^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28

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

Parent: ^{154}Pm: E=0.0; $J^\pi=(4^+)$; $T_{1/2}$=2.68 min *7*; 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 which is a private communication. For the most extensive published data, see 1971Da28 and 1974Ya07. Others: 1958Wi42, 1972Ta13, 1973Pr05, and 1990Ba57. For the experimental methods of these papers, see the comments associated with the ^{154}Pm (1.73 m) isomer.

^{154}Sm Levels

Additional information 2.

E(level)†‡	J^π#	$T_{1/2}$	E(level)†‡	J^π#
0.0@	0^+	stable	1706.78 *5*	3^+
82.003@ *23*	2^+	3.02 ns *4*	1754.64 *5*	
266.835@ *31*	4^+	172 ps *4*	1755.86 *5*	(3^-)
543.92@ *7*	6^+	22.7 ps *6*	1773.9? *25*	5^-
921.40& *4*	1^-	21 fs *1*	1804.47 *20*	5^+
1012.35& *6*	3^-	23 fs *3*	1815.08 *7*	2^+,3
1177.79 *4*	2^+	4.3 ps *5*	1817.96 *12*	$(4^+,5)$
1286.33 *7*	2^+		1878.84 *5*	(2^+)
1440.06[a] *5*	2^+	0.42 ps *3*	1922.17 *5*	2^+
1472.88? *14*	(4^+)		1945.79 *22*	(3^-)
1515.38 *12*	2^-		1986.71 *4*	3^-
1539.17[a] *8*	3^+		2065.90 *8*	$(3,4^+)$
1584.60 *10*	3^-		2232.68 *32*	$(3,4^+)$
1664.90[a] *23*	4^+		2293.92 *11*	$(3,4^+)$
1673.72 *14*	2			

† Additional information 3.

‡ From least-squares fit to γ energies with χ^2/dof=2.5 > critical χ^2/dof=1.5.

From ^{154}Sm Adopted Levels.

@ Band(A): $K^\pi=0^+$ ground-state band.

& Band(B): $K^\pi=0^-$ octupole-vibrational band.

[a] Band(C): γ-vibrational band.

β^- radiations

av Eβ: Additional information 4.

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(1895 *25*)	2293.92	3.9 *17*	6.40 *19*	av Eβ=719 *11*
(1956 *25*)	2232.68	1.8 *7*	6.79 *17*	av Eβ=746 *11*
(2123 *25*)	2065.90	5.5 *14*	6.44 *11*	av Eβ=820 *11*
(2202 *25*)	1986.71	65 *14*	5.43 *10*	av Eβ=855 *11*
				E(decay): 1.85×10^3 *20* from coincidence with 546 γ (1971Da28).

Continued on next page (footnotes at end of table)

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(2243 *25*)	1945.79	<2.0	>7.0	av Eβ=874 *11*
(2267 *25*)	1922.17	<0.3	>9.0	av Eβ=867 *11*
(2310 *25*)	1878.84	<1	>8.5	av Eβ=885 *11*
(2371 *25*)	1817.96	1.2 *5*	7.30 *18*	av Eβ=931 *11*
(2374 *25*)	1815.08	<0.4	>7.8	av Eβ=933 *11*
(2385 *25*)	1804.47	1.7 *7*	7.16 *18*	av Eβ=938 *11*
(2415 *25*)	1773.9?	1.2 *5*	7.33 *18*	av Eβ=951 *11*
(2433 *25*)	1755.86	<1.3	>7.3	av Eβ=959 *11* E(decay): 2.0×10^3 *2* from coincidence with 742 γ + 745 γ (1971Da28).
(2434 *25*)	1754.64	<1	>7.4	av Eβ=960 *11*
(2482 *25*)	1706.78	<2	>7.2	av Eβ=981 *11*
(2515 *25*)	1673.72	<0.6	>8.9[1u]	av Eβ=975 *11*
(2524 *25*)	1664.90	0.6 *4*	7.71 *29*	av Eβ=1000 *11* E(decay): 2.4×10^3 *2* from coincidence with 1393 γ (1971Da28), but γ also occurs in decay of 1.73-m isomer. Other: 2.4×10^3 *2*, from coincidence with 1300-1500 γ region (1974Ya07) which includes several levels.
(2604 *25*)	1584.60	<0.2	>8.2	av Eβ=1037 *11*
(2650 *25*)	1539.17	2 *1*	7.27 *22*	av Eβ=1057 *11*
(2674 *25*)	1515.38	≈0.6	≈9.1[1u]	av Eβ=1045 *11*
(2749 *25*)	1440.06	3 *3*	≥8.0	av Eβ=1078 *11* E(decay): 2.4×10^3 *3* from coincidence with 1358 γ (1971Da28). 2.4×10^3 *2* from coincidence with 1300-1500 γ region (1974Ya07), which includes several levels.
(2903 *25*)	1286.33	0.8 *7*	9.18 *38*	av Eβ=1146 *11*
(3177 *25*)	1012.35	<2	>7.6	av Eβ=1298 *11*
(3922 *25*)	266.835	<12	>7.2	av Eβ=1641 *12*

† Values are from γ intensity balances.
‡ Absolute intensity per 100 decays.

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

$\gamma(^{154}Sm)$

Iγ normalization: From requirement of 100% feeding to the ground state with no direct β^- feeding to the 0- and 82-keV levels. Calculated normalization factor 0.96 *+21−14* is adopted as 0.96 *18*.

E_γ[†‡]	I_γ[#@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[cd]	$I_{(\gamma+ce)}$[e]	Comments
45.5	0.64 *32*	1584.60	3^-	1539.17	3^+			0.64	%Iγ=0.61 *33* E$_\gamma$,I$_{(\gamma+ce)}$: Existence of γ deduced from $\gamma\gamma$ coincidences.
64.548 *25*	4.83 *24*	1986.71	3^-	1922.17	2^+	E1	0.893 *13*		α(K)=0.744 *10*; α(L)=0.1174 *16*; α(M)=0.02518 *35* α(N)=0.00557 *8*; α(O)=0.000767 *11*; α(P)=3.39×10^{-5} *5* %Iγ=4.6 *9* Mult.: From α_K(exp) ≈ 1.0 (1993GrZY).
82.016 *25*	15.4 *31*	82.003	2^+	0.0	0^+	E2	4.86 *7*		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* %Iγ=15 *4* Mult.: From α_K(exp)=2.04 *15* (1993GrZY).
[x]104.30 *4*	≈0.14[a]								%Iγ≈0.13
107.896 *25*	6.8 *3*	1986.71	3^-	1878.84	(2^+)	E1	0.2242 *31*		α(K)=0.1892 *27*; α(L)=0.0276 *4*; α(M)=0.00590 *8* α(N)=0.001315 *18*; α(O)=0.0001865 *26*; α(P)=9.27×10^{-6} *13* %Iγ=6.5 *13* Mult.: From α_K(exp) ≈ 0.2 (1993GrZY).
[x]138.0 *3*	0.22[a] *11*								%Iγ=0.21 *11*
143.74 *15*	0.48 *16*	2065.90	$(3,4^+)$	1922.17	2^+				%Iγ=0.46 *18*
171.6 *3*	7.10 *36*	1986.71	3^-	1815.08	2^+,3	E1	0.0637 *9*		α(K)=0.0541 *8*; α(L)=0.00757 *11*; α(M)=0.001617 *24* α(N)=0.000362 *5*; α(O)=5.24×10^{-5} *8*; α(P)=2.81×10^{-6} *4* %Iγ=6.8 *13* Mult.: From α_K(exp) < 0.08 (1993GrZY).
171.8[f] *3*	0.32[a] *10*	1878.84	(2^+)	1706.78	3^+				%Iγ=0.31 *11* E$_\gamma$: γ not included in the Adopted Gammas data set.
184.810 *25*	32.0 *32*	266.835	4^+	82.003	2^+	E2	0.272 *4*		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* %Iγ=31 *7*
214.0 *3*	0.32 *10*	1878.84	(2^+)	1664.90	4^+				%Iγ=0.31 *11* E$_\gamma$: 2006De19, in (n,n′γ), report a 214.6 *7* γ but do not place it from this level. IT is not included it in the Adopted Gammas data set.
230.82 *3*	6.34 *32*	1986.71	3^-	1755.86	(3^-)				%Iγ=6.1 *12*
232.08 *3*	4.44 *22*	1986.71	3^-	1754.64					%Iγ=4.3 *8*
247.75 *15*	0.71 *14*	2065.90	$(3,4^+)$	1817.96	$(4^+,5)$				%Iγ=0.68 *19*
[x]249.52 *15*	1.01 *30*								%Iγ=0.97 *34*
256.1 *4*	≈0.006[a]	1177.79	2^+	921.40	1^-	[E1]	0.02206 *32*		α(K)=0.01880 *27*; α(L)=0.00257 *4*; α(M)=0.000549 *8*

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

$\gamma(^{154}Sm)$ (continued)

E_γ[†‡]	I_γ[#@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[cd]	Comments
								α(N)=0.0001235 *18*; α(O)=1.806×10^{-5} *26*; α(P)=1.020×10^{-6} *15* %Iγ≈0.0058
273.96 *20*	0.27 *8*	1286.33	2$^+$	1012.35	3$^-$			%Iγ=0.26 *9*
276.00 *25*	0.90 *27*	1815.08	2$^+$,3	1539.17	3$^+$			%Iγ=0.86 *31*
277.04 *6*	2.31 *46*	543.92	6$^+$	266.835	4$^+$	E2	0.0721 *10*	α(K)=0.0555 *8*; α(L)=0.01299 *18*; α(M)=0.00290 *4* α(N)=0.000646 *9*; α(O)=8.82×10^{-5} *12*; α(P)=2.94×10^{-6} *4* %Iγ=2.2 *6*
279.93 *4*	11.9 *12*	1986.71	3$^-$	1706.78	3$^+$			%Iγ=11.4 *24*
280.1 *3*	0.27[a] *14*	1755.86	(3$^-$)	1472.88?	(4$^+$)			%Iγ=0.26 *14*
[x]291.25 *20*	0.63 *19*							%Iγ=0.61 *22*
[x]293.1 *3*	0.34[a] *17*							%Iγ=0.33 *18*
[x]303.10[f] *20*	0.61 *18*							%Iγ=0.59 *21* E_γ: γ placed from the 1817.96 level, but it is not reported in (n,n′γ) by 2006De19.
307.3[f] *3*	0.33[a] *17*	2293.92	(3,4$^+$)	1986.71	3$^-$			%Iγ=0.32 *18*
315.77 *20*	0.68 *20*	1755.86	(3$^-$)	1440.06	2$^+$			%Iγ=0.65 *23*
339.68 *20*	0.70 *21*	1878.84	(2$^+$)	1539.17	3$^+$			%Iγ=0.67 *24*
[x]354.90 *20*	0.68 *20*							%Iγ=0.65 *23*
359.16 *8*	4.09 *29*	2065.90	(3,4$^+$)	1706.78	3$^+$			%Iγ=3.9 *8*
364.67 *10*	0.65 *13*	1286.33	2$^+$	921.40	1$^-$			%Iγ=0.62 *17*
371.7[f] *3*	≤0.36[a]	2293.92	(3,4$^+$)	1922.17	2$^+$			%Iγ≤0.35
375.06 *8*	1.95 *20*	1815.08	2$^+$,3	1440.06	2$^+$			%Iγ=1.9 *4*
402.15 *10*	1.62 *9*	1986.71	3$^-$	1584.60	3$^-$			%Iγ=1.56 *31*
406.63 *15*	0.63 *13*	1878.84	(2$^+$)	1472.88?	(4$^+$)			%Iγ=0.61 *17*
415.23 *15*	1.24 *25*	2293.92	(3,4$^+$)	1878.84	(2$^+$)			%Iγ=1.19 *33*
438.76 *20*	2.18 *22*	1878.84	(2$^+$)	1440.06	2$^+$			%Iγ=2.1 *5*
447.5 *3*	0.44 *22*	1986.71	3$^-$	1539.17	3$^+$			%Iγ=0.42 *23*
471.36 *20*	1.02 *20*	1986.71	3$^-$	1515.38	2$^-$			%Iγ=0.98 *27*
[x]482.57 *20*	1.44 *43*							%Iγ=1.4 *5*
[x]494.55 *25*	0.59 *18*							%Iγ=0.57 *20*
526.0 *4*	1.62 *32*	2232.68	(3,4$^+$)	1706.78	3$^+$			%Iγ=1.6 *4*
526.7 *4*	0.29 *9*	2065.90	(3,4$^+$)	1539.17	3$^+$			%Iγ=0.28 *10*
528.9 *5*	0.23 *12*	1815.08	2$^+$,3	1286.33	2$^+$			%Iγ=0.22 *12*
546.66 *6*	14.5 *7*	1986.71	3$^-$	1440.06	2$^+$			%Iγ=13.9 *27*
592.5 *3*	1.24 *25*	1878.84	(2$^+$)	1286.33	2$^+$			%Iγ=1.19 *33*
[x]628.14 *25*	1.34 *27*							%Iγ=1.3 *4*
637.1 *3*	0.45 *14*	1815.08	2$^+$,3	1177.79	2$^+$			%Iγ=0.43 *16*
661.7 *3*	≤0.27	1673.72	2	1012.35	3$^-$	E1,M1	0.007 *4*	α(K)=0.006 *4*; α(L)=7; α(M)=1.6×10^{-4} *10* α(N)=3.6×10^{-5} *24*; α(O)=5; α(P)=3.4×10^{-7} *23* %Iγ≤0.26

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

$\gamma(^{154}Sm)$ (continued)

E_γ [†‡]	I_γ [#@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[cd]	Comments
[x]681.7 *3*	0.68[a] *20*							%Iγ=0.65 *23*
700.0[f] *3*	0.65 *33*	1986.71	3⁻	1286.33	2⁺			%Iγ=0.62 *34*
701.1 *3*	0.57 *17*	1878.84	(2⁺)	1177.79	2⁺			%Iγ=0.55 *19*
709.1 *3*	0.59 *18*	2293.92	(3,4⁺)	1584.60	3⁻			%Iγ=0.57 *20*
[x]721.0 *3*	0.76[a] *38*							%Iγ=0.7 *4*
[x]730.1 *4*	0.44[a] *22*							%Iγ=0.42 *23*
742.2 *3*	2.34 *47*	1754.64		1012.35	3⁻			%Iγ=2.3 *6*
743.4 *3*	2.80 *56*	1755.86	(3⁻)	1012.35	3⁻			%Iγ=2.7 *8*
745.40 *15*	3.22 *64*	1012.35	3⁻	266.835	4⁺	E1	1.83×10^{-3} *3*	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* %Iγ=3.1 *9*
752.24 *15*	≤0.32	1673.72	2	921.40	1⁻	E1,M1	0.0048 *30*	α(K)=0.0041 *26*; α(L)=5.5×10^{-4} *35*; α(M)=1.2×10^{-4} *7* α(N)=2.7×10^{-5} *17*; α(O)=4.0×10^{-6} *25*; α(P)=2.5×10^{-7} *16* %Iγ≤0.31
802.7 *3*	0.52 *26*	1815.08	2⁺,3	1012.35	3⁻			%Iγ=0.50 *27*
833.4 *3*	2.46 *49*	1754.64		921.40	1⁻			%Iγ=2.4 *7*
834.45 *20*	3.11 *62*	1755.86	(3⁻)	921.40	1⁻			%Iγ=3.0 *8*
839.36 *4*	3.9 *8*	921.40	1⁻	82.003	2⁺	E1	1.44×10^{-3} *2*	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* %Iγ=3.7 *11*
853.1[f] *5*	≤0.74	2293.92	(3,4⁺)	1440.06	2⁺			%Iγ≤0.71
[x]861.2 *3*	0.50[a] *15*							%Iγ=0.48 *17*
866.9[f] *4*	0.29[a] *15*	1878.84	(2⁺)	1012.35	3⁻			%Iγ=0.28 *15* E_γ: γ not included in the Adopted Gammas data set.
[x]901.9 *3*	1.45[a] *44*							%Iγ=1.4 *5*
909.7 *3*	0.93 *28*	1922.17	2⁺	1012.35	3⁻			%Iγ=0.89 *32*
910.93 *6*	≈0.31	1177.79	2⁺	266.835	4⁺	E2	0.00304 *4*	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* %Iγ≈0.3
921.36 *6*	2.8 *6*	921.40	1⁻	0.0	0⁺	E1	1.20×10^{-3} *2*	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* %Iγ=2.7 *8*
930.38 *8*	5.4 *8*	1012.35	3⁻	82.003	2⁺	E1	1.18×10^{-3} *2*	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* %Iγ=5.2 *13*
933.5 *4*	≤0.77	1945.79	(3⁻)	1012.35	3⁻			%Iγ≤0.74
958.1[f] *4*	≤0.33[a]	1878.84	(2⁺)	921.40	1⁻			%Iγ≤0.32 E_γ: 2006De19, in (n,n′γ), report a 956.9 *3* γ from this level.

$^{154}_{62}Sm_{92}$-5

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$\gamma(^{154}Sm)$ (continued)

E_γ †‡	I_γ #@e	E_i(level)	J_i^π	E_f	J_f^π	Mult.&	δ	αcd	Comments
974.0f 4	≈0.29a	1986.71	3−	1012.35	3−				%Iγ≈0.28
1019.48 20	0.66 20	1286.33	2+	266.835	4+				%Iγ=0.63 23
1024.3 3	≤0.54	1945.79	(3−)	921.40	1−				%Iγ≤0.52
x1040.7 5	<0.32a								%Iγ<0.31 Eγ: Tentatively placed from the 1584.6 level, but this γ is not confirmed in (n,n′γ) by 2006De19.
1095.84 6	≈0.41	1177.79	2+	82.003	2+	E0+M1+E2	−30 21	0.0052 32	%Iγ≈0.39
1162.5f 4	0.57 29	1706.78	3+	543.92	6+				%Iγ=0.55 30 Eγ: γ not reported in (n,n′γ). Its placement from this level would require mult=M3. The evaluator regards this placement as questionable.
1173.5 3	0.88 44	1440.06	2+	266.835	4+	E2		1.79×10^{-3} 3	α(K)=0.001521 21; α(L)=0.0002090 29; α(M)=4.48×10^{-5} 6 α(N)=1.012×10^{-5} 14; α(O)=1.506×10^{-6} 21; α(P)=9.05×10^{-8} 13; α(IPF)=3.23×10^{-6} 5 %Iγ=0.8 5
1177.75 6	≈0.29	1177.79	2+	0.0	0+	E2		1.78×10^{-3} 3	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 %Iγ≈0.28
1204.56 10	1.33 27	1286.33	2+	82.003	2+				%Iγ=1.3 4
1205.5b 5	≈0.6ab	1472.88?	(4+)	266.835	4+				%Iγ≈0.58
x1223.21 25	0.45 22								%Iγ=0.43 23
1230.0f 25	1.20 24	1773.9?	5−	543.92	6+				%Iγ=1.15 32
1260.2 3	1.17 35	1804.47	5+	543.92	6+				%Iγ=1.1 4
x1270.6 5	0.49a 25								%Iγ=0.47 26 Eγ: Tentatively placed from the 1815.07 level, but this γ is not confirmed by 2006De19 in (n,n′γ).
1271.85 20	1.28 26	1539.17	3+	266.835	4+				%Iγ=1.23 34
1273.77 20	0.88 18	1817.96	(4+,5)	543.92	6+				%Iγ=0.85 24
1317.7 3	1.16 23	1584.60	3−	266.835	4+	E1		7.10×10^{-4} 10	α(K)=0.000539 8; α(L)=6.86×10^{-5} 10; α(M)=1.455×10^{-5} 20 α(N)=3.29×10^{-6} 5; α(O)=4.94×10^{-7} 7; α(P)=3.13×10^{-8} 4; α(IPF)=8.43×10^{-5} 12 %Iγ=1.11 31
1358.05 6	10.7 11	1440.06	2+	82.003	2+	M1+E2	−19 10	1.37×10^{-3} 2	α(K)=0.001142 17; α(L)=0.0001540 22; α(M)=3.29×10^{-5} 5 α(N)=7.44×10^{-6} 11; α(O)=1.111×10^{-6} 16;

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

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

$\gamma(^{154}Sm)$ (continued)

E_γ[†‡]	I_γ[#@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ	α[cd]	Comments
									α(P)=6.80×10^{-8} *10*; α(IPF)=3.30×10^{-5} *5* %Iγ=10.3 *22*
1398.3 *4*	0.80 *24*	1664.90	4$^+$	266.835	4$^+$	M1(+E2)	−2.5 *+10−25*	0.00138 *9*	α(K)=0.00114 *8*; α(L)=0.000153 *10*; α(M)=3.26×10^{-5} *21* α(N)=7.4×10^{-6} *5*; α(O)=1.11×10^{-6} *8*; α(P)=6.8×10^{-8} *5*; α(IPF)=4.42×10^{-5} *9* %Iγ=0.77 *27*
[x]1404.1 *3*	0.50[a] *25*								%Iγ=0.48 *26*
[x]1411.73 *20*	0.80 *24*								%Iγ=0.77 *27*
1433.38 *15*	≈1.6	1515.38	2$^-$	82.003	2$^+$	E1		7.02×10^{-4} *10*	α(K)=0.000466 *7*; α(L)=5.92×10^{-5} *8*; α(M)=1.255×10^{-5} *18* α(N)=2.84×10^{-6} *4*; α(O)=4.27×10^{-7} *6*; α(P)=2.71×10^{-8} *4*; α(IPF)=0.0001603 *22* %Iγ≈1.5
1439.94 *10*	12.2 *24*	1706.78	3$^+$	266.835	4$^+$	M1+E2		0.00149 *25*	α(K)=0.00123 *21*; α(L)=0.000163 *27*; α(M)=3.5×10^{-5} *6* α(N)=7.9×10^{-6} *13*; α(O)=1.18×10^{-6} *20*; α(P)=7.5×10^{-8} *14*; α(IPF)=5.82×10^{-5} *25* %Iγ=11.7 *32*
1440.0 *3*	10.8 *22*	1440.06	2$^+$	0.0	0$^+$	E2		1.25×10^{-3} *2*	α(K)=0.001019 *14*; α(L)=0.0001365 *19*; α(M)=2.91×10^{-5} *4* α(N)=6.59×10^{-6} *9*; α(O)=9.86×10^{-7} *14*; α(P)=6.07×10^{-8} *8*; α(IPF)=5.59×10^{-5} *8* %Iγ=10.4 *29*
1457.30 *10*	3.82 *19*	1539.17	3$^+$	82.003	2$^+$	E2+M1	−7.5 *10*	1.23×10^{-3} *2*	α(K)=0.001003 *14*; α(L)=0.0001341 *19*; α(M)=2.86×10^{-5} *4* α(N)=6.48×10^{-6} *9*; α(O)=9.69×10^{-7} *14*; α(P)=5.98×10^{-8} *9*; α(IPF)=6.14×10^{-5} *9* %Iγ=3.7 *7*
1502.9 *5*	0.25 *13*	1584.60	3$^-$	82.003	2$^+$	E1		7.10×10^{-4} *10*	α(K)=0.000430 *6*; α(L)=5.45×10^{-5} *8*; α(M)=1.156×10^{-5} *16* α(N)=2.62×10^{-6} *4*; α(O)=3.93×10^{-7} *6*; α(P)=2.502×10^{-8} *35*; α(IPF)=0.0002103 *30* %Iγ=0.24 *13*
1537.87 *25*	0.63 *19*	1804.47	5$^+$	266.835	4$^+$	M1(+E2)		0.00134 *20*	α(K)=0.00107 *17*; α(L)=0.000141 *22*; α(M)=3.0×10^{-5} *5* α(N)=6.8×10^{-6} *11*; α(O)=1.03×10^{-6} *16*; α(P)=6.5×10^{-8} *11*; α(IPF)=9.3×10^{-5} *4* %Iγ=0.61 *22*

$^{154}_{62}Sm_{92}$-7

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

$\gamma(^{154}Sm)$ (continued)

E_γ[†‡]	I_γ[#@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ	α[cd]	Comments
1547.95 *20*	1.5 *5*	1815.08	2^+,3	266.835	4^+				%Iγ=1.4 *6*
1551.01 *25*	1.03 *15*	1817.96	(4^+,5)	266.835	4^+				%Iγ=0.99 *24*
1582.6 *6*	0.18[a] *9*	1664.90	4^+	82.003	2^+	E2		1.10×10^{-3} *2*	α(K)=0.000851 *12*; α(L)=0.0001130 *16*; α(M)=2.410×10^{-5} *34* α(N)=5.46×10^{-6} *8*; α(O)=8.17×10^{-7} *11*; α(P)=5.07×10^{-8} *7*; α(IPF)=0.0001050 *15* %Iγ=0.17 *9*
1611.97 *25*	1.27 *19*	1878.84	(2^+)	266.835	4^+				%Iγ=1.22 *29*
1624.83 *10*	5.4 *5*	1706.78	3^+	82.003	2^+	M1+E2	+0.75 *+25−10*	0.00129 *5*	α(K)=0.00099 *4*; α(L)=0.000130 *5*; α(M)=2.78×10^{-5} *11* α(N)=6.30×10^{-6} *26*; α(O)=9.5×10^{-7} *4*; α(P)=6.04×10^{-8} *28*; α(IPF)=0.0001291 *25* %Iγ=5.2 *11*
1655.39 *10*	4.38 *22*	1922.17	2^+	266.835	4^+				%Iγ=4.2 *8*
[x]1660.6 *4*	0.50[a] *25*								%Iγ=0.48 *26*
1719.74 *25*	0.7 *2*	1986.71	3^-	266.835	4^+				%Iγ=0.67 *23*
1733.11 *15*	1.82 *18*	1815.08	2^+,3	82.003	2^+	E1,M1		0.00103 *26*	α(K)=6.4×10^{-4} *30*; α(L)=8; α(M)=1.8×10^{-5} *9* α(N)=4.0×10^{-6} *20*; α(O)=6.1×10^{-7} *30*; α(P)=3.9×10^{-8} *19*; α(IPF)=2.8×10^{-4} *10* %Iγ=1.8 *4*
1796.85 *15*	2.75 *28*	1878.84	(2^+)	82.003	2^+	M1+E2	−1.5 *+8−70*	0.00106 *9*	α(K)=0.00073 *7*; α(L)=9.6×10^{-5} *10*; α(M)=2.05×10^{-5} *20* α(N)=4.6×10^{-6} *5*; α(O)=7.0×10^{-7} *7*; α(P)=4.4×10^{-8} *5*; α(IPF)=0.000201 *8* %Iγ=2.6 *6*
1799.4[f] *5*	≈0.15[a]	2065.90	($3,4^+$)	266.835	4^+				%Iγ≈0.14
1840.20 *10*	4.0 *4*	1922.17	2^+	82.003	2^+				%Iγ=3.8 *8*
1863.9 *5*	≤0.77[a]	1945.79	(3^-)	82.003	2^+				%Iγ≤0.74
1878.3 *5*	0.17 *9*	1878.84	(2^+)	0.0	0^+				%Iγ=0.16 *9*
1905.1 *4*	0.75 *23*	1986.71	3^-	82.003	2^+				%Iγ=0.72 *26*
2026.9 *3*	0.71 *14*	2293.92	($3,4^+$)	266.835	4^+				%Iγ=0.68 *19*
2150.5[f] *5*	0.22 *11*	2232.68	($3,4^+$)	82.003	2^+				%Iγ=0.21 *11*
2211.9 *3*	0.60 *18*	2293.92	($3,4^+$)	82.003	2^+				%Iγ=0.58 *21*
[x]2800.9 *9*	0.20[a] *10*								%Iγ=0.19 *10*

† From 1993GrZY. Others: 1974Ya07, 1971Da28.
‡ Unplaced γ's are from 1993GrZY. Others: 1974Ya07, but some of these have been placed by 1993GrZY, and 1971Da28, but they are not assigned to a specific isomer.

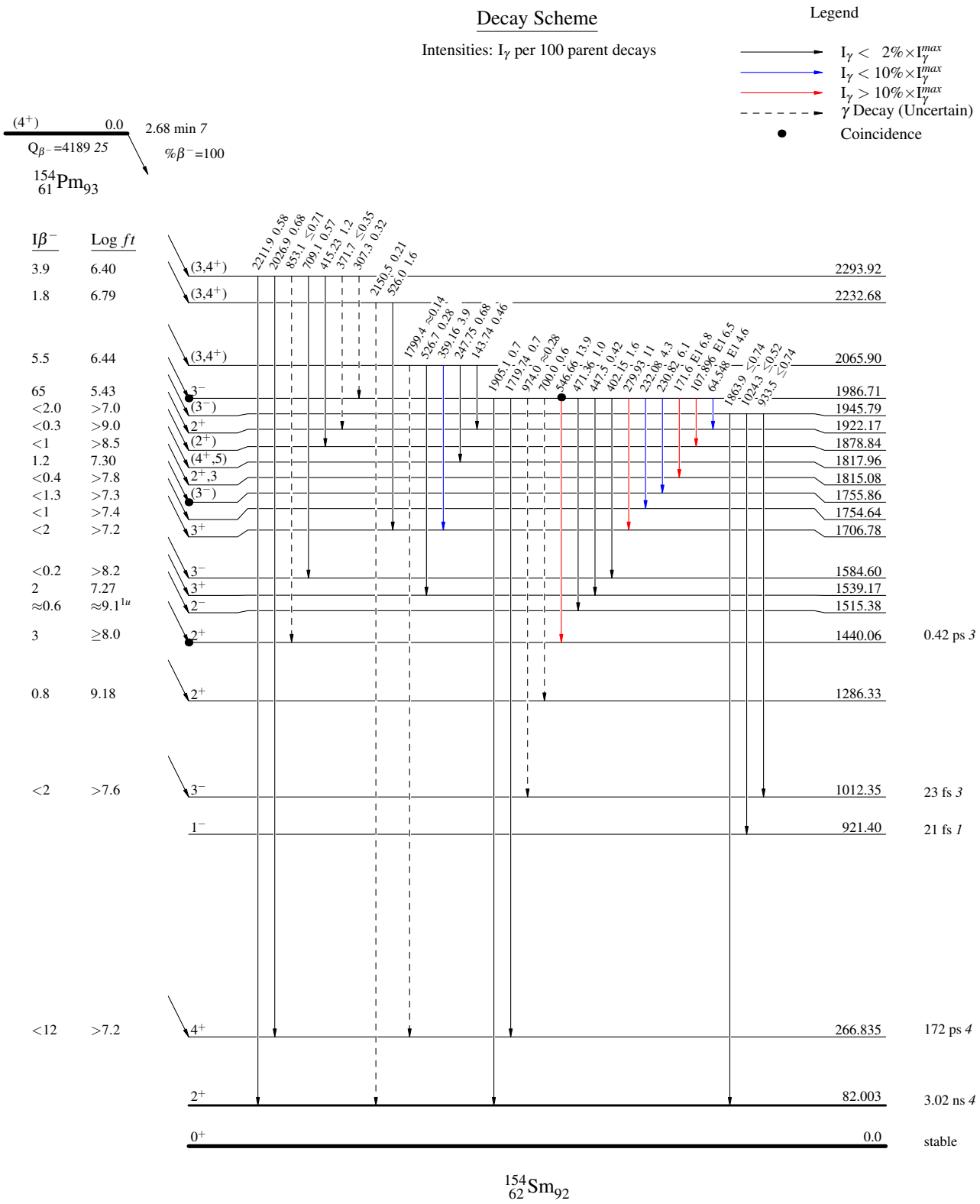
^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28 (continued)

$\gamma(^{154}Sm)$ (continued)

From 1993GrZY. Other: 1974Ya07.
@ I(Kxα)=25.7 and I(Kxβ)=6.7.
& 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 is uncertain.
b Existence of γ deduced from $\gamma\gamma$ coincidences.
c Calculated values smaller than≈0.5% are not listed.
d Additional information 5.
e For absolute intensity per 100 decays, multiply by 0.96 *18*.
f Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

$^{154}_{62}Sm_{92}$-9

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28



^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays

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)
- Coincidence

(4^+) 0.0 2.68 min 7

Q_{β^-}=4189 25 $\%\beta^-$=100

$^{154}_{61}Pm_{93}$

Iβ⁻	Log *ft*			
<0.3	>9.0	2+	1922.17	
<1	>8.5	(2+)	1878.84	
1.2	7.30	(4+,5)	1817.96	
<0.4	>7.8	2+,3	1815.08	
1.7	7.16	5+	1804.47	
1.2	7.33	5−	1773.9	
<2	>7.2	3+	1706.78	
0.6	7.71	4+	1664.90	
2	7.27	3+	1539.17	
		(4+)	1472.88	
3	≥8.0	2+	1440.06	0.42 ps *3*
0.8	9.18	2+	1286.33	
		2+	1177.79	4.3 ps *5*
<2	>7.6	3−	1012.35	23 fs *3*
		1−	921.40	21 fs *1*
		6+	543.92	22.7 ps *6*
<12	>7.2	4+	266.835	172 ps *4*
		2+	82.003	3.02 ns *4*
		0+	0.0	stable

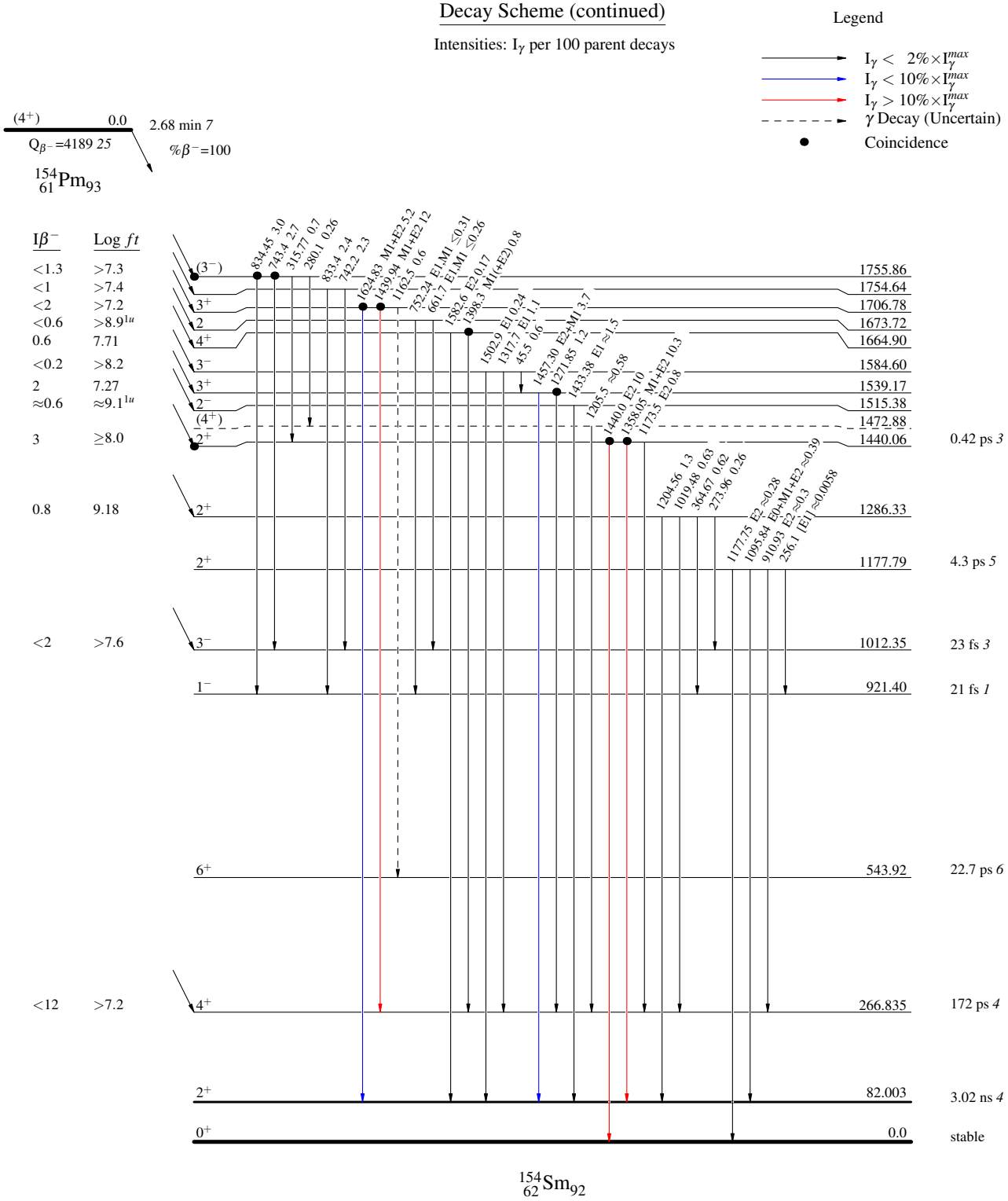
1840.20 3.8; 1655.39 4.2; 909.7 0.9; 1878.3 0.16; 1796.85 M1+E2 2.6; 1611.97 1.2; 958.1 ≤0.32; 866.9 0.28; 701.1 0.55; 592.5 1.2; 458.76 2.1; 406.63 0.61; 339.68 0.7; 214.0 0.31; 171.8 0.31; 1551.01 1.0; 1273.77 0.8; 1733.11 E1,M1 1.8; 1547.95 1.4; 802.7 0.5; 637.1 0.43; 528.9 0.22; 375.06 1.9; 276.00 0.9; 1537.87 M1(+E2) 0.61; 1260.2 1.1; 1230.0 1.2

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

^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28

Decay Scheme (continued)

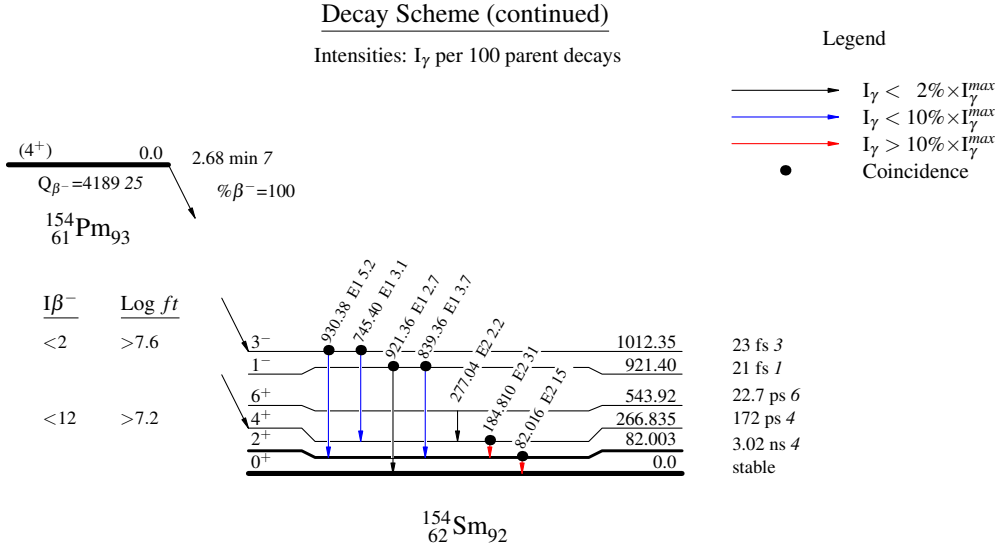
Intensities: I_γ per 100 parent decays



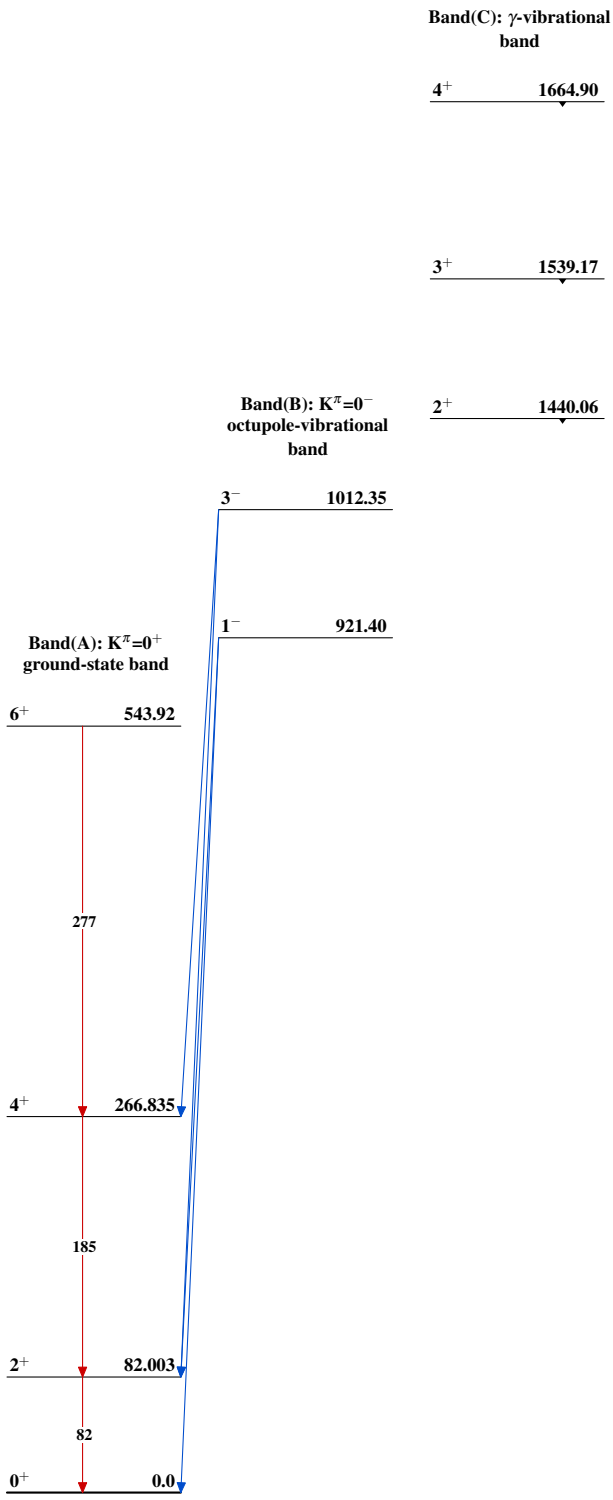
^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays



^{154}Pm β^- decay (2.68 min) 1993GrZY,1974Ya07,1971Da28



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