%Iγ<0.5
1393.58 *6*	14.4 *5*	1475.59	1$^-$	81.994	2$^+$			%Iγ=13.0 *25*

$^{154}_{62}$Sm$_{92}$-6

γ(^{154}Sm) (continued)

E_γ [†‡]	I_γ [#@c]	E_i(level)	J^π_i	E_f	J^π_f	Comments
1433.38 *15*	≈0.21	1515.37	2^-	81.994	2^+	%Iγ≈0.19
1440.0 *3*	≈0.28	1440.05	2^+	0.0	0^+	%Iγ≈0.25
1447.4[ae] *3*	<0.34	2368.80	$(1,2^+)$	921.379	1^-	%Iγ<0.31
1475.4[e] *3*	<0.14	1475.59	1^-	0.0	0^+	%Iγ<0.13
1576.7[da] *8*	<0.24[d]	2779.00	1	1202.36	0^+	%Iγ<0.22
1576.7[d] *8*	<0.24[d]	3051.23		1475.59	1^-	%Iγ<0.22
[x]1660.6[a] *4*	<0.20					%Iγ<0.18
1670.16 *25*	<0.42	2591.32		921.379	1^-	%Iγ<0.38
1681.6 *5*	<0.18	1764.40		81.994	2^+	%Iγ<0.16
1764.9[d] *4*	<0.32[d]	1764.40		0.0	0^+	%Iγ<0.29
1764.9[d] *4*	<0.32[d]	3051.23		1286.32	2^+	%Iγ<0.29
1801.6[a] *5*	0.11	2069.068	(2^+)	266.811	4^+	%Iγ=0.099
1808.17 *12*	1.55 *10*	1890.11	1^-	81.994	2^+	%Iγ=1.40 *28*
1858.3 *4*	<0.24	2779.00	1	921.379	1^-	%Iγ<0.22
1863.9[a] *5*	≤0.24	1945.52		81.994	2^+	%Iγ≤0.22
1865.7[a] *5*	0.08	2131.75	(2^+)	266.811	4^+	%Iγ=0.072
1873.6[ae] *8*	0.07	2139.79	$(1,2^+)$	266.811	4^+	%Iγ=0.063
1873.6[d] *8*	<0.14[d]	3051.23		1177.780	2^+	%Iγ<0.13
1890.00 *20*	1.03 *15*	1890.11	1^-	0.0	0^+	%Iγ=0.93 *22*
1891.8 *3*	0.39 *30*	1973.73	$1^-,2^+$	81.994	2^+	%Iγ=0.35 *28*
1933.5 *3*	<0.28	2015.37	$(1^-,2^+)$	81.994	2^+	%Iγ<0.25
1973.59 *20*	0.48 *10*	1973.73	$1^-,2^+$	0.0	0^+	%Iγ=0.43 *12*
1987.04 *10*	1.06 *20*	2069.068	(2^+)	81.994	2^+	%Iγ=0.95 *26*
2015.5[a] *4*	<0.20	2015.37	$(1^-,2^+)$	0.0	0^+	%Iγ<0.18
2015.5[a] *4*	<0.20	3193.15	1^+	1177.780	2^+	%Iγ<0.18
2050.1 *3*	<0.32	2131.75	(2^+)	81.994	2^+	%Iγ<0.29
2057.76 *6*	17.1 *5*	2139.79	$(1,2^+)$	81.994	2^+	%Iγ=15.4 *30*
2069.04 *8*	1.63 *10*	2069.068	(2^+)	0.0	0^+	%Iγ=1.47 *29*
2130.4 *3*	0.21 *20*	3051.23		921.379	1^-	%Iγ=0.19 *19*
2139.76 *8*	9.7 *5*	2139.79	$(1,2^+)$	0.0	0^+	%Iγ=8.7 *17*
2287.0 *3*	<0.26	2368.80	$(1,2^+)$	81.994	2^+	%Iγ<0.23
2340.8[ae] *5*	<0.16	2421.96?	$(1,2^+)$	81.994	2^+	%Iγ<0.14
2346.48 *10*	1.70 *5*	2428.49		81.994	2^+	%Iγ=1.53 *29*
2368.74 *20*	0.50 *10*	2368.80	$(1,2^+)$	0.0	0^+	%Iγ=0.45 *13*
2421.4[ae] *4*	<0.14	2421.96?	$(1,2^+)$	0.0	0^+	%Iγ<0.13
2474.5 *3*	<0.38	2556.57	1^-	81.994	2^+	%Iγ<0.34
2509.27 *15*	1.10 *10*	2591.32		81.994	2^+	%Iγ=0.99 *21*
2536.08 *15*	0.68 *10*	2618.04	1^-	81.994	2^+	%Iγ=0.61 *15*
2556.6 *3*	<0.28	2556.57	1^-	0.0	0^+	%Iγ<0.25
2591.14 *20*	0.43 *10*	2591.32		0.0	0^+	%Iγ=0.39 *12*

From ENSDF

γ(^{154}Sm) (continued)

E_γ [†‡]	I_γ [#@c]	E_i(level)	J_i^π	E_f	J_f^π	Comments
2617.92 *20*	0.52 *10*	2618.04	1^-	0.0	0^+	%Iγ=0.47 *13*
2639.2[a] *4*	<0.14	2721.29	$(1,2^+)$	81.994	2^+	%Iγ<0.13
2697.4 *3*	<0.18	2779.00	1	81.994	2^+	%Iγ<0.16
2721.3 *3*	0.17 *15*	2721.29	$(1,2^+)$	0.0	0^+	%Iγ=0.15 *14*
2761.1 *5*	<0.14	2842.82	1^-	81.994	2^+	%Iγ<0.13
2778.6 *3*	0.33 *10*	2779.00	1	0.0	0^+	%Iγ=0.30 *11*
[x]2800.9[a] *9*	<0.16					%Iγ<0.14
2842.6 *4*	<0.16	2842.82	1^-	0.0	0^+	%Iγ<0.14
2968.9 *4*	<0.26	3051.23		81.994	2^+	%Iγ<0.23
3110.9 *5*	<0.16	3193.15	1^+	81.994	2^+	%Iγ<0.14
[x]3346.9[a] *15*	0.033 *30*					%Iγ=0.030 *28*

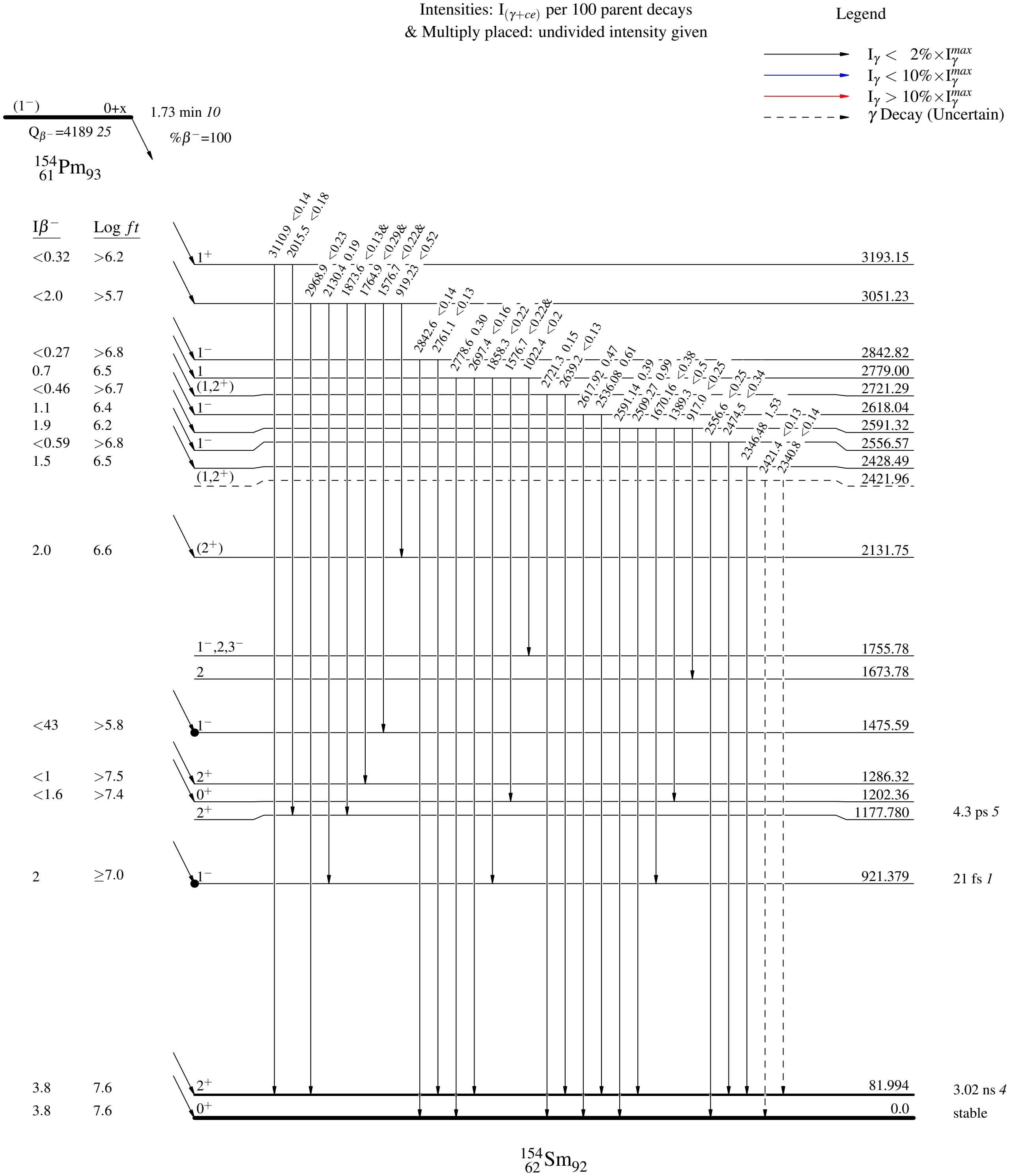
[†] From 1993GrZY. Others: 1974Ya07, 1971Da28.
[‡] Unplaced γ's are from 1993GrZY. Others: 1974Ya07, but some of these γ's are placed by 1993GrZY; also 1971Da28, but they are not assigned to a specific isomer.
[#] From 1993GrZY. Other: 1974Ya07.
[@] I(K$x\alpha$)=16.9 and I(K$x\beta$)=4.4.
[&] Adopted values. Some values were measured in this dataset from measured α_K(exp) values obtained from I(K x ray) and Iγ ratios (1993GrZY, with the α_K(exp) values given in comments).
[a] Existence and placement of γ are uncertain.
[b] Additional information 4.
[c] For absolute intensity per 100 decays, multiply by 0.90 *17*.
[d] Multiply placed with undivided intensity.
[e] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{154}_{62}$Sm$_{92}$-8

^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09

Decay Scheme

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

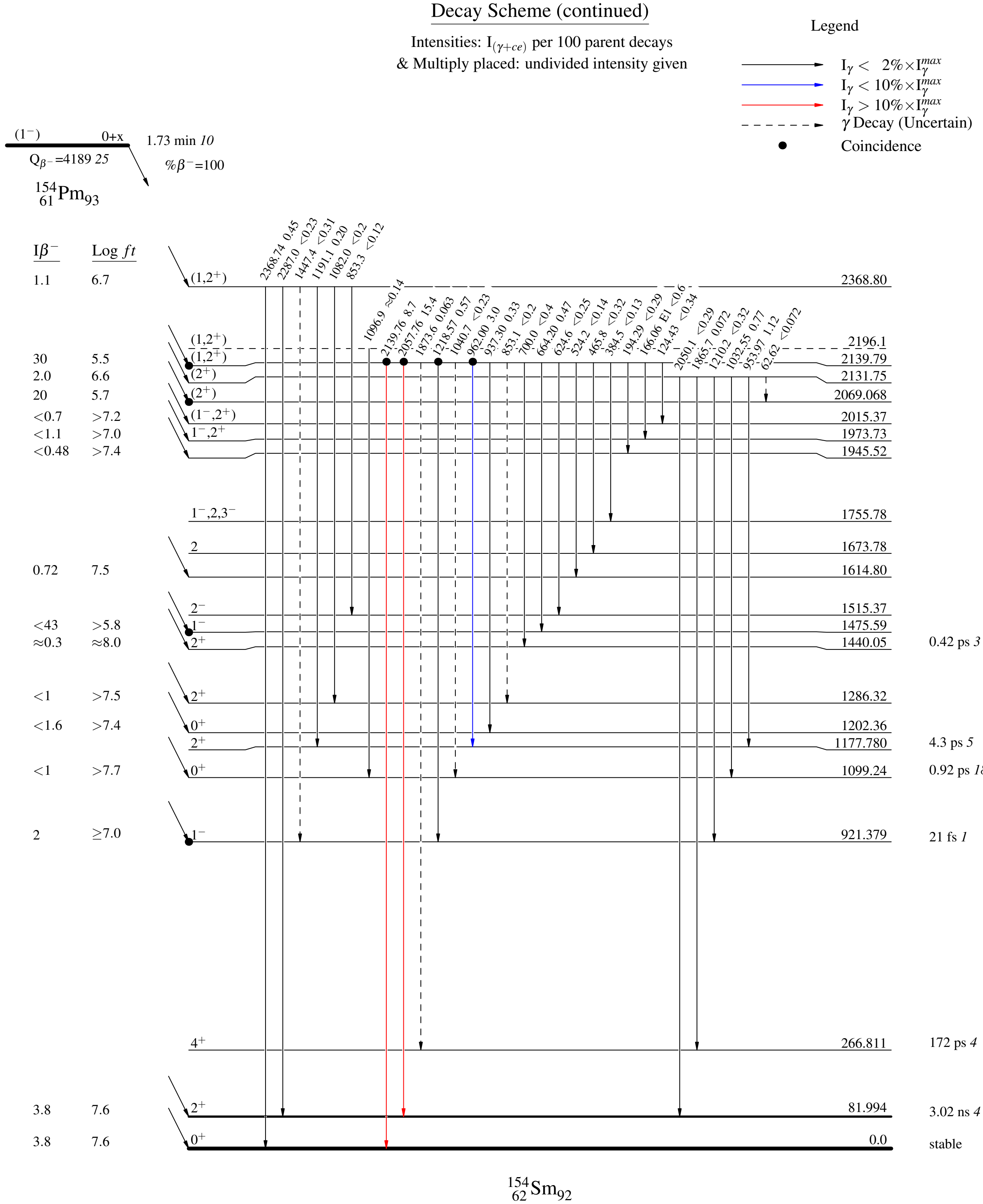


^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

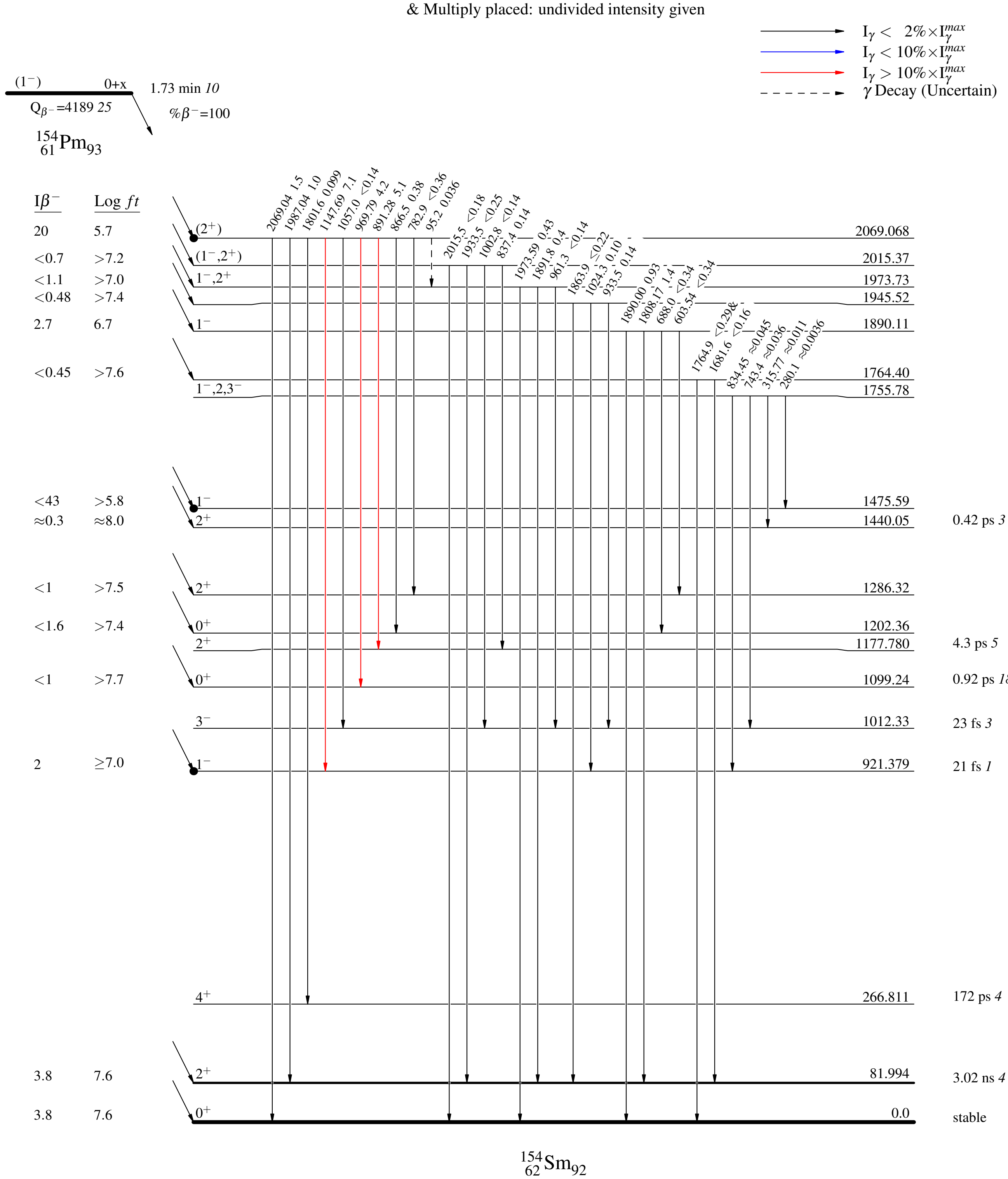
& Multiply placed: undivided intensity given



^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09

Decay Scheme (continued)

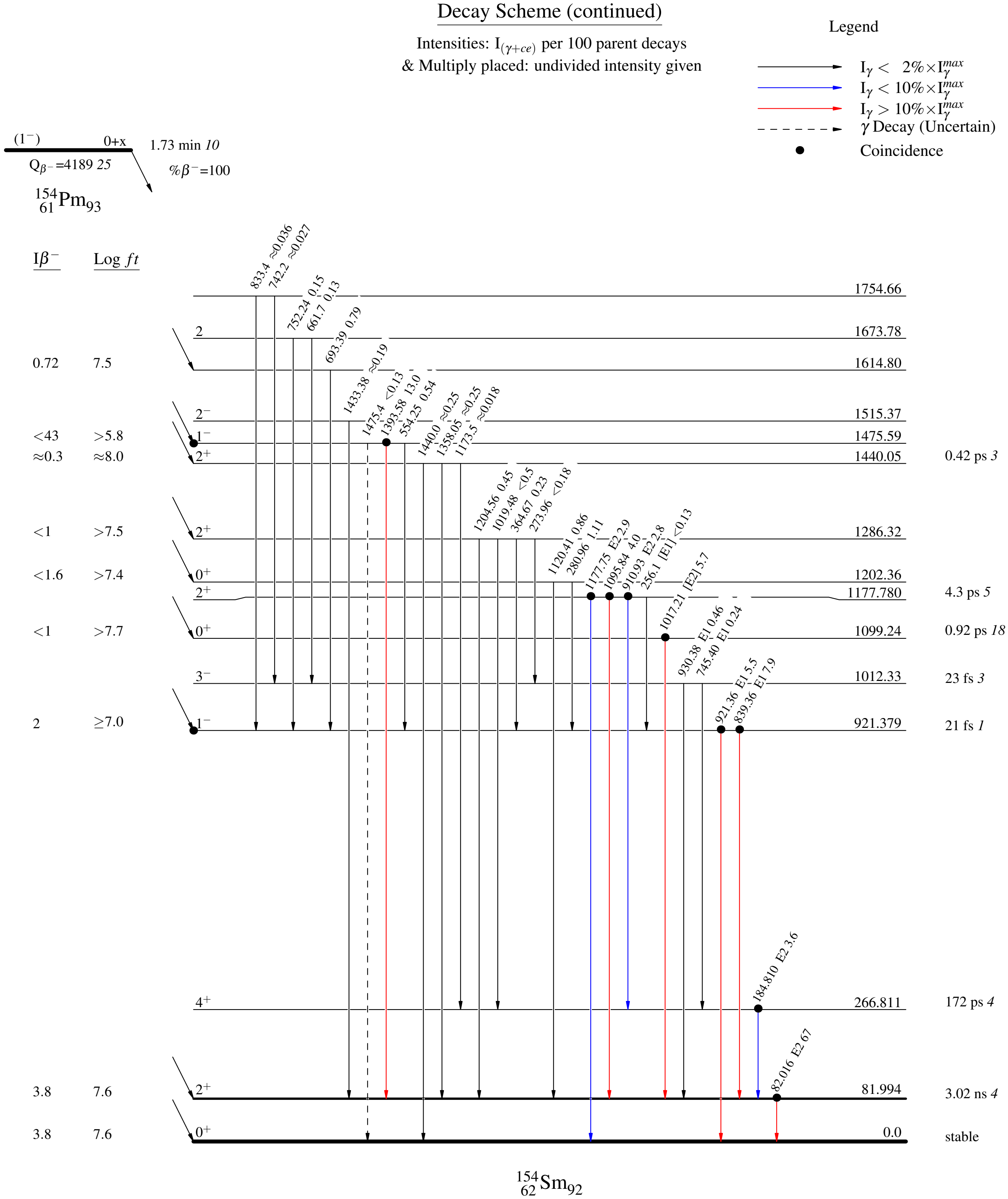
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



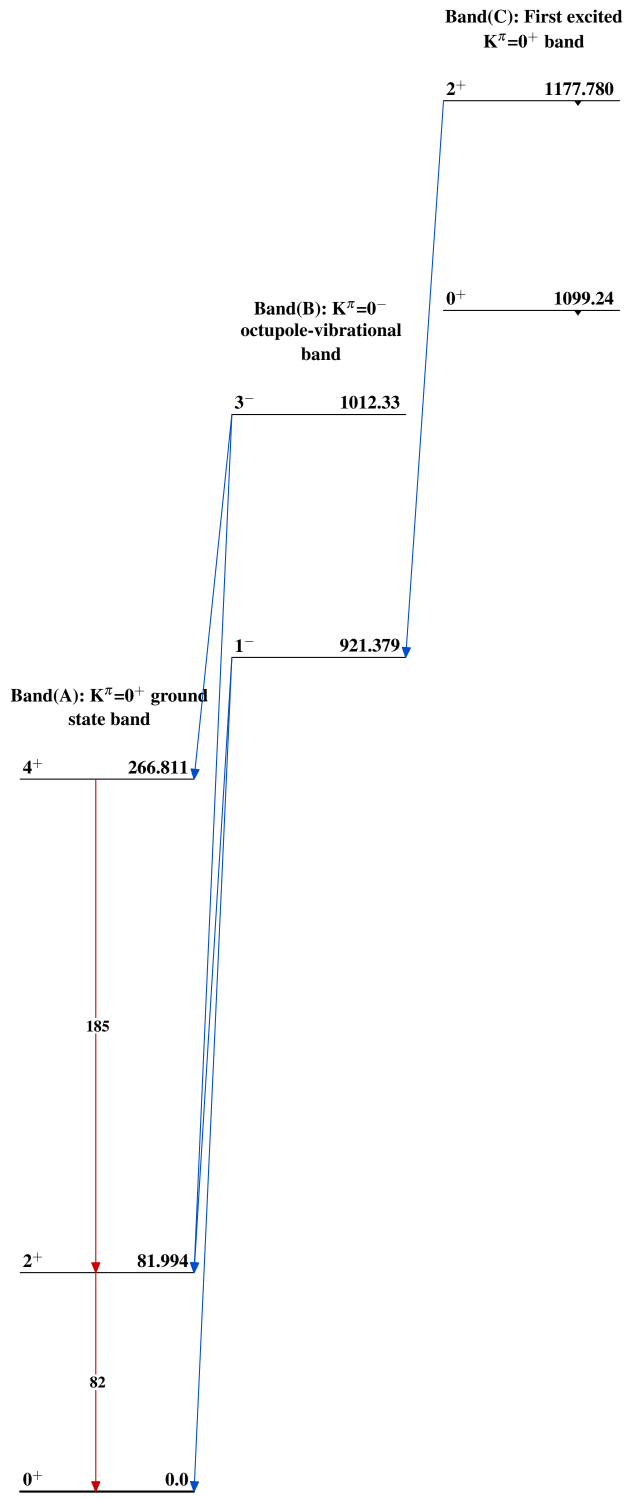
^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09

Decay Scheme (continued)

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



^{154}Pm β^- decay (1.73 min) 1993GrZY,1995Gr19,1997Gr09



$^{154}_{62}Sm_{92}$