Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

Q(β^-)=−9750 *30*; S(n)=11540 *40*; S(p)=4714 *18*; Q(α)=1724 *17* 2017Wa10
S(2n)=20830 *17*, S(2p)=6876 *17*, Q(εp)=798 *17*, Q(β^+)=3440 *30* (2017Wa10).
First identification of ^{138}Sm nuclide by 1973WeZK and later confirmed by 1982No15.
Mass measurement: 2004LiZX, 2000Be42, 1997Be63, 1997Be81.
Isotope shift: 1992Le09, 1987Al25.
Nuclear structure calculations: 2015El05, 2015Ya14, 2014Gi01, 2013Ni17, 2013Xi11, 2010Ma35, 2010Ni06, 2010Pa12, 2009Ti07, 2006Fi03, 2000Du06, 1999Pr03, 1996La03.

^{138}Sm Levels

Cross Reference (XREF) Flags

- A ^{138}Eu ε decay
- B ^{104}Pd(^{37}Cl,2npγ)
- C ^{106}Cd(^{35}Cl,3pγ)
- D (HI,xnγ)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[d]	0$^+$	3.1 min *2*	ABCD	%ε+%β^+=100 T$_{1/2}$: weighted average of 3.1 m *2* from 1983GaZT and 3.0 m *3* from 1973WeZK. Evaluated nuclear charge radius <r^2>$^{1/2}$=4.960 fm *4* (2013An02).
346.71[d] *16*	2$^+$	40 ps *6*	ABCD	μ=+0.7; g=+0.35 (1989OgZY) J$^\pi$: 346.7γ E2 to 0$^+$, band member.
745.69[k] *16*	(2$^+$)		AB	J$^\pi$: 399.0γ (M1+E2) to 2$^+$, 745.7γ (E2) to 0$^+$, band member.
891.25[d] *25*	4$^+$		ABCD	J$^\pi$: 544.4γ E2 to 2$^+$, band member.
1083.89[k] *19*	(3$^+$)		AB	J$^\pi$: 737.2γ (M1+E2) to 2$^+$ and 338.0γ (M1+E2) to (2$^+$), band member.
1398.64[k] *23*	(4$^+$)		AB	J$^\pi$: 652.8γ (E2) to (2$^+$) and 507.5γ to 4$^+$, band member.
1576.8[d] *4*	6$^+$		ABCD	J$^\pi$: 685.6γ E2 to 4$^+$.
1655.82 *25*	(4$^+$)		A	J$^\pi$: 571.3γ (M1+E2) to (3$^+$) and 911.0γ to (2$^+$); possible ε feeding from (6$^-$) based on intensity imbalance in ^{138}Eu ε decay.
1732.59[k] *25*	(5$^+$)		AB	J$^\pi$: 648.8γ (E2) to (3$^+$), band member.
2097.1 *3*			A	
2104.7[k] *3*	(6$^+$)		AB	J$^\pi$: 706.1γ (E2) to (4$^+$), band member.
2237.5 *4*			A	
2258.2 *4*			A	J$^\pi$: γ to (4).
2352.3[d] *4*	8$^+$		ABCD	J$^\pi$: 775.2γ E2 to 6$^+$.
2500.8[k] *4*	(7$^+$)		AB	J$^\pi$: 768.2γ to (5$^+$) level, band member.
2508.7[@] *4*	(7$^-$)		ABC	J$^\pi$: 931.9γ (E1) to 6$^+$.
2560.4 *4*			A	
2651.8[k] *4*	(8$^+$)		B	J$^\pi$: 547.1γ to (6$^+$), band member.
2653.5[i] *4*	(7)$^-$		C	J$^\pi$: 1077.0γ (E1) to 6$^+$, 646.9γ E2 from π=−.
2904.7[b] *4*	10$^+$	0.55 ns *3*	BCD	μ≈+10; g≈+1 (1989OgZY) J$^\pi$: 552.2γ E2 to 8$^+$.
2955.6 *5*	(8$^+$)		A	J$^\pi$: 850.9γ (E2) to (8$^+$).
3029.0[@] *4*	(9$^-$)		B	J$^\pi$: 520.4γ E2 to (7$^-$), 676.5γ (E1) to 8$^+$, band member.
3106.6[h] *4*	10$^+$		BC	J$^\pi$: 754.4γ E2 to 8$^+$, band member.
3261.3[b] *5*	12$^+$	26 ps *4*	BCD	J$^\pi$: 356.4γ E2 to 10$^+$, band member.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{138}Sm Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
3300.1[i] 5	(9)$^-$	C	Jπ: 947.4γ E1 to 8$^+$, intraband 646.9γ E2 to J=(7), band member.
3640.2[@] 5	(11$^-$)	BC	Jπ: 611.3γ E2 to (9$^-$), band member.
3820.4[h] 5	12$^+$	BC	Jπ: 713.9γ E2 to 10$^+$, band member.
3918.1[b] 5	14$^+$	BCD	Jπ: 656.7γ E2 to 12$^+$, band member.
3920.8[i] 6	(11)$^-$	C	Jπ: 620.7γ E2 to (9)$^-$, band member.
4071.3[f] 5	(13)$^+$	C	Jπ: 810.1γ M1+E2 to 12$^+$.
4341.6[@] 5	(13$^-$)	BC	Jπ: 701.5γ E2 to (11$^-$), band member.
4488.5[g] 5	14$^+$	BC	Jπ: 1227.0γ E2 to 12$^+$, 668.3γ to 12$^+$, 417γ M1+E2 to (13)$^+$.
4615.6[h] 5	14$^+$	C	Jπ: 795.2γ E2 to 12$^+$, band member.
4734.6[i] 6	(13$^-$)	C	Jπ: 813.8γ (E2) to (11)$^-$, band member.
4780.6[c] 6	16$^+$	BC	Jπ: 862.6γ E2 to 14$^+$.
4804.4[e] 5	(15)$^+$	C	Jπ: 886.3γ M1+E2 to 14$^+$, 733.2γ E2 to (13)$^+$.
4833.0[b] 5	16$^+$	BC	Jπ: 914.9γ E2 to 14$^+$, band member.
4925.2[f] 6	(15)$^+$	C	Jπ: 853.9γ E2 to (13)$^+$.
5074.5[&] 5	(15$^-$)	BC	Jπ: 733.0γ E2 to (13$^-$) and (E1) to 14$^+$.
5200.3[@] 6	(15$^-$)	C	Jπ: 858.7γ (E2) to (13$^-$), band member.
5257.0[g] 6	(16$^+$)	C	Jπ: 768.5γ (E2) to (14$^+$), band member.
5327.9[c] 6	18$^+$	BC	Jπ: 494.9γ E2 to 16$^+$, band member.
5440.2[h] 8	16$^+$	BC	Jπ: 824.6γ E2 to 14$^+$, band member.
5704.6[&] 6	(17$^-$)	C	Jπ: 630.1γ E2 to (15$^-$), band member.
5721.9?[i] 7	(15$^-$)	C	Jπ: 987.3γ E2 to (13$^-$), possible band member.
5767.1[e] 6	(17$^+$)	C	Jπ: 962.7γ to (15)$^+$, band member.
5859.4[f] 7	(17$^+$)	C	Jπ: 934.2γ to (15)$^+$, band member.
5937.0[b] 6	18$^+$	BC	Jπ: 1104.0γ E2 to 16$^+$, band member.
6014.1[c] 7	20$^+$	BC	Jπ: 1104.0γ E2 to 18$^+$, band member.
6167.0[g] 12	(18$^+$)	C	Jπ: 910γ to (16$^+$), band member.
6260.2[@] 7	(17$^-$)	C	Jπ: 1059.9γ to (15$^-$), band member.
6342.2[h] 9	18$^+$	C	Jπ: 902.0γ E2 to 16$^+$, band member.
6489.0[&] 7	(19$^-$)	C	Jπ: 784.4γ E2 to (17$^-$), band member.
6885.4[c] 7	22$^+$	BC	Jπ: 871.3γ E2 to 20$^+$, band member.
6913.9[e] 7	(19$^+$)	C	Jπ: 1146.8γ to (17$^+$), band member.
6986.5[a] 7	(20$^+$)	C	Jπ: 1049.5γ (E2) to 18$^+$.
7208.1[b] 7	(20$^+$)	C	Jπ: 1146.8γ to 18$^+$, band member.
7377.2[h] 9	(20$^+$)	C	Jπ: 1035.0γ to 18$^+$, band member.
7442.6[&] 7	(21$^-$)	B	Jπ: 953.6γ to (19$^-$), band member.
7905.3[a] 7	(22$^+$)	C	Jπ: 871.3γ E2 to (20$^+$), band member.
7975.2[c] 8	(24$^+$)	C	Jπ: 1089.8γ to (22$^+$), band member.
8564.0[&] 8	(23$^-$)	C	Jπ: 1121.3γ to (21$^-$), band member.
8861.4[a] 8	(24$^+$)	C	Jπ: 956.1γ E2 to (22$^+$), band member.
9261.2[c] 13	(26$^+$)	C	Jπ: 1286γ to (24$^+$), band member.
9851.0[&] 13	(25$^-$)	C	Jπ: 1287γ to (23$^-$), band member.
9879.7[a] 9	(26$^+$)	C	Jπ: 1018.3γ to (24$^+$), band member.
10964.1[a] 9	(28$^+$)	C	Jπ: 1084.4γ to (26$^+$), band member.
12109.7[a] 10	(30$^+$)	C	Jπ: 1145.6γ to (28$^+$), band member.
13309.9?[a] 15	(32$^+$)	C	Jπ: 1199γ to (30$^+$), possible band member.
x[j]	(13$^-$)	C	Additional information 1. Jπ: proposed by 1994Pa27 in ^{106}Cd(^{35}Cl,3pγ) based on configuration systematics of neighbouring nuclei.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{138}Sm Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
x+139.7[j] *3*	(14$^-$)	C	J$^{\pi}$: 139.7γ D to (13$^-$).
x+317.9[j] *5*	(15$^-$)	C	J$^{\pi}$: 178.2γ D to (14$^-$).
x+545.4[j] *5*	(16$^-$)	C	J$^{\pi}$: 406γ to (14$^-$), 227.4γ M1+E2 to (15$^-$), band member.
x+845.0[j] *6*	(17$^-$)	C	J$^{\pi}$: 527γ to (15$^-$), 299.7γ M1+E2 to (16$^-$), band member.
x+1178.6[j] *6*	(18$^-$)	C	J$^{\pi}$: 633γ to (16$^-$), 333.6γ M1+E2 to (17$^-$), band member.
x+1598.9[j] *7*	(19$^-$)	C	J$^{\pi}$: 754γ to (17$^-$), 420.2γ to (18$^-$), band member.
x+2043.3[j] *7*	(20$^-$)	C	J$^{\pi}$: 865γ to (18$^-$), 444.4γ to (19$^-$), band member.
x+2553.1[j] *8*	(21$^-$)	C	J$^{\pi}$: 954γ to (19$^-$), 509.9γ to (20$^-$), band member.
x+3109.2[j] *10*	(22$^-$)	C	J$^{\pi}$: 1066γ to (20$^-$), 556γ to (21$^-$), band member.
x+3675.2[j] *13*	(23$^-$)	C	J$^{\pi}$: 1122γ to (21$^-$), band member.
x+4212.2[j] *15*	(24$^-$)	C	J$^{\pi}$: 1103γ to (22$^-$), band member.
x+4848.2[j] *16*	(25$^-$)	C	J$^{\pi}$: 1173γ to (23$^-$), band member.
x+6067?[j]	(27$^-$)	C	J$^{\pi}$: 1219γ to (25$^-$), possible band member.

[†] From a least-squares fit to γ-ray energies.
[‡] Fom deduced γ-ray multipolarities and band structures.
[#] From (HI,xnγ), unless otherwise noted.
[@] Band(A): Band 1. (π,α)=(-,1). Configuration=((π h$_{11/2}$)(π g$_{7/2}$)). β_2=0.21, β_4=−0.02, γ=−20°.
[&] Band(B): Band 2. (π,α)=(-,1). Configuration=((π h$_{11/2}$)(π g$_{7/2}$)(ν h$_{11/2}$)^2) β_2=0.17, β_4=−0.02, γ=−30°.
[a] Band(C): Band 3. (π,α)=(+,0). Configuration=((π h$_{11/2}$)^2(ν i$_{13/2}$)^2) β_2=0.32, β_4=0.02, γ=0°. Prolate shape with enhanced quadrupole deformation.
[b] Band(D): Band 4. (π,α)=(+,0). Configuration=(π h$_{11/2}$)^2 β_2=0.21, β_4=−0.02, γ=−20°.
[c] Band(E): Band 5. (π,α)=(+,0). Configuration=((π h$_{11/2}$)^2(ν h$_{11/2}$)^2) β_2=0.18, β_4=−0.03, γ=−26°.
[d] Band(F): Band 6. g.s. band. (π,α)=(+,0). β_2=0.20, β_4=−0.02, γ=−25°.
[e] Band(G): Band 7. π=+. 4-quasiparticle configuration. Possible configurations are (π h$_{11/2}$), (π g$_{7/2}$), (ν h$_{11/2}$), (ν g$_{7/2}$).
[f] Band(H): Band 8. π=+. 4-quasiparticle configuration. Possible configurations are (π h$_{11/2}$), (π g$_{7/2}$), (ν h$_{11/2}$), (ν g$_{7/2}$).
[g] Band(I): Band 9. π=+. 4-quasiparticle configuration. Possible configurations are (π h$_{11/2}$), (π g$_{7/2}$), (ν h$_{11/2}$), (ν g$_{7/2}$).
[h] Band(J): Band 10. (π,α)=(+,0). For lower band configuration=(ν h$_{11/2}$)^2, β_2=0.18, β_4=−0.03, γ=−30°. For upper band configuration=(ν h$_{11/2}$)^4, β_2=0.17, β_4=−0.02, γ=−75°.
[i] Band(K): Band 11. (π,α)=(-,1). Configuration=((ν h$_{11/2}$)(ν g$_{7/2}$)) β_2=0.19, β_4=−0.03, γ=−30°.
[j] Band(L): Band 12. (π,α)=(-,1). Configuration=((π h$_{11/2}$)(π g$_{7/2}$)(ν h$_{11/2}$)^2) β_2=0.21, β_4=−0.02, γ=−91°. Collectively rotating oblate band.
[k] Band(M): γ-vibrational band observed by 1987Pa30 in ^{104}Pd(^{37}Cl,2npγ).

γ(^{138}Sm)

E$_i$(level)	J$_i^{\pi}$	E$_{\gamma}$[†]	I$_{\gamma}$[†]	E$_f$	J$_f^{\pi}$	Mult.[‡]	α[@]	Comments
346.71	2$^+$	346.7 *2*	100	0.0	0$^+$	E2	0.0362	B(E2)(W.u.)=64 *+12−9* α(K)=0.0287 *4*; α(L)=0.00584 *9*; α(M)=0.001294 *19* α(N)=0.000289 *4*; α(O)=4.02×10^{-5} *6*; α(P)=1.579×10^{-6} *23* E$_{\gamma}$: weighted average of 346.7 *3* from ^{138}Eu ε decay, 346.6 *2* from ^{104}Pd(^{37}Cl,2npγ), and 346.9 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ) and γ-ray anisotropy in ^{138}Eu ε decay.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
745.69	(2$^+$)	399.0 *2*	100 *5*	346.71	2$^+$	(M1+E2)[#]	0.031 *8*	α(K)=0.026 *7*; α(L)=0.0041 *5*; α(M)=0.00088 *8* α(N)=0.000199 *19*; α(O)=2.9×10^{-5} *4*; α(P)=1.6×10^{-6} *5* E_γ: weighted average of 399.0 *3* from ^{138}Eu ε decay and 399.0 *2* from ^{104}Pd(^{37}Cl,2npγ). I_γ: from ^{104}Pd(^{37}Cl,2npγ).
		745.7 *2*	<11	0.0	0$^+$	(E2)[#]	0.00475	α(K)=0.00399 *6*; α(L)=0.000599 *9*; α(M)=0.0001295 *19* α(N)=2.92×10^{-5} *4*; α(O)=4.27×10^{-6} *6*; α(P)=2.35×10^{-7} *4* E_γ: weighted average of 745.6 *3* from ^{138}Eu ε decay and 745.7 *2* from ^{104}Pd(^{37}Cl,2npγ). I_γ: from ^{104}Pd(^{37}Cl,2npγ). Other: 49 from ^{138}Eu ε decay.
891.25	4$^+$	544.4 *3*	100	346.71	2$^+$	E2	0.01026	α(K)=0.00847 *12*; α(L)=0.001403 *20*; α(M)=0.000306 *5* α(N)=6.87×10^{-5} *10*; α(O)=9.89×10^{-6} *14*; α(P)=4.91×10^{-7} *7* E_γ: weighted average of 544.5 *3* from ^{138}Eu ε decay, 544.2 *2* from ^{104}Pd(^{37}Cl,2npγ), and 544.9 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ) and γ-ray anisotropy in ^{138}Eu ε decay.
1083.89	(3$^+$)	338.0 *2*	78.8 *19*	745.69	(2$^+$)	(M1+E2)[#]	0.049 *10*	α(K)=0.041 *10*; α(L)=0.0067 *3*; α(M)=0.00145 *4* α(N)=0.000326 *12*; α(O)=4.7×10^{-5} *4*; α(P)=2.4×10^{-6} *8* E_γ: weighted average of 338.0 *3* from ^{138}Eu ε decay and 338.0 *2* from ^{104}Pd(^{37}Cl,2npγ). I_γ: from ^{104}Pd(^{37}Cl,2npγ). Other: 74 from ^{138}Eu ε decay.
		737.2 *2*	100 *10*	346.71	2$^+$	(M1+E2)[#]	0.0065 *17*	α(K)=0.0056 *15*; α(L)=0.00078 *17*; α(M)=0.00017 *4* α(N)=3.8×10^{-5} *8*; α(O)=5.6×10^{-6} *13*; α(P)=3.4×10^{-7} *10* E_γ: weighted average of 737.2 *3* from ^{138}Eu ε decay and 737.2 *2* from ^{104}Pd(^{37}Cl,2npγ). I_γ: from ^{104}Pd(^{37}Cl,2npγ).
1398.64	(4$^+$)	507.5 *3*	33	891.25	4$^+$			E_γ,I_γ: from ^{138}Eu ε decay. Other: Eγ=507 *1* from ^{104}Pd(^{37}Cl,2npγ).
		652.8 *2*	100	745.69	(2$^+$)	(E2)[#]	0.00651	α(K)=0.00543 *8*; α(L)=0.000847 *12*; α(M)=0.000184 *3* α(N)=4.13×10^{-5} *6*; α(O)=6.01×10^{-6} *9*; α(P)=3.19×10^{-7} *5* E_γ: weighted average of 652.9 *3* from ^{138}Eu ε decay and 652.7 *2* from ^{104}Pd(^{37}Cl,2npγ).
1576.8	6$^+$	685.6 *2*	100	891.25	4$^+$	E2	0.00579	α(K)=0.00484 *7*; α(L)=0.000744 *11*; α(M)=0.0001611 *23* α(N)=3.63×10^{-5} *5*; α(O)=5.29×10^{-6} *8*; α(P)=2.85×10^{-7} *4*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
								E_γ: weighted average of 685.6 *3* from ^{138}Eu ε decay, 685.4 *2* from ^{104}Pd(^{37}Cl,2npγ), and 685.9 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ) and γ-ray anisotropy in ^{138}Eu ε decay.
1655.82	(4$^+$)	571.3 *3*	100	1083.89	(3$^+$)	(M1+E2)[#]	0.012 *4*	α(K)=0.010 *3*; α(L)=0.0015 *3*; α(M)=0.00032 *6* α(N)=7.3×10^{-5} *14*; α(O)=1.08×10^{-5} *22*; α(P)=6.3×10^{-7} *20* E_γ,I_γ: from ^{138}Eu ε decay only.
		911.0 *3*	30	745.69	(2$^+$)			E_γ,I_γ: from ^{138}Eu ε decay only.
1732.59	(5$^+$)	648.8 *2*	100	1083.89	(3$^+$)	(E2)[#]	0.00661	α(K)=0.00551 *8*; α(L)=0.000861 *12*; α(M)=0.000187 *3* α(N)=4.20×10^{-5} *6*; α(O)=6.11×10^{-6} *9*; α(P)=3.23×10^{-7} *5* E_γ: weighted average of 648.8 *3* from ^{138}Eu ε decay and 648.8 *2* from ^{104}Pd(^{37}Cl,2npγ).
		841.1 *3*	12	891.25	4$^+$			E_γ,I_γ: from ^{138}Eu ε decay only.
2097.1		441.5 *3*	100	1655.82	(4$^+$)			E_γ,I_γ: from ^{138}Eu ε decay only.
		698.2 *3*	59	1398.64	(4$^+$)			E_γ,I_γ: from ^{138}Eu ε decay only.
2104.7	(6$^+$)	706.1 *2*	100	1398.64	(4$^+$)	(E2)[#]	0.00540	α(K)=0.00452 *7*; α(L)=0.000689 *10*; α(M)=0.0001491 *21* α(N)=3.36×10^{-5} *5*; α(O)=4.91×10^{-6} *7*; α(P)=2.66×10^{-7} *4* E_γ: weighted average of 706.2 *3* from ^{138}Eu ε decay and 706.1 *2* from ^{104}Pd(^{37}Cl,2npγ).
2237.5		838.9 *3*	100	1398.64	(4$^+$)			E_γ: from ^{138}Eu ε decay only.
2258.2		602.4 *3*	100	1655.82	(4$^+$)			E_γ: from ^{138}Eu ε decay only.
2352.3	8$^+$	775.2 *2*	100	1576.8	6$^+$	E2	0.00435	α(K)=0.00365 *6*; α(L)=0.000544 *8*; α(M)=0.0001174 *17* α(N)=2.65×10^{-5} *4*; α(O)=3.88×10^{-6} *6*; α(P)=2.16×10^{-7} *3* E_γ: weighted average of 775.1 *3* from ^{138}Eu ε decay, 775.2 *2* from ^{104}Pd(^{37}Cl,2npγ), and 775.2 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ) and γ-ray anisotropy in ^{138}Eu ε decay.
2500.8	(7$^+$)	768.2 *2*	100	1732.59	(5$^+$)			E_γ: weighted average of 768.1 *3* from ^{138}Eu ε decay and 768.2 *2* from ^{104}Pd(^{37}Cl,2npγ).
2508.7	(7$^-$)	931.9 *2*	100	1576.8	6$^+$	(E1)	1.18×10^{-3}	α(K)=0.001013 *15*; α(L)=0.0001306 *19*; α(M)=2.77×10^{-5} *4* α(N)=6.28×10^{-6} *9*; α(O)=9.39×10^{-7} *14*; α(P)=5.86×10^{-8} *9* E_γ: weighted average of 931.8 *3* from ^{138}Eu ε decay, 931.9 *2* from ^{104}Pd(^{37}Cl,2npγ), and 931.9 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
2560.4		827.8 *3*	100	1732.59	(5^+)			E_γ: from ^{138}Eu ε decay only.
2651.8	(8^+)	547.1 *2*	100 *11*	2104.7	(6^+)			E_γ,I_γ: from ^{104}Pd(^{37}Cl,2npγ) only.
		1074[&] *1*	46 *11*	1576.8	6^+			E_γ,I_γ: from ^{104}Pd(^{37}Cl,2npγ) only.
2653.5	$(7)^-$	1077.0 *3*	100	1576.8	6^+	(E1)	8.99×10^{-4}	α(K)=0.000773 *11*; α(L)=9.91×10^{-5} *14*; α(M)=2.10×10^{-5} *3* α(N)=4.76×10^{-6} *7*; α(O)=7.13×10^{-7} *10*; α(P)=4.48×10^{-8} *7* E_γ: from ^{106}Cd(^{35}Cl,3pγ) only.
2904.7	10^+	552.2 *2*	100	2352.3	8^+	E2	0.00989	B(E2)(W.u.)=0.47 *3* α(K)=0.00817 *12*; α(L)=0.001347 *19*; α(M)=0.000293 *5* α(N)=6.59×10^{-5} *10*; α(O)=9.50×10^{-6} *14*; α(P)=4.74×10^{-7} *7* E_γ: weighted average of 552.1 *2* from ^{104}Pd(^{37}Cl,2npγ) and 552.3 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
2955.6	(8^+)	850.9 *3*	100	2104.7	(6^+)	(E2)[#]	0.00352	α(K)=0.00297 *5*; α(L)=0.000433 *6*; α(M)=9.33×10^{-5} *13* α(N)=2.10×10^{-5} *3*; α(O)=3.10×10^{-6} *5*; α(P)=1.762×10^{-7} *25* E_γ: from ^{138}Eu ε decay only.
3029.0	(9^-)	520.4 *2*	100 *8*	2508.7	(7^-)	E2	0.01154	α(K)=0.00950 *14*; α(L)=0.001600 *23*; α(M)=0.000349 *5* α(N)=7.84×10^{-5} *11*; α(O)=1.125×10^{-5} *16*; α(P)=5.48×10^{-7} *8* E_γ: weighted average of 520.3 *2* from ^{104}Pd(^{37}Cl,2npγ) and 520.5 *3* from ^{106}Cd(^{35}Cl,3pγ). I_γ: from ^{104}Pd(^{37}Cl,2npγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
		676.5 *5*	74 *8*	2352.3	8^+	(E1)	0.00223	α(K)=0.00192 *3*; α(L)=0.000251 *4*; α(M)=5.33×10^{-5} *8* α(N)=1.204×10^{-5} *17*; α(O)=1.79×10^{-6} *3*; α(P)=1.100×10^{-7} *16* E_γ: un weighted average of 677.0 *2* from ^{104}Pd(^{37}Cl,2npγ) and 676.0 *3* from ^{106}Cd(^{35}Cl,3pγ). I_γ: from ^{104}Pd(^{37}Cl,2npγ). Other: 80 from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
3106.6	10^+	754.4 *2*	100	2352.3	8^+	E2	0.00463	α(K)=0.00389 *6*; α(L)=0.000582 *9*; α(M)=0.0001257 *18* α(N)=2.83×10^{-5} *4*; α(O)=4.15×10^{-6} *6*; α(P)=2.29×10^{-7} *4* E_γ: weighted average of 754.3 *2* from ^{104}Pd(^{37}Cl,2npγ) and 754.7 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{138}Sm)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
3261.3	12^+	356.4 *2*	100	2904.7	10^+	E2	0.0333	B(E2)(W.u.)=86 *+16−12* α(K)=0.0265 *4*; α(L)=0.00532 *8*; α(M)=0.001177 *17* α(N)=0.000263 *4*; α(O)=3.67×10^{-5} *6*; α(P)=1.465×10^{-6} *21* E_γ: weighted average of 356.3 *2* from ^{104}Pd(^{37}Cl,2npγ) and 356.6 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
3300.1	$(9)^-$	646.9 *3*	17	2653.5	$(7)^-$	E2	0.00666	α(K)=0.00555 *8*; α(L)=0.000868 *13*; α(M)=0.000188 *3* α(N)=4.24×10^{-5} *6*; α(O)=6.16×10^{-6} *9*; α(P)=3.25×10^{-7} *5*
		947.4 *3*	100	2352.3	8^+	E1	1.14×10^{-3}	α(K)=0.000982 *14*; α(L)=0.0001265 *18*; α(M)=2.69×10^{-5} *4* α(N)=6.08×10^{-6} *9*; α(O)=9.09×10^{-7} *13*; α(P)=5.68×10^{-8} *8*
3640.2	(11^-)	611.3 *2*	100	3029.0	(9^-)	E2	0.00765	α(K)=0.00636 *9*; α(L)=0.001012 *15*; α(M)=0.000220 *3* α(N)=4.95×10^{-5} *7*; α(O)=7.17×10^{-6} *10*; α(P)=3.72×10^{-7} *6* E_γ: weighted average of 611.2 *2* from ^{104}Pd(^{37}Cl,2npγ) and 611.6 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
3820.4	12^+	713.9 *2*	100	3106.6	10^+	E2	0.00526	α(K)=0.00441 *7*; α(L)=0.000670 *10*; α(M)=0.0001449 *21* α(N)=3.26×10^{-5} *5*; α(O)=4.77×10^{-6} *7*; α(P)=2.60×10^{-7} *4* E_γ: weighted average of 712.8 *2* from ^{104}Pd(^{37}Cl,2npγ) and 713.0 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
3918.1	14^+	656.7 *2*	100	3261.3	12^+	E2	0.00642	α(K)=0.00536 *8*; α(L)=0.000834 *12*; α(M)=0.000181 *3* α(N)=4.07×10^{-5} *6*; α(O)=5.92×10^{-6} *9*; α(P)=3.14×10^{-7} *5* E_γ: weighted average of 656.6 *2* from ^{104}Pd(^{37}Cl,2npγ) and 657.0 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
3920.8	$(11)^-$	620.7 *3*	100	3300.1	$(9)^-$	E2	0.00737	α(K)=0.00613 *9*; α(L)=0.000971 *14*; α(M)=0.000211 *3* α(N)=4.74×10^{-5} *7*; α(O)=6.88×10^{-6} *10*; α(P)=3.58×10^{-7} *5*
4071.3	$(13)^+$	810.1 *3*	100	3261.3	12^+	M1+E2	0.0052 *13*	α(K)=0.0044 *12*; α(L)=0.00062 *13*; α(M)=0.00013 *3* α(N)=3.0×10^{-5} *7*; α(O)=4.5×10^{-6} *10*; α(P)=2.7×10^{-7} *8*
4341.6	(13^-)	701.5 *2*	100	3640.2	(11^-)	E2	0.00548	α(K)=0.00459 *7*; α(L)=0.000701 *10*;

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{138}Sm)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
								α(M)=0.0001517 *22* α(N)=3.42×10^{-5} *5*; α(O)=4.99×10^{-6} *7*; α(P)=2.70×10^{-7} *4* E_γ: weighted average of 701.6 *2* from ^{104}Pd(^{37}Cl,2npγ) and 701.2 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
4488.5	14$^+$	417 *1*	<17	4071.3	(13)$^+$	M1+E2	0.028 *7*	α(K)=0.023 *6*; α(L)=0.0036 *5*; α(M)=0.00078 *8* α(N)=0.000175 *20*; α(O)=2.6×10^{-5} *4*; α(P)=1.4×10^{-6} *5*
		668.3 *3*	67	3820.4	12$^+$	E2	0.00615	α(K)=0.00514 *8*; α(L)=0.000796 *12*; α(M)=0.0001724 *25* α(N)=3.88×10^{-5} *6*; α(O)=5.66×10^{-6} *8*; α(P)=3.02×10^{-7} *5*
		1227.0 *3*	100	3261.3	12$^+$	E2	1.64×10^{-3}	α(K)=0.001392 *20*; α(L)=0.000190 *3*; α(M)=4.07×10^{-5} *6* α(N)=9.20×10^{-6} *13*; α(O)=1.370×10^{-6} *20*; α(P)=8.29×10^{-8} *12*; α(IPF)=8.99×10^{-6} *14*
4615.6	14$^+$	795.2 *2*	100	3820.4	12$^+$	E2	0.00410	α(K)=0.00345 *5*; α(L)=0.000510 *8*; α(M)=0.0001101 *16* α(N)=2.48×10^{-5} *4*; α(O)=3.65×10^{-6} *6*; α(P)=2.04×10^{-7} *3* E_γ: weighted average of 795.2 *2* from ^{104}Pd(^{37}Cl,2npγ) and 795.3 *3* from ^{106}Cd(^{35}Cl,3pγ).
4734.6	(13$^-$)	813.8 *3*	100	3920.8	(11)$^-$	(E2)	0.00389	α(K)=0.00328 *5*; α(L)=0.000482 *7*; α(M)=0.0001040 *15* α(N)=2.35×10^{-5} *4*; α(O)=3.45×10^{-6} *5*; α(P)=1.94×10^{-7} *3*
4780.6	16$^+$	862.6 *4*	100	3918.1	14$^+$	E2	0.00342	α(K)=0.00289 *4*; α(L)=0.000419 *6*; α(M)=9.02×10^{-5} *13* α(N)=2.04×10^{-5} *3*; α(O)=3.00×10^{-6} *5*; α(P)=1.711×10^{-7} *24* E_γ: weighted average of 862.3 *2* from ^{104}Pd(^{37}Cl,2npγ) and 863.1 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
4804.4	(15)$^+$	733.2 *3*	10	4071.3	(13)$^+$	E2	0.00494	α(K)=0.00415 *6*; α(L)=0.000626 *9*; α(M)=0.0001352 *19* α(N)=3.05×10^{-5} *5*; α(O)=4.46×10^{-6} *7*; α(P)=2.44×10^{-7} *4*
		886.3 *3*	100	3918.1	14$^+$	M1+E2	0.0042 *11*	α(K)=0.0036 *9*; α(L)=0.00050 *11*; α(M)=0.000106 *22* α(N)=2.4×10^{-5} *5*; α(O)=3.6×10^{-6} *8*; α(P)=2.2×10^{-7} *6*
4833.0	16$^+$	914.9 *2*	100	3918.1	14$^+$	E2	0.00301	α(K)=0.00254 *4*; α(L)=0.000365 *6*; α(M)=7.84×10^{-5} *11* α(N)=1.771×10^{-5} *25*; α(O)=2.62×10^{-6} *4*; α(P)=1.509×10^{-7} *22*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
								E_γ: weighted average of 914.9 *2* from ^{104}Pd(^{37}Cl,2npγ) and 915.0 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
4925.2	$(15)^+$	853.9 *3*	100	4071.3	$(13)^+$	E2	0.00350	α(K)=0.00295 *5*; α(L)=0.000429 *6*; α(M)=9.25×10^{-5} *13* α(N)=2.09×10^{-5} *3*; α(O)=3.07×10^{-6} *5*; α(P)=1.748×10^{-7} *25*
5074.5	(15^-)	733.0 *2*	100	4341.6	(13^-)	E2	0.00495	α(K)=0.00415 *6*; α(L)=0.000626 *9*; α(M)=0.0001353 *19* α(N)=3.05×10^{-5} *5*; α(O)=4.46×10^{-6} *7*; α(P)=2.45×10^{-7} *4*
								E_γ: weighted average of 732.9 *2* from ^{104}Pd(^{37}Cl,2npγ) and 733.3 *3* from ^{106}Cd(^{35}Cl,3pγ). Mult.: also from γ(DCO) in ^{104}Pd(^{37}Cl,2npγ).
		1156.3 *3*	43	3918.1	14^+	(E1)	8.01×10^{-4}	α(K)=0.000680 *10*; α(L)=8.69×10^{-5} *13*; α(M)=1.84×10^{-5} *3* α(N)=4.17×10^{-6} *6*; α(O)=6.26×10^{-7} *9*; α(P)=3.94×10^{-8} *6*; α(IPF)=1.084×10^{-5} *17*
5200.3	(15^-)	858.7 *3*	100	4341.6	(13^-)	(E2)	0.00345	α(K)=0.00292 *4*; α(L)=0.000424 *6*; α(M)=9.12×10^{-5} *13* α(N)=2.06×10^{-5} *3*; α(O)=3.03×10^{-6} *5*; α(P)=1.727×10^{-7} *25*
5257.0	(16^+)	768.5 *3*	100	4488.5	14^+	(E2)	0.00443	α(K)=0.00373 *6*; α(L)=0.000556 *8*; α(M)=0.0001200 *17* α(N)=2.70×10^{-5} *4*; α(O)=3.97×10^{-6} *6*; α(P)=2.20×10^{-7} *3*
5327.9	18^+	494.9 *4*	67	4833.0	16^+	E2	0.01318	α(K)=0.01081 *16*; α(L)=0.00186 *3*; α(M)=0.000406 *6* α(N)=9.11×10^{-5} *13*; α(O)=1.304×10^{-5} *19*; α(P)=6.21×10^{-7} *9*
								E_γ: weighted average of 494.6 *2* from ^{104}Pd(^{37}Cl,2npγ) and 495.4 *3* from ^{106}Cd(^{35}Cl,3pγ).
		547.3 *2*	100	4780.6	16^+	(E2)	0.01012	α(K)=0.00836 *12*; α(L)=0.001382 *20*; α(M)=0.000301 *5* α(N)=6.76×10^{-5} *10*; α(O)=9.74×10^{-6} *14*; α(P)=4.85×10^{-7} *7*
								E_γ: weighted average of 547.2 *2* from ^{104}Pd(^{37}Cl,2npγ) and 547.4 *3* from ^{106}Cd(^{35}Cl,3pγ).
5440.2	16^+	824.6 *6*	100	4615.6	14^+	E2	0.00378	α(K)=0.00319 *5*; α(L)=0.000467 *7*; α(M)=0.0001007 *15* α(N)=2.27×10^{-5} *4*; α(O)=3.34×10^{-6} *5*; α(P)=1.89×10^{-7} *3*
								E_γ: unweighted average of 824.0 *2* from ^{104}Pd(^{37}Cl,2npγ) and 825.1 *3* from ^{106}Cd(^{35}Cl,3pγ).
5704.6	(17^-)	630.1 *3*	100	5074.5	(15^-)	E2	0.00710	α(K)=0.00591 *9*; α(L)=0.000932 *14*; α(M)=0.000202 *3* α(N)=4.55×10^{-5} *7*; α(O)=6.61×10^{-6} *10*; α(P)=3.46×10^{-7} *5*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡	α @	Comments
5721.9?	(15$^-$)	987.3 *3*	100	4734.6	(13$^-$)	E2	0.00255	α(K)=0.00217 *3*; α(L)=0.000306 *5*; α(M)=6.57×10^{-5} *10* α(N)=1.484×10^{-5} *21*; α(O)=2.20×10^{-6} *3*; α(P)=1.287×10^{-7} *18*
5767.1	(17$^+$)	962.7 *3*	100	4804.4	(15)$^+$	(E2)	0.00270	α(K)=0.00228 *4*; α(L)=0.000324 *5*; α(M)=6.96×10^{-5} *10* α(N)=1.573×10^{-5} *22*; α(O)=2.33×10^{-6} *4*; α(P)=1.356×10^{-7} *19*
5859.4	(17$^+$)	934.2 *3*	100	4925.2	(15)$^+$	(E2)	0.00287	α(K)=0.00243 *4*; α(L)=0.000347 *5*; α(M)=7.47×10^{-5} *11* α(N)=1.686×10^{-5} *24*; α(O)=2.49×10^{-6} *4*; α(P)=1.444×10^{-7} *21*
5937.0	18$^+$	1104.0 *3*	100	4833.0	16$^+$	E2	0.00202	α(K)=0.001720 *25*; α(L)=0.000239 *4*; α(M)=5.11×10^{-5} *8* α(N)=1.156×10^{-5} *17*; α(O)=1.717×10^{-6} *24*; α(P)=1.024×10^{-7} *15*; α(IPF)=3.70×10^{-7} *7*
6014.1	20$^+$	686.2 *3*	100	5327.9	18$^+$	E2	0.00578	α(K)=0.00483 *7*; α(L)=0.000742 *11*; α(M)=0.0001607 *23* α(N)=3.62×10^{-5} *5*; α(O)=5.28×10^{-6} *8*; α(P)=2.84×10^{-7} *4* E_γ: from 1994Pa27 in ^{106}Cd(^{35}Cl,3pγ), but a very discrepant value 688.9 *2* is reported in 1987Pa30 (same first author as 1994Pa27) in ^{104}Pd(^{37}Cl,2npγ). The evaluator has adopted the more recent one.
6167.0	(18$^+$)	910 *1*	100	5257.0	(16$^+$)	(E2)	0.00304	α(K)=0.00257 *4*; α(L)=0.000369 *6*; α(M)=7.94×10^{-5} *12* α(N)=1.79×10^{-5} *3*; α(O)=2.65×10^{-6} *4*; α(P)=1.526×10^{-7} *22*
6260.2	(17$^-$)	1059.9 *3*	100	5200.3	(15$^-$)	(E2)	0.00220	α(K)=0.00187 *3*; α(L)=0.000261 *4*; α(M)=5.60×10^{-5} *8* α(N)=1.265×10^{-5} *18*; α(O)=1.88×10^{-6} *3*; α(P)=1.112×10^{-7} *16*
6342.2	18$^+$	902.0 *3*	100	5440.2	16$^+$	E2	0.00310	α(K)=0.00262 *4*; α(L)=0.000377 *6*; α(M)=8.11×10^{-5} *12* α(N)=1.83×10^{-5} *3*; α(O)=2.70×10^{-6} *4*; α(P)=1.555×10^{-7} *22*
6489.0	(19$^-$)	784.4 *3*	100	5704.6	(17$^-$)	E2	0.00423	α(K)=0.00356 *5*; α(L)=0.000528 *8*; α(M)=0.0001139 *16* α(N)=2.57×10^{-5} *4*; α(O)=3.77×10^{-6} *6*; α(P)=2.10×10^{-7} *3*
6885.4	22$^+$	871.3 *3*	100	6014.1	20$^+$	E2	0.00335	α(K)=0.00282 *4*; α(L)=0.000409 *6*; α(M)=8.81×10^{-5} *13* α(N)=1.99×10^{-5} *3*; α(O)=2.93×10^{-6} *5*; α(P)=1.674×10^{-7} *24*
6913.9	(19$^+$)	1146.8 *3*	100	5767.1	(17$^+$)	(E2)	0.00187	α(K)=0.001593 *23*; α(L)=0.000220 *3*; α(M)=4.70×10^{-5} *7* α(N)=1.063×10^{-5} *15*; α(O)=1.582×10^{-6} *23*; α(P)=9.48×10^{-8} *14*; α(IPF)=1.59×10^{-6} *3*
6986.5	(20$^+$)	1049.5 *3*	100	5937.0	18$^+$	(E2)	0.00225	α(K)=0.00191 *3*; α(L)=0.000267 *4*; α(M)=5.72×10^{-5} *8* α(N)=1.293×10^{-5} *19*; α(O)=1.92×10^{-6} *3*; α(P)=1.134×10^{-7} *16*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
7208.1	(20$^+$)	1271.1 *3*	100	5937.0	18$^+$	(E2)	1.54×10^{-3}	α(K)=0.001298 *19*; α(L)=0.0001764 *25*; α(M)=3.77×10^{-5} *6* α(N)=8.53×10^{-6} *12*; α(O)=1.273×10^{-6} *18*; α(P)=7.73×10^{-8} *11*; α(IPF)=1.549×10^{-5} *23*
7377.2	(20$^+$)	1035.0 *3*	100	6342.2	18$^+$	(E2)	0.00231	α(K)=0.00196 *3*; α(L)=0.000275 *4*; α(M)=5.90×10^{-5} *9* α(N)=1.334×10^{-5} *19*; α(O)=1.98×10^{-6} *3*; α(P)=1.167×10^{-7} *17*
7442.6	(21$^-$)	953.6 *3*	100	6489.0	(19$^-$)	(E2)	0.00275	α(K)=0.00233 *4*; α(L)=0.000331 *5*; α(M)=7.12×10^{-5} *10* α(N)=1.608×10^{-5} *23*; α(O)=2.38×10^{-6} *4*; α(P)=1.383×10^{-7} *20*
7905.3	(22$^+$)	918.8 *3*	100	6986.5	(20$^+$)	E2	0.00298	α(K)=0.00252 *4*; α(L)=0.000361 *5*; α(M)=7.76×10^{-5} *11* α(N)=1.753×10^{-5} *25*; α(O)=2.59×10^{-6} *4*; α(P)=1.496×10^{-7} *21*
7975.2	(24$^+$)	1089.8 *3*	100	6885.4	22$^+$	(E2)	0.00208	α(K)=0.001766 *25*; α(L)=0.000245 *4*; α(M)=5.26×10^{-5} *8* α(N)=1.189×10^{-5} *17*; α(O)=1.766×10^{-6} *25*; α(P)=1.051×10^{-7} *15*
8564.0	(23$^-$)	1121.3 *3*	100	7442.6	(21$^-$)	(E2)	0.00196	α(K)=0.001667 *24*; α(L)=0.000231 *4*; α(M)=4.94×10^{-5} *7* α(N)=1.117×10^{-5} *16*; α(O)=1.660×10^{-6} *24*; α(P)=9.92×10^{-8} *14*; α(IPF)=7.00×10^{-7} *13*
8861.4	(24$^+$)	956.1 *3*	100	7905.3	(22$^+$)	E2	0.00273	α(K)=0.00232 *4*; α(L)=0.000329 *5*; α(M)=7.08×10^{-5} *10* α(N)=1.598×10^{-5} *23*; α(O)=2.36×10^{-6} *4*; α(P)=1.376×10^{-7} *20*
9261.2	(26$^+$)	1286 *1*	100	7975.2	(24$^+$)	(E2)	1.51×10^{-3}	α(K)=0.001268 *18*; α(L)=0.0001722 *25*; α(M)=3.68×10^{-5} *6* α(N)=8.33×10^{-6} *12*; α(O)=1.242×10^{-6} *18*; α(P)=7.55×10^{-8} *11*; α(IPF)=1.80×10^{-5} *3*
9851.0	(25$^-$)	1287 *1*	100	8564.0	(23$^-$)	(E2)	1.50×10^{-3}	α(K)=0.001266 *18*; α(L)=0.0001719 *25*; α(M)=3.68×10^{-5} *6* α(N)=8.31×10^{-6} *12*; α(O)=1.240×10^{-6} *18*; α(P)=7.54×10^{-8} *11*; α(IPF)=1.81×10^{-5} *3*
9879.7	(26$^+$)	1018.3 *3*	100	8861.4	(24$^+$)	(E2)	0.00239	α(K)=0.00203 *3*; α(L)=0.000285 *4*; α(M)=6.12×10^{-5} *9* α(N)=1.384×10^{-5} *20*; α(O)=2.05×10^{-6} *3*; α(P)=1.207×10^{-7} *17*
10964.1	(28$^+$)	1084.4 *3*	100	9879.7	(26$^+$)	(E2)	0.00210	α(K)=0.001784 *25*; α(L)=0.000248 *4*; α(M)=5.32×10^{-5} *8* α(N)=1.202×10^{-5} *17*; α(O)=1.79×10^{-6} *3*; α(P)=1.061×10^{-7} *15*
12109.7	(30$^+$)	1145.6 *3*	100	10964.1	(28$^+$)	(E2)	0.00188	α(K)=0.001596 *23*; α(L)=0.000220 *3*; α(M)=4.71×10^{-5} *7* α(N)=1.066×10^{-5} *15*; α(O)=1.585×10^{-6} *23*; α(P)=9.50×10^{-8} *14*; α(IPF)=1.53×10^{-6} *3*
13309.9?	(32$^+$)	1199[&] *1*	100	12109.7	(30$^+$)	(E2)	1.72×10^{-3} *3*	α(K)=0.001457 *21*; α(L)=0.000200 *3*; α(M)=4.27×10^{-5} *6* α(N)=9.66×10^{-6} *14*; α(O)=1.439×10^{-6} *21*; α(P)=8.67×10^{-8} *13*; α(IPF)=5.60×10^{-6} *14*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{138}Sm)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
x+139.7	(14$^-$)	139.7 *3*	100	x	(13$^-$)	(M1+E2)	0.68 *4*	α(K)=0.50 *6*; α(L)=0.14 *7*; α(M)=0.032 *15* α(N)=0.007 *4*; α(O)=0.0009 *4*; α(P)=2.8×10^{-5} *8*
x+317.9	(15$^-$)	178.2 *3*	100	x+139.7	(14$^-$)	(M1+E2)	0.320 *13*	α(K)=0.25 *4*; α(L)=0.056 *17*; α(M)=0.013 *4* α(N)=0.0028 *9*; α(O)=0.00038 *10*; α(P)=1.4×10^{-5} *4*
x+545.4	(16$^-$)	227.4 *3*	100	x+317.9	(15$^-$)	M1+E2	0.153 *17*	α(K)=0.123 *22*; α(L)=0.024 *4*; α(M)=0.0053 *10* α(N)=0.00118 *20*; α(O)=0.000166 *19*; α(P)=7.2×10^{-6} *20*
		406 *1*	<25	x+139.7	(14$^-$)	(E2)	0.0228	α(K)=0.0184 *3*; α(L)=0.00345 *6*; α(M)=0.000759 *13* α(N)=0.000170 *3*; α(O)=2.39×10^{-5} *4*; α(P)=1.034×10^{-6} *16*
x+845.0	(17$^-$)	299.7 *3*	100	x+545.4	(16$^-$)	M1+E2	0.069 *13*	α(K)=0.056 *13*; α(L)=0.00965 *18*; α(M)=0.00211 *7* α(N)=0.000474 *12*; α(O)=6.81×10^{-5} *19*; α(P)=3.4×10^{-6} *10*
		527 *1*	<33	x+317.9	(15$^-$)	(E2)	0.01116	α(K)=0.00920 *14*; α(L)=0.001542 *24*; α(M)=0.000336 *5* α(N)=7.55×10^{-5} *12*; α(O)=1.085×10^{-5} *17*; α(P)=5.32×10^{-7} *8*
x+1178.6	(18$^-$)	333.6 *3*	100	x+845.0	(17$^-$)	M1+E2	0.051 *11*	α(K)=0.042 *10*; α(L)=0.0069 *3*; α(M)=0.00151 *4* α(N)=0.000340 *11*; α(O)=4.9×10^{-5} *4*; α(P)=2.5×10^{-6} *8*
		633 *1*	<33	x+545.4	(16$^-$)	(E2)	0.00702	α(K)=0.00585 *9*; α(L)=0.000920 *14*; α(M)=0.000200 *3* α(N)=4.49×10^{-5} *7*; α(O)=6.53×10^{-6} *10*; α(P)=3.42×10^{-7} *5*
x+1598.9	(19$^-$)	420.2 *3*	100	x+1178.6	(18$^-$)	(M1+E2)	0.027 *7*	α(K)=0.023 *6*; α(L)=0.0035 *5*; α(M)=0.00076 *8* α(N)=0.000171 *20*; α(O)=2.5×10^{-5} *4*; α(P)=1.4×10^{-6} *5*
		754 *1*	<50	x+845.0	(17$^-$)	(E2)	0.00463	α(K)=0.00389 *6*; α(L)=0.000583 *9*; α(M)=0.0001259 *19* α(N)=2.84×10^{-5} *4*; α(O)=4.16×10^{-6} *6*; α(P)=2.30×10^{-7} *4*
x+2043.3	(20$^-$)	444.4 *3*	100	x+1598.9	(19$^-$)	(M1+E2)	0.023 *6*	α(K)=0.020 *6*; α(L)=0.0030 *4*; α(M)=0.00065 *8* α(N)=0.000146 *19*; α(O)=2.1×10^{-5} *4*; α(P)=1.2×10^{-6} *4*
		865 *1*	<100	x+1178.6	(18$^-$)	(E2)	0.00340	α(K)=0.00287 *4*; α(L)=0.000416 *6*; α(M)=8.96×10^{-5} *13* α(N)=2.02×10^{-5} *3*; α(O)=2.98×10^{-6} *5*; α(P)=1.701×10^{-7} *25*
x+2553.1	(21$^-$)	509.9 *3*		x+2043.3	(20$^-$)	(M1+E2)	0.016 *5*	α(K)=0.014 *4*; α(L)=0.0020 *4*; α(M)=0.00044 *7* α(N)=9.9×10^{-5} *16*; α(O)=1.5×10^{-5} *3*; α(P)=8.E−7 *3*
		954 *1*		x+1598.9	(19$^-$)	(E2)	0.00275	α(K)=0.00233 *4*; α(L)=0.000331 *5*; α(M)=7.11×10^{-5} *11* α(N)=1.606×10^{-5} *23*; α(O)=2.38×10^{-6} *4*; α(P)=1.382×10^{-7} *20*
x+3109.2	(22$^-$)	556 *1*		x+2553.1	(21$^-$)	(M1+E2)	0.013 *4*	α(K)=0.011 *3*; α(L)=0.0016 *3*; α(M)=0.00035 *6* α(N)=7.9×10^{-5} *14*; α(O)=1.16×10^{-5} *23*; α(P)=6.7×10^{-7} *21*
		1066 *1*		x+2043.3	(20$^-$)	(E2)	0.00218	α(K)=0.00185 *3*; α(L)=0.000258 *4*; α(M)=5.53×10^{-5} *8*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{138}Sm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
								α(N)=1.249×10^{-5} *18*; α(O)=1.85×10^{-6} *3*; α(P)=1.099×10^{-7} *16*
x+3675.2	(23$^-$)	1122 *1*	100	x+2553.1	(21$^-$)	(E2)	0.00196	α(K)=0.001665 *24*; α(L)=0.000230 *4*; α(M)=4.93×10^{-5} *7*
								α(N)=1.115×10^{-5} *16*; α(O)=1.658×10^{-6} *24*; α(P)=9.91×10^{-8} *14*; α(IPF)=7.2×10^{-7} *3*
x+4212.2	(24$^-$)	1103 *1*	100	x+3109.2	(22$^-$)	(E2)	0.00203	α(K)=0.001723 *25*; α(L)=0.000239 *4*; α(M)=5.12×10^{-5} *8*
								α(N)=1.158×10^{-5} *17*; α(O)=1.720×10^{-6} *25*; α(P)=1.025×10^{-7} *15*; α(IPF)=3.56×10^{-7} *15*
x+4848.2	(25$^-$)	1173 *1*	100	x+3675.2	(23$^-$)	(E2)	0.00179	α(K)=0.001522 *22*; α(L)=0.000209 *3*; α(M)=4.48×10^{-5} *7*
								α(N)=1.013×10^{-5} *15*; α(O)=1.507×10^{-6} *22*; α(P)=9.06×10^{-8} *13*; α(IPF)=3.19×10^{-6} *9*
x+6067?	(27$^-$)	1219[&] *1*	100	x+4848.2	(25$^-$)	(E2)	1.66×10^{-3}	α(K)=0.001410 *20*; α(L)=0.000193 *3*; α(M)=4.12×10^{-5} *6*
								α(N)=9.33×10^{-6} *14*; α(O)=1.389×10^{-6} *20*; α(P)=8.39×10^{-8} *12*; α(IPF)=7.95×10^{-6} *17*

[†] From ^{106}Cd(^{35}Cl,3pγ) (1994Pa27), unless otherwise noted.
[‡] From ^{106}Cd(^{35}Cl,3pγ) (1994Pa27) based on measured DCO ratios, unless noted otherwise.
[#] From ^{138}Eu ε decay (1992Si22) based on measured anisotropy.
[@] Additional information 2.
[&] Placement of transition in the level scheme is uncertain.

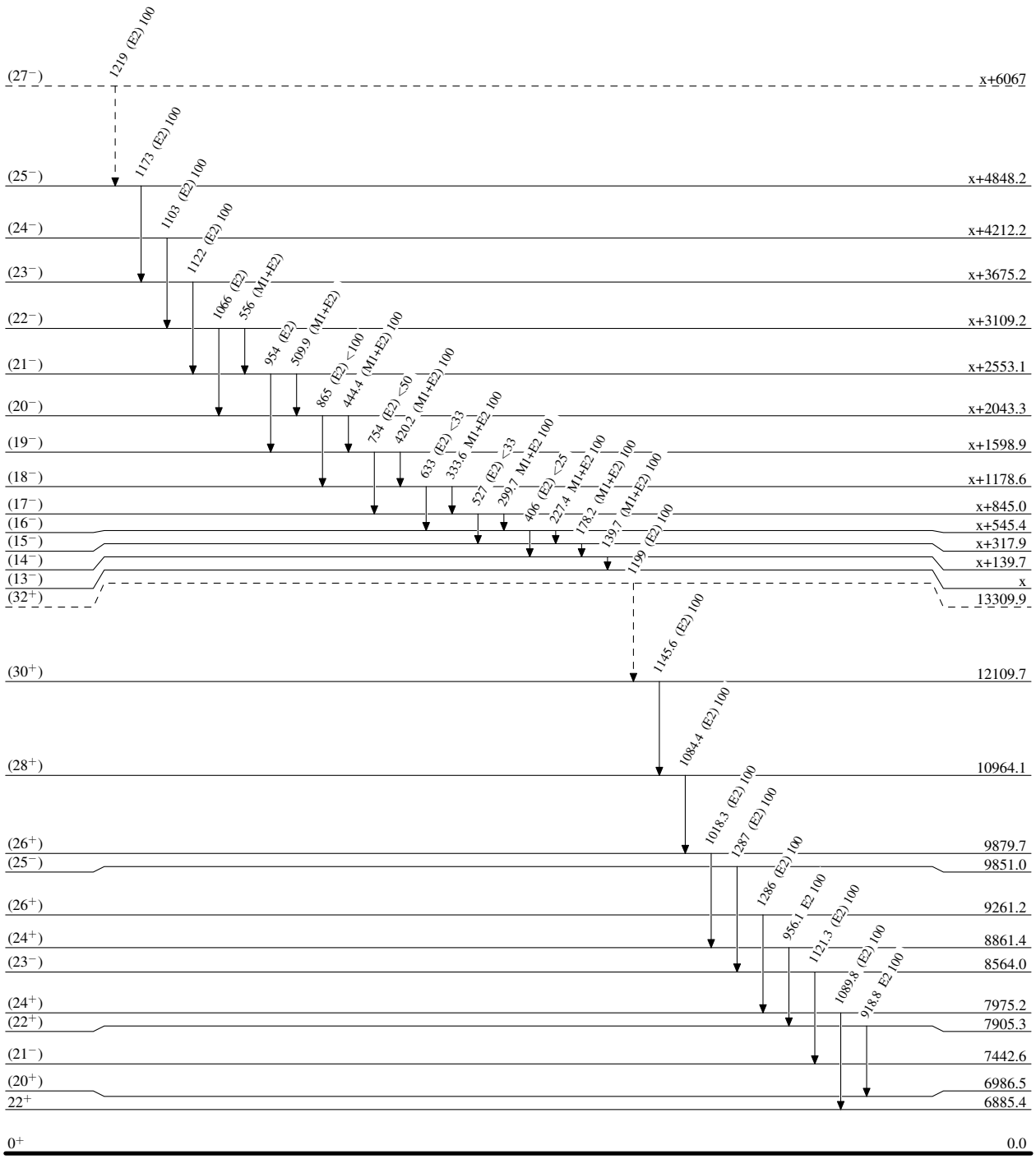
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

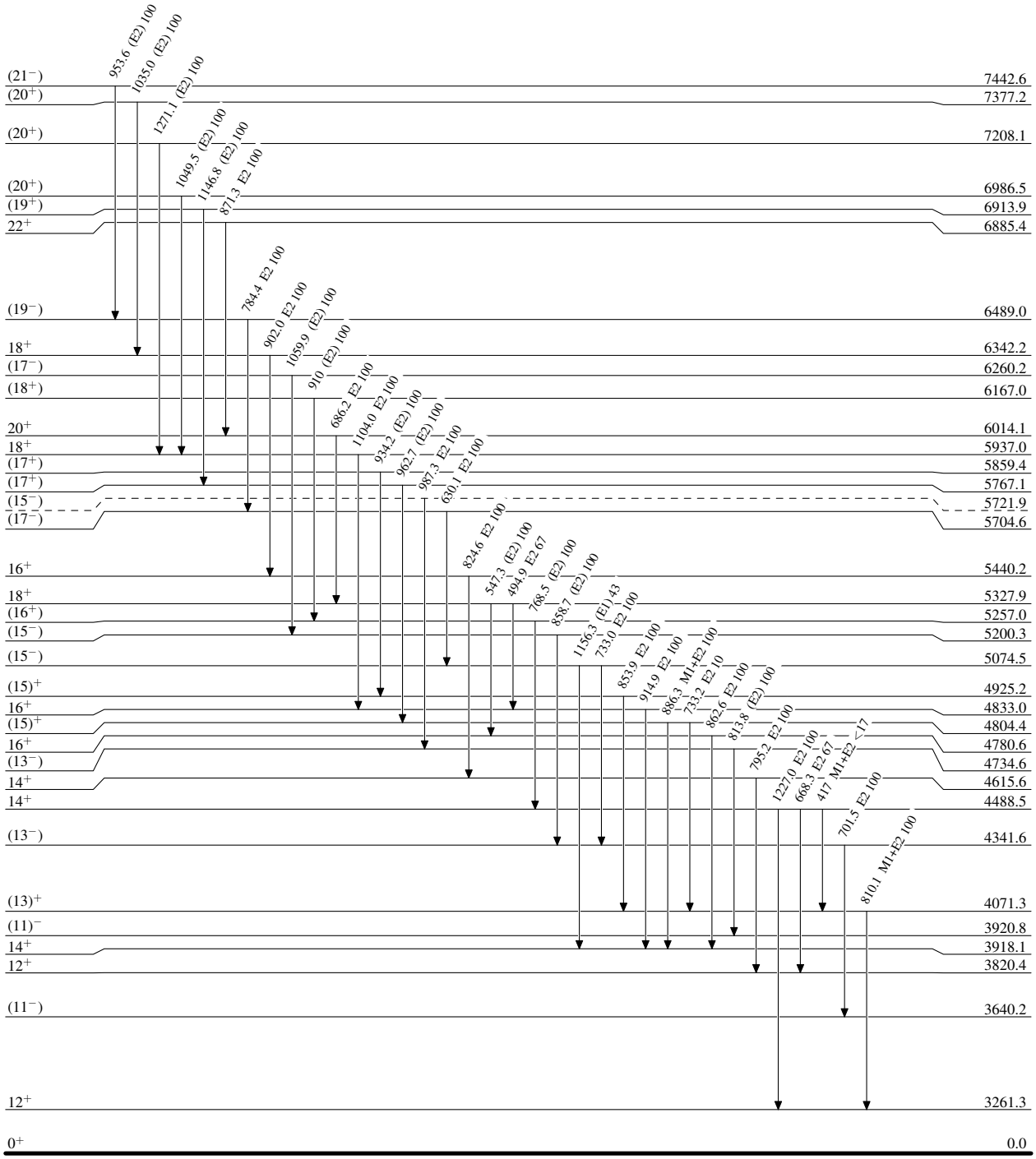


$^{138}_{62}Sm_{76}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{138}_{62}Sm_{76}$

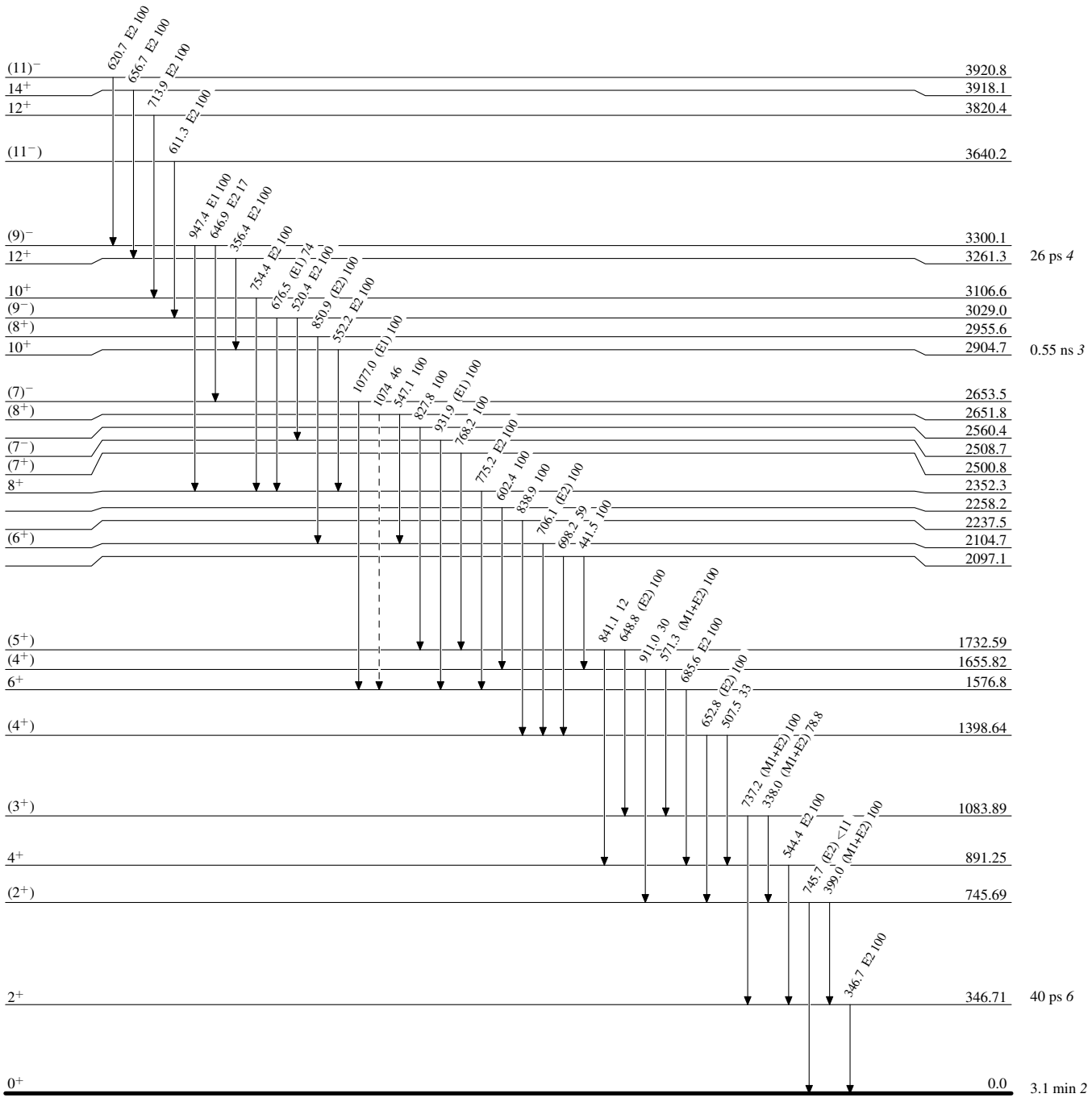
Adopted Levels, Gammas

Legend

Level Scheme (continued)

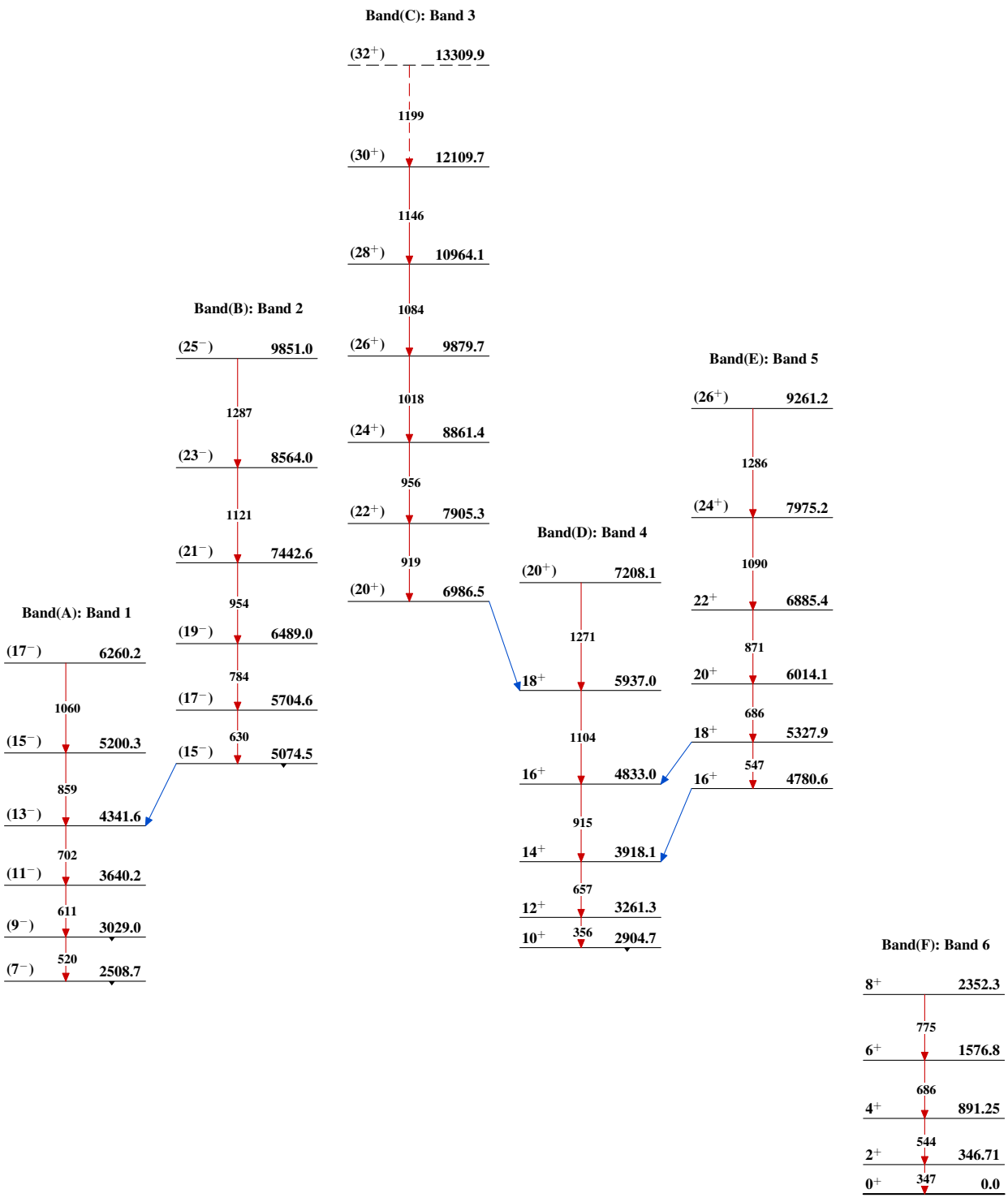
Intensities: Relative photon branching from each level

γ Decay (Uncertain)

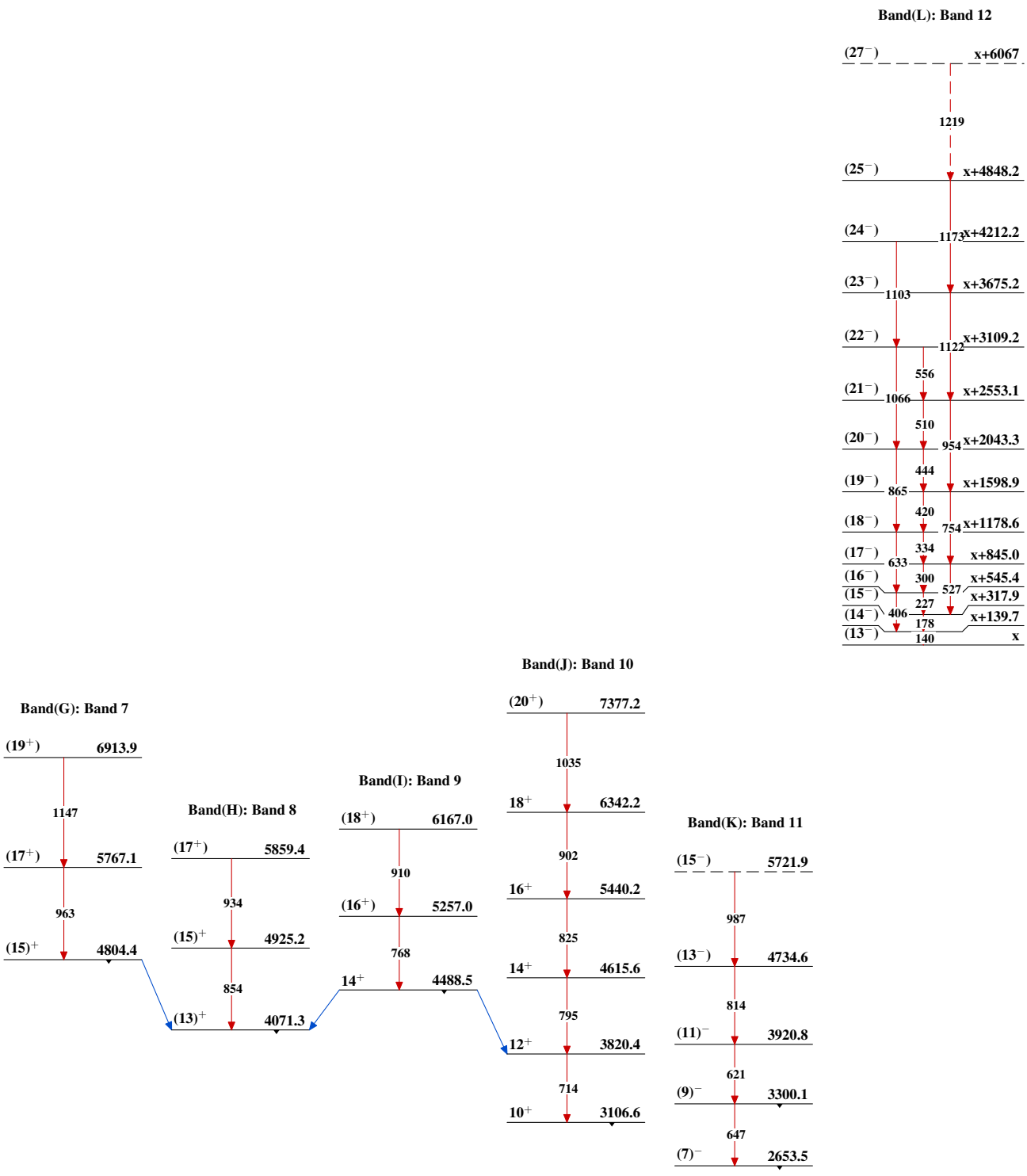


$^{138}_{62}Sm_{76}$

Adopted Levels, Gammas

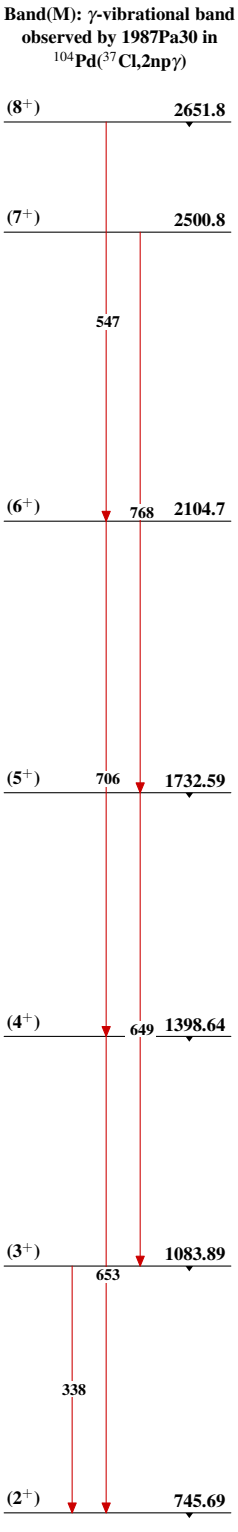


Adopted Levels, Gammas (continued)



$^{138}_{62}Sm_{76}$

Adopted Levels, Gammas (continued)



$^{138}_{62}Sm_{76}$