^{154}Sm(n,n′γ) 1986Be52,2006De19

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

The level energies and γ data are from 2006De19, who report ≈205 γ′s. Others: 1986Be52, who report≈165 γ′s; 1973El09, who report≈35 γ′s; 1978Si13, who report 6 γ′s; and 1996Ko41, who report level populations. The level lifetimes are from 1993Ju04.

2006De19 report detailed information on levels only up to≈1.99 MeV. these authors give much less detailed information on levels above this energy. In a number of cases, these levels lead to the emission of only 1 or 2 γ′s. In such cases, these levels generally are not included as (n,n′γ) levels in the Adopted Levels.

2006De19 do not confirm the population in (n,n′γ) of levels at 1104, 1120, 1295, 1365 and 1371 keV, if they have J≤5. Also, they do not confirm the population of the 1577 keV, 6^+ member of the first excited $K^\pi=0^+$ band and the 2154.3 keV, 7^+ member of the γ band, which were reported in an earlier (n,n′γ) study.

2006De19: enriched (97.9%) target of mass 10 g and thickness 0.58 g/cm^2 irradiated in a beam of fast-reactor neutrons. γ′s detected using a HPGe detector of efficiency 10% and FWHM 2.4 keV at 1.3 MeV. γ spectra measured at angles of 90, 105, 115, 125, 135, 142 and 150° with respect to the beam direction. Measured Eγ, Iγ, γ(θ). Report level scheme and δ values for many of the γ′s.

1986Be52: Enriched (98.5%) target with reactor neutrons.

1996Ko41: reactor neutrons.

1993Ju04: E(n)=1.3 MeV on natural Sm target. Doppler-shift attenuation method, spectra measured at eight angles between 35° and 144°.

1978Si13: E(n)=2.75 MeV.

1973El09: Enriched (99.54%) target; n from p bombardment of ^{7}Li and maximum n energies of 1.1 to 2.3 MeV.

^{154}Sm Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
0[&]	0^+		
81.973[&] *16*	2^+		
266.856[&] *25*	4^+		
544.15[&] *4*	6^+		
902.79[&] *19*	8^+		
921.338[a] *20*	1^-	20.1 fs *14*	
1012.36[a] *3*	3^-	23 fs *3*	
1099.21[b] *11*	0^+		
1177.833[b] *24*	2^+		
1181.30[a] *4*	5^-		
1202.43[d] *7*	0^+		
1286.27[d] *4*	2^+		
1333.4[@&] *6*	10^+		
1337.62[b] *6*	4^+		
1430.98[@a] *14*	7^-		
1440.06[c] *4*	2^+		
1472.29[d] *17*	(4^+)		
1475.81[e] *4*	1^-		
1515.17[e] *6*	2^-		
1539.21[c] *4*	3^+		
1584.54[e] *5*	3^-		
1660.69[e] *4*	4^-		
1664.86[c] *7*	4^+		
1673.87 *7*	2		Jπ: 2006De19 assign J,$K^\pi=2,2^-$ to this level.
1706.89 *8*	3^+		

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^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

^{154}Sm Levels (continued)

E(level)[†]	Jπ[‡]	Comments
1755.30 *7*	(3⁻)	Jπ: Assigned 2⁻ by 1996Ko41. 2006De19 report Jπ=2,3⁻ and assign J, Kπ=3,2⁻ to IT.
1774.36[e] *8*	5⁻	
1805.12[c] *10*	5⁺	
1815.10 *6*	2⁺,3	Jπ: 2006De19 report J=3.
1818.42[@] *9*	(4⁺,5)	Jπ: 2006De19 report J=5.
1878.72 *15*	(2⁺)	
1890.58 *12*	1⁻	
1922.23 *12*	2⁺	Jπ: 2006De19 report Jπ=2⁺,3⁻. However, this level is fed in ^{154}Pm β⁻ decay (2.68 min) by an E1 transition from a 3⁻ level, ruling out π=−.
1925.60 *16*		Jπ: 2006De19 report Jπ=4⁺.
1945.73 *9*		Jπ: 2006De19 report J=2.
1973.29 *24*	1⁻,2⁺	
1986.8 *4*	3⁻	E(level): Assumed by the evaluator to be the same as the 1986.72 level seen in the ^{154}Pm β⁻ decay (2.68 min). Previous objections to this were based on the differences in the γ-decay modes of this level as observed Iβ the β⁻ decay and in the earlier (n,n′γ) work. the present γ decay mode is that reported by 2006De19, which differs markedly from this earlier (n,n′γ) work and is not inconsistent with the β⁻ decay results. Jπ: 2006De19 report Jπ=(2⁺,3).
2013.4 *6*		
2015.80[@] *24*	(1⁻,2⁺)	E(level): This level may be the same as the 2015.37 level seen in the ^{154}Pm β⁻ decay (1.73 min), based primarily on the reasonable agreement of the decay modes. However, an 837.4 γ is seen in the β⁻ decay, which 2006De19 should have seen, but do not list.
2069.04 *20*	(2⁺)	E(level): Assumed by the evaluator to be the same as the 2069.06 level seen in the ^{154}Pm β⁻ decay (1.73 min), based primarily on the reasonable agreement of the decay modes. However, a 969.79 γ is seen in the β⁻ decay, which 2006De19 should have seen, but do not list. 1986Be52 show a 969.7 γ, but give only an upper limit for its Iγ value. Jπ: 1986Be52 report Jπ=1⁻, but give no basis for this assignment.
2131.8[@] *4*	(2⁺)	In ^{154}Pm β⁻ decay (1.73 min), a 953.97 γ is shown deexciting a 2131.81 level. The two most intense γ′s deexciting this level have Eγ=953.97 and 1032.55, with Iγ(953γ)/Iγ(1032γ)≈1.45. 2006De19 do report a 953.34 γ, with Iγ=5.9 *3*, in their data, but show it as unplaced. IT is possible that at least some of this intensity is associated with the decay of this level, but the evaluator has chosen not to do this.
2139.9 *3*	(1,2⁺)	E(level): Because of the somewhat different relative Iγ values for the γ′s depopulating this level compared with those from the 2139.80 level in the ^{154}Pm β⁻ decay (1.73 min), this level may not the same as that level. The properties listed for this level in the Adopted Levels, Gammas data set are from the β⁻ decay data. Jπ: From the Adopted Values. 1986Be52 report Jπ=1⁻, but give no basis for that assignment.
2151.8?[@] *2*		
2175.3?[@]		
2232.5[@] *8*		E(level): This may be the same as the 2232.8 level seen in the ^{154}Pm β⁻ decay (2.68 min). There, a strong 526.0 γ is reported to also deexcite this level. 2006De19 report a 525.6 *3* γ, but place IT elsewhere in the level scheme.
2293.5[@] *4*		
2312.8?[@]		
2347.4 *6*		
2368.3[@] *10*		
2444.6[@] *6*		
2557.2[@] *9*		
2580.0?[@]		
2584.2?[@]		
2592.2[@] *8*		

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^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

^{154}Sm Levels (continued)

E(level)†
2616.9@ *12*
2721.8@ *17*
2743.1@ *9*
2778.6@ *5*

† From least-squares fit to the listed Eγ values.
‡ From Adopted Levels, unless noted otherwise.
# From 1993Ju04, DSAM.
@ Level reported by 2006De19. Not reported in earlier (n,n′γ) studies.
& Band(A): $K^\pi=0^+$ ground-state band.
a Band(B): $K^\pi=0^-$ octupole-vibrational band.
b Band(C): First excited $K^\pi=0^+$ band.
c Band(D): $K^\pi=2^+$ γ-vibrational band.
d Band(E): Second excited $K^\pi=0^+$ band.
e Band(F): $K^\pi=1^-$ octupole-vibrational band.

γ(^{154}Sm)

E_γ†	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	Comments
x40.1							
x45.5							
81.98 *2*		81.973	2^+	0	0^+	E2	I_γ: 2006De19 do not list an Iγ value for this γ. From the Iγ data of 1986Be52, one computes Iγ(81.95)=1.08×10^3 *23* on the intensity scale of 2006De19. However, since the data of 1986Be52 were measured at 90°, while those of 2006De19 were taken at 125°, this computed value may not be realistic. Mult.: From the adopted values. 2006De19 do not report a mult for this γ.
x150.4 *4*	1.7 *3*						E_γ: Previous (n,n′γ) work placed a 150.2 γ from the 1815 level, but this placement is not adopted by 2006De19.
184.88 *3*	565 *20*	266.856	4^+	81.973	2^+	E2	
x214.6 *7*	1.5 *2*						
x231.7 *5*	1.5 *2*						
x267.3 *3*	3.4 *4*						
274.0 *10*	9.8 *3*	1286.27	2^+	1012.36	3^-		
277.34 *4*	78 *10*	544.15	6^+	266.856	4^+	E2	
281.01 *9*	14 *3*	1202.43	0^+	921.338	1^-		
315.5 *3*	4.5 *10*	1755.30	(3^-)	1440.06	2^+		
x336.4 *5*	1.4 *3*						
339.0 *5*	1.7 *3*	1878.72	(2^+)	1539.21	3^+		
358.8 *2*	7.0 *15*	902.79	8^+	544.15	6^+	E2	
364.91 *6*	17.9 *18*	1286.27	2^+	921.338	1^-	E1	
375.3 *7*	3.1 *4*	1815.10	2^+,3	1440.06	2^+		
x401.8 *2*	3.2 *2*						
430.6 *7*	1.1 *3*	1333.4	10^+	902.79	8^+		
x444.3 *6*	0.7 *2*						
460.0 *3*	3.7 *4*	1472.29	(4^+)	1012.36	3^-		
x526.5 *3*	2.4 *3*						
528.8& *4*	1.5& *2*	1430.98	7^-	902.79	8^+		I_γ: 2006De19 report Iγ=1.9 *2* for the composite peak. The difference is placed from the 1815 level.

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^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

γ(^{154}Sm) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
528.8[&] *4*	0.37[&]	1815.10	2^+,3	1286.27	2^+		I_γ: From Iγ(528γ)/Iγ(375γ) in ^{154}Pm β^- decay (2.68 min) and Iγ(375γ). 2006De19, in (n,n′γ) report Iγ=1.9 *2* for the composite peak.
546.7 *4*	2.1 *2*	1986.8	3^-	1440.06	2^+		
554.3 *4*	1.6 *3*	1475.81	1^-	921.338	1^-		
[x]560.6 *4*	3.4 *3*						
584.4 *6*	1.0 *2*	1922.23	2^+	1337.62	4^+		
615.2[a] *7*	0.9 *2*	2151.8?		1539.21	3^+		E_γ: Poor energy fit.
[x]617.3 *3*	<3.0						Peak is a multiplet (2006De19).
[x]626.1 *3*	1.1 *2*						
637.14[&] *6*	10.8[&]	1181.30	5^-	544.15	6^+	E1	I_γ: 2006De19 report Iγ=11.9 *5* for the composite peak and Iγ≤11.3 for this placement.
637.14[&] *6*	1.1[&]	1815.10	2^+,3	1177.833	2^+		I_γ: From Iγ(637γ)/Iγ(1733γ) in ^{154}Pm β^- decay (2.68 min) and Iγ(1733γ). 2006De19, in (n,n′γ), report Iγ=11.9 *5* for the composite peak, from which Iγ=0.6 is deduced.
[x]644.1 *4*	0.9 *2*						
[x]649.1 *4*	0.6 *2*						E_γ: Previous (n,n′γ) work showed a 649.5 γ as doubly placed, but these placements are not adopted by 2006De19.
661.47 *9*	9.5 *2*	1673.87	2	1012.36	3^-	E1,M1	
664.0 *5*	1.6 *2*	2139.9	$(1,2^+)$	1475.81	1^-		
673.5 *6*	1.4 *3*	2347.4		1673.87	2		
675.8 *6*	1.5 *3*	2013.4		1337.62	4^+		
688.1 *4*	0.6 *2*	1890.58	1^-	1202.43	0^+		
[x]702.4 *2*	3.1 *3*						
716.7[a] *4*	1.4 *2*	2151.8?		1440.06	2^+		E_γ: Poor energy fit.
742.90 *6*	13.7 *4*	1755.30	(3^-)	1012.36	3^-		
745.50 *4*	59.0 *18*	1012.36	3^-	266.856	4^+	E1	
752.57 *10*	7.8 *3*	1673.87	2	921.338	1^-	E1,M1	
773.8[a] *5*	0.9 *3*	2312.8?		1539.21	3^+		
[x]778.22 *12*	3.8 *2*						
794.9 *2*	4.5 *3*	1337.62	4^+	544.15	6^+		
[x]826.6 *6*	1.0 *2*						
834.05 *20*	13.6 *4*	1755.30	(3^-)	921.338	1^-		I_γ: Also listed as≤13.6 by 2006De19.
839.36 *2*	118 *3*	921.338	1^-	81.973	2^+	E1	
872.15[a] *20*	1.2 *3*	2312.8?		1440.06	2^+		
886.75 *14*	5.0 *3*	1430.98	7^-	544.15	6^+		
891.15 *21*	3.2 *3*	2069.04	(2^+)	1177.833	2^+		
910.96 *3*	27.3 *22*	1177.833	2^+	266.856	4^+	E2	
914.44 *3*	30.8 *6*	1181.30	5^-	266.856	4^+	E1	
921.33 *3*	80.4 *20*	921.338	1^-	0	0^+	E1	
930.37 *3*	100 *1*	1012.36	3^-	81.973	2^+	E1	
[x]942.76 *19*	2.0 *2*						
[x]953.34 *15*	5.9 *3*						At least some of the intensity of this γ may be associated with the decay of the 2131.8 level. See the comment for that level.
956.9 *3*	3.1 *3*	1878.72	(2^+)	921.338	1^-		
[x]978.8 *13*	0.81 *26*						
[x]995.6 *3*	3.02 *24*						
[x]999.7 *3*	2.8 *3*						
1003.1 *4*	2.03 *24*	2015.80	$(1^-,2^+)$	1012.36	3^-		
1017.23 *10*	32.5 *6*	1099.21	0^+	81.973	2^+		
1019.40 *20*	15.7 *5*	1286.27	2^+	266.856	4^+		

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^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

γ(^{154}Sm) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	Comments
1024.40 *8*	9.4 *3*	1945.73		921.338	1^-	E1,M1		
1032.6 *3*	2.3 *2*	2131.8	(2^+)	1099.21	0^+			
[x]1044.0 *7*	0.8 *3*							
[x]1047.8 *3*	2.3 *2*							
[x]1057.4 *5*	1.8 *3*							
[x]1064.7 *11*	0.58 *23*							
1070.68 *7*	11.8 *4*	1337.62	4^+	266.856	4^+	E2(+M1)	>50	δ: 2006De19 also report δ=−1.1 *3*. From consideration of the two-proton-quasiparticle makeup of this state, 2005DeZV suggest that δ is positive.
[x]1086.1 *6*	0.9 *3*							
1095.86 *3*	36.3 *7*	1177.833	2^+	81.973	2^+	E2(+M1)	+6×10[1] *+13−3*	δ: 2006De19 report δ=+56 *+130−25* or −0.42 *2*. From consideration of the two-proton-quasiparticle makeup of this state, 2005DeZV suggest that δ is positive.
[x]1105.9 *10*	0.7 *3*							
[x]1108.2 *5*	1.4 *4*							
1120.51 *8*	11.1 *3*	1202.43	0^+	81.973	2^+	E2		
[x]1124.6 *5*	2.0 *3*							
1148.1 *6*	1.7 *3*	2069.04	(2^+)	921.338	1^-			
1162.7[a] *4*	2.1 *3*	2175.3?		1012.36	3^-			
1173.1 *4*	2.6 *3*	1440.06	2^+	266.856	4^+			
1177.79 *4*	23.9 *5*	1177.833	2^+	0	0^+	E2		
1204.30 *4*	29 *3*	1286.27	2^+	81.973	2^+	M1+E2	+0.8 *+15−6*	
1205.4 *2*	11 *2*	1472.29	(4^+)	266.856	4^+			
1230.16 *7*	11.0 *4*	1774.36	5^-	544.15	6^+			
[x]1232.2 *3*	4.97 *25*							
[x]1243.5 *6*	0.37 *15*							
1255.55 *7*	14.1 *3*	1337.62	4^+	81.973	2^+	E2		
1261.0 *1*	2.6 *3*	1805.12	5^+	544.15	6^+			
[x]1261.1 *3*	2.6 *2*							
[x]1268.4 *8*	0.80 *24*							
1272.34 *7*	11.3 *5*	1539.21	3^+	266.856	4^+			
1274.33 *19*	2.8 *3*	1818.42	$(4^+,5)$	544.15	6^+			
1286.8 *5*	2.0 *3*	1286.27	2^+	0	0^+			
[x]1298.4 *6*	0.95 *26*							
[x]1302.0 *3*	<3.8							
[x]1309.8 *7*	0.4 *2*							
1317.68 *4*	19.3 *6*	1584.54	3^-	266.856	4^+	E1		
[x]1348.5 *4*	<2.6							
1358.09 *3*	32.4 *7*	1440.06	2^+	81.973	2^+			δ: 2006De19 report δ=−0.59 *3* or −8.5 *15*.
[x]1377.3 *5*	0.71 *24*							
[x]1380.7 *7*	1.78 *25*							
1393.83[&] *3*	28.4[&]	1475.81	1^-	81.973	2^+			I_γ: 2006De19 report Iγ=40.4 *13* for the composite peak.
1393.83[&] *3*	12[&]	1660.69	4^-	266.856	4^+			I_γ: 2006De19 report Iγ=49.4 *13* for the composite peak.
1398.00 *6*	11.2 *3*	1664.86	4^+	266.856	4^+	M1(+E2)	−2.5 *+10−25*	
[x]1406.2 *3*	0.8 *3*							
1433.19 *5*	28.0 *8*	1515.17	2^-	81.973	2^+	E1		

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^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

γ(^{154}Sm) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	Comments
1440.05[&] *10*	32.4[&]	1440.06	2^+	0	0^+			I_γ: 2006De19 report Iγ=49.4 *13* for the composite peak.
1440.05[&] *10*	17[&]	1706.89	3^+	266.856	4^+			I_γ: 2006De19 report Iγ=49.4 *13* for the composite peak.
1457.23 *4*	29.7 *9*	1539.21	3^+	81.973	2^+	E2+M1	−7.5 *10*	
[x]1471.9 *5*	1.2 *5*							
1476.0 *6*	0.7 *2*	1475.81	1^-	0	0^+			
[x]1482.6 *10*	0.55 *22*							
[x]1486.7 *3*	2.1 *2*							
[x]1496.5 *6*	1.2 *2*							
1502.6 *2*	3.8 *3*	1584.54	3^-	81.973	2^+	E1		
1509.0 *4*	2.2 *3*	1774.36	5^-	266.856	4^+	E1		
[x]1511.3 *7*	1.2 *3*							
[x]1524.1 *8*	1.4 *4*							Peak is a multiplet (2006De19).
1538.1 *2*	5.5 *3*	1805.12	5^+	266.856	4^+	M1(+E2)		Mult.: 2006De19 report δ=0.00 *2* or −9 *2*.
[x]1540.5 *5*	1.4 *4*							
1548.4 *3*	3.2 *2*	1815.10	2^+,3	266.856	4^+			
1551.54 *9*	7.0 *3*	1818.42	(4^+,5)	266.856	4^+			δ: 2006De19 give δ=−0.05 *5* or −5 *+1−2*.
1582.8 *3*	3.7 *2*	1664.86	4^+	81.973	2^+	E2		
[x]1600.2 *10*	0.68 *11*							
1612.1 *4*	1.3 *2*	1878.72	(2^+)	266.856	4^+			
1624.87 *12*	7.7 *3*	1706.89	3^+	81.973	2^+	M1+E2	+0.75 *+25−10*	
1655.24 *15*	5.2 *3*	1922.23	2^+	266.856	4^+			
1658.73 *15*	4.3 *3*	1925.60		266.856	4^+			
1674.1 *4*	1.6 *2*	1755.30	(3^-)	81.973	2^+			
[x]1705.4 *10*	0.9 *3*							Peak is a multiplet (2006De19).
[x]1718.7 *4*	2.0 *2*							
[x]1727.0 *10*	0.84 *25*							
1733.65 *13*	4.6 *2*	1815.10	2^+,3	81.973	2^+	E1,M1		
[x]1744.6 *4*	1.5 *2*							
[x]1763.9 *3*	3.7 *3*							
[x]1773.2 *9*	1.3 *3*							
[x]1779.0 *5*	2.1 *3*							E_γ: γ listed as questionable by 2006De19.
[x]1786.5 *3*	3.35 *23*							Peak is a multiplet (2006De19).
1796.96 *22*	4.1 *3*	1878.72	(2^+)	81.973	2^+	M1+E2	−1.5 *+8−70*	
1808.29 *19*	4.1 *3*	1890.58	1^-	81.973	2^+	E1		
1840.44 *18*	5.1 *3*	1922.23	2^+	81.973	2^+			
[x]1844.9 *8*	2.5 *2*							
[x]1852.3 *6*	0.7 *2*							
1863.3 *5*	2.5 *3*	1945.73		81.973	2^+			
[x]1869.2 *7*	1.5 *3*							
1878.9 *4*	0.7 *2*	1878.72	(2^+)	0	0^+			
[x]1888.9 *3*	2.8 *3*							
1890.80 *16*	3.4 *2*	1890.58	1^-	0	0^+	E1		
[x]1897.6 *2*	3.7 *3*							
1908.4[a] *6*	1.0 *2*	2175.3?		266.856	4^+			
[x]1923.2 *10*	1.0 *2*							
1934.0 *3*	3.5 *3*	2015.80	(1^-,2^+)	81.973	2^+			
[x]1959.7 *7*	1.5 *2*							
[x]1969.5 *3*	3.8 *3*							
1973.28 *24*	4.1 *3*	1973.29	1^-,2^+	0	0^+			

Continued on next page (footnotes at end of table)

^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

γ(^{154}Sm) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Comments
x1991.4 *10*	1.1 *2*					
x2017.6 *9*	0.74 *22*					
2026.0 *7*	1.6 *3*	2293.5		266.856	4^+	
2035.2[a] *9*	1.4 *3*	2580.0?		544.15	6^+	
2039.9[a] *10*	1.3 *2*	2584.2?		544.15	6^+	
x2052.0 *3*	3.1 *3*					
2058.0 *4*	2.2 *3*	2139.9	$(1,2^+)$	81.973	2^+	
x2066.7 *8*	0.87 *22*					
x2076.3 *5*	1.5 *3*					
x2107.0 *12*	1.4 *3*					
x2131.3 *5*	2.2 *3*					Peak is a multiplet (2006De19).
2139.6 *6*	1.7 *3*	2139.9	$(1,2^+)$	0	0^+	
2150.5 *8*	1.4 *3*	2232.5		81.973	2^+	
x2159.14 *26*	3.0 *3*					
x2167.4 *9*	0.8 *2*					
x2170.2 *5*	0.8 *2*					
x2184.3 *10*	1.0 *2*					
x2193.5 *12*	0.5 *2*					
2211.8 *5*	0.6 *2*	2293.5		81.973	2^+	
x2235.5 *8*	1.5 *2*					
x2240.5 *4*	2.6 *3*					
x2253.7 *4*	1.2 *2*					
x2259.7 *4*	2.4 *3*					
x2271.2 *12*	0.89 *16*					
x2292.6 *4*	1.6 *2*					
x2307.3 *15*	0.7 *3*					
2313.7[a] *9*	1.0 *3*	2580.0?		266.856	4^+	
2317.3[a] *16*	0.44 *18*	2584.2?		266.856	4^+	
x2327.7 *10*	0.7 *3*					
x2338.5 *5*	1.0 *3*					Peak is a multiplet (2006De19).
x2347.0 *4*	0.9 *2*					
2368.3 *10*	0.64 *25*	2368.3		0	0^+	
x2377.0 *5*	1.1 *2*					
x2392.5 *15*	0.64 *26*					
x2400.6 *9*	1.4 *3*					
x2408.6 *8*	1.3 *3*					
x2418.9 *9*	1.5 *3*					
2444.6 *6*	1.8 *3*	2444.6		0	0^+	
x2457.4 *14*	1.3 *2*					
2475.2 *9*	1.4 *2*	2557.2		81.973	2^+	
2510.2 *8*	2.0 *3*	2592.2		81.973	2^+	
2534.9 *12*	1.5 *3*	2616.9		81.973	2^+	
x2636.2 *5*	1.4 *3*					
2661.1 *9*	2.1 *4*	2743.1		81.973	2^+	Peak is a multiplet (2006De19).
x2675.8 *5*	1.4 *4*					
x2694.7 *8*	1.1 *2*					
x2701.1 *11*	0.78 *24*					
2721.8 *17*	1.6 *3*	2721.8		0	0^+	
x2734.3 *16*	1.5 *3*					
x2754.7 *4*	1.9 *3*					
2778.6 *5*	1.1 *2*	2778.6		0	0^+	
x2858.6 *5*	0.5 *2*					
x2870.6 *5*	0.5 *2*					

Continued on next page (footnotes at end of table)

^{154}Sm(n,n′γ) 1986Be52,2006De19 (continued)

γ(^{154}Sm) (continued)

† From 2006De19, measured at θ=90°.
‡ Relative units, measured at θ=125° (2006De19).
# Values as reported by 2006De19 and based on their γ(θ) measurements, supplemented with data from the previous Nuclear Data Sheets evaluation (1998Re22).
@ From the γ(θ) data of 2006De19.
& Multiply placed with intensity suitably divided.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

^{154}Sm(n,n′γ) 1986Be52,2006De19

Level Scheme

Intensities: Relative I_γ

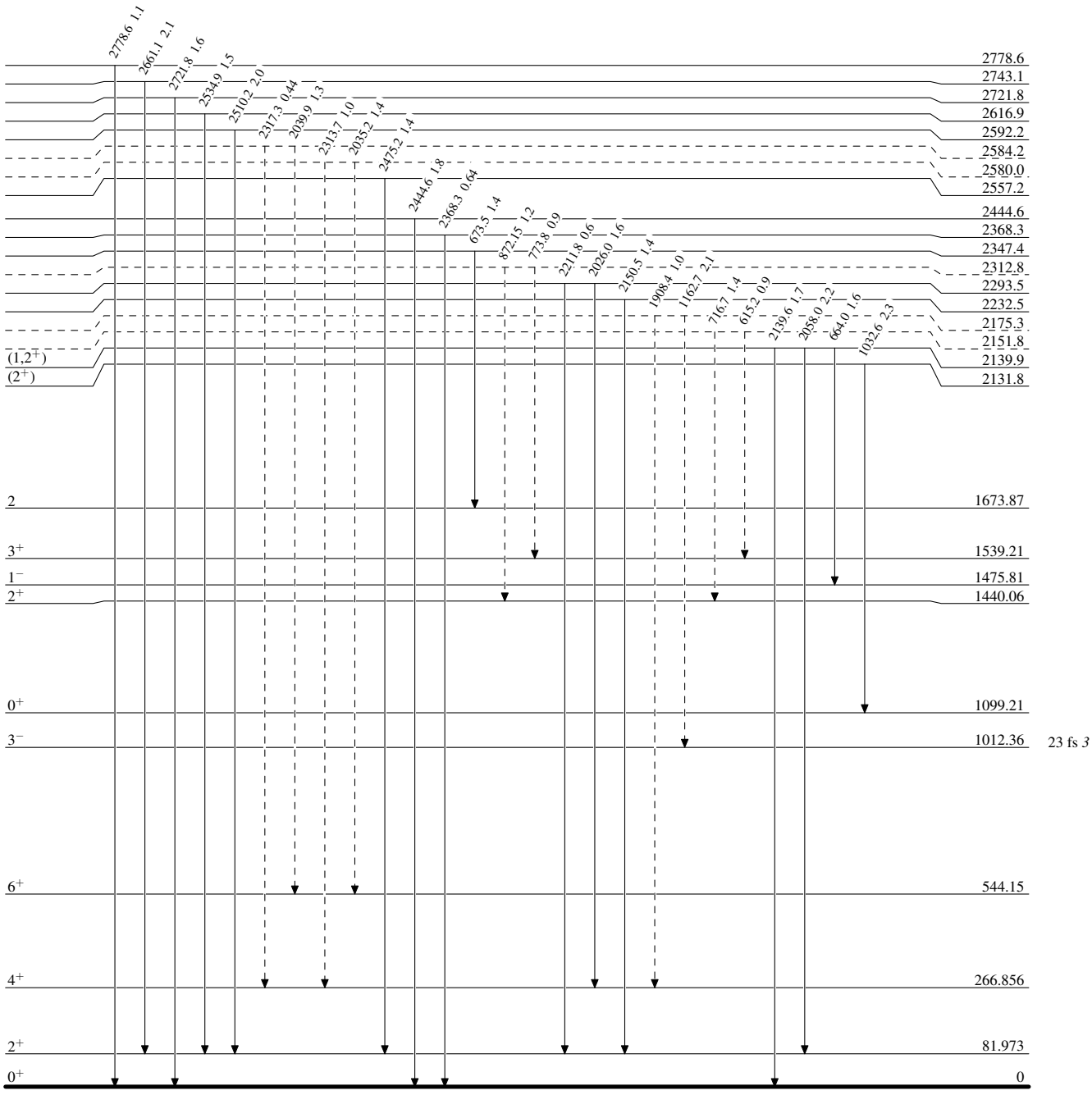
Legend

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

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

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

γ Decay (Uncertain)



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

^{154}Sm(n,n′γ) 1986Be52,2006De19

Level Scheme (continued)

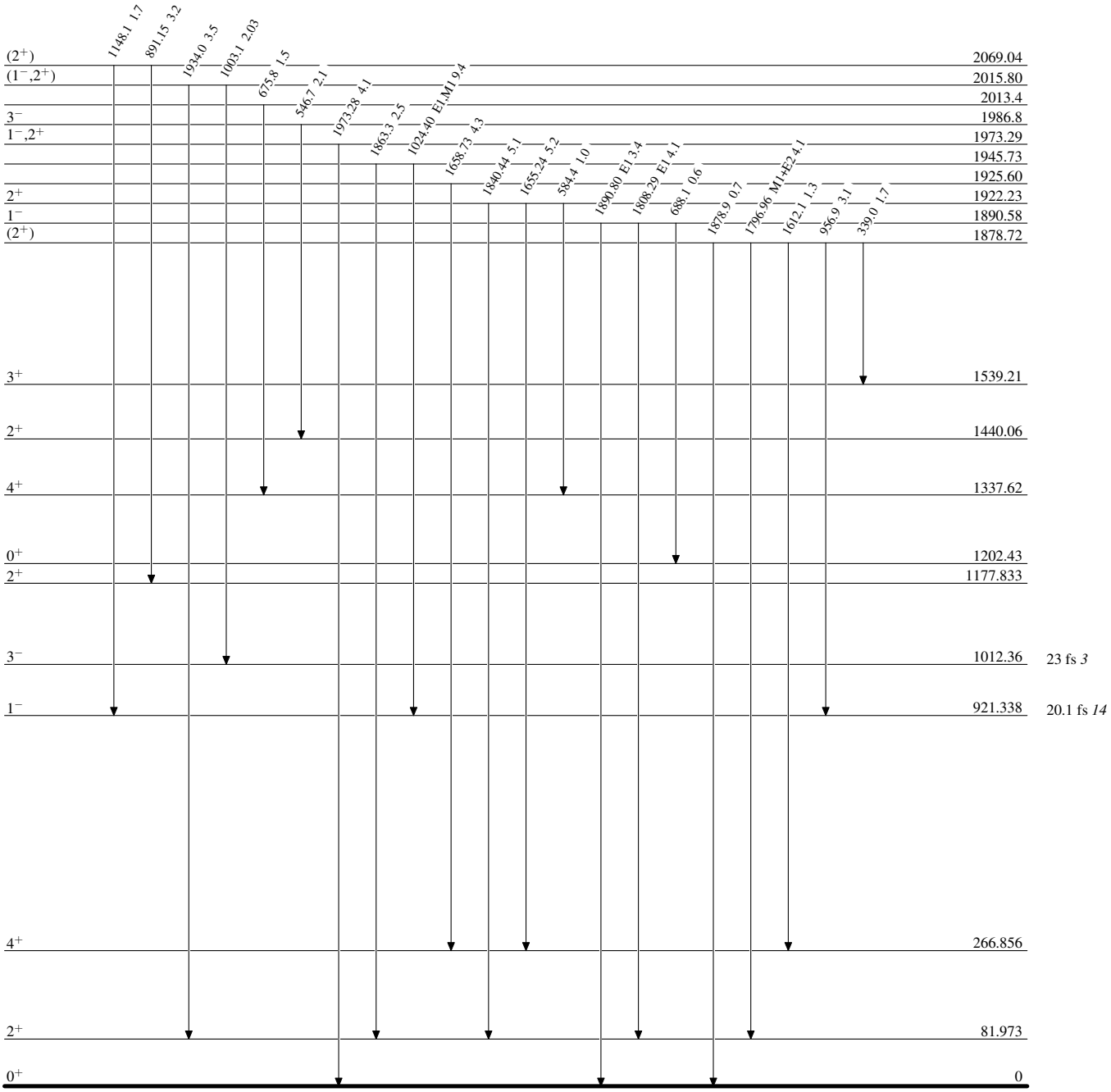
Intensities: Relative I_γ

Legend

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

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

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



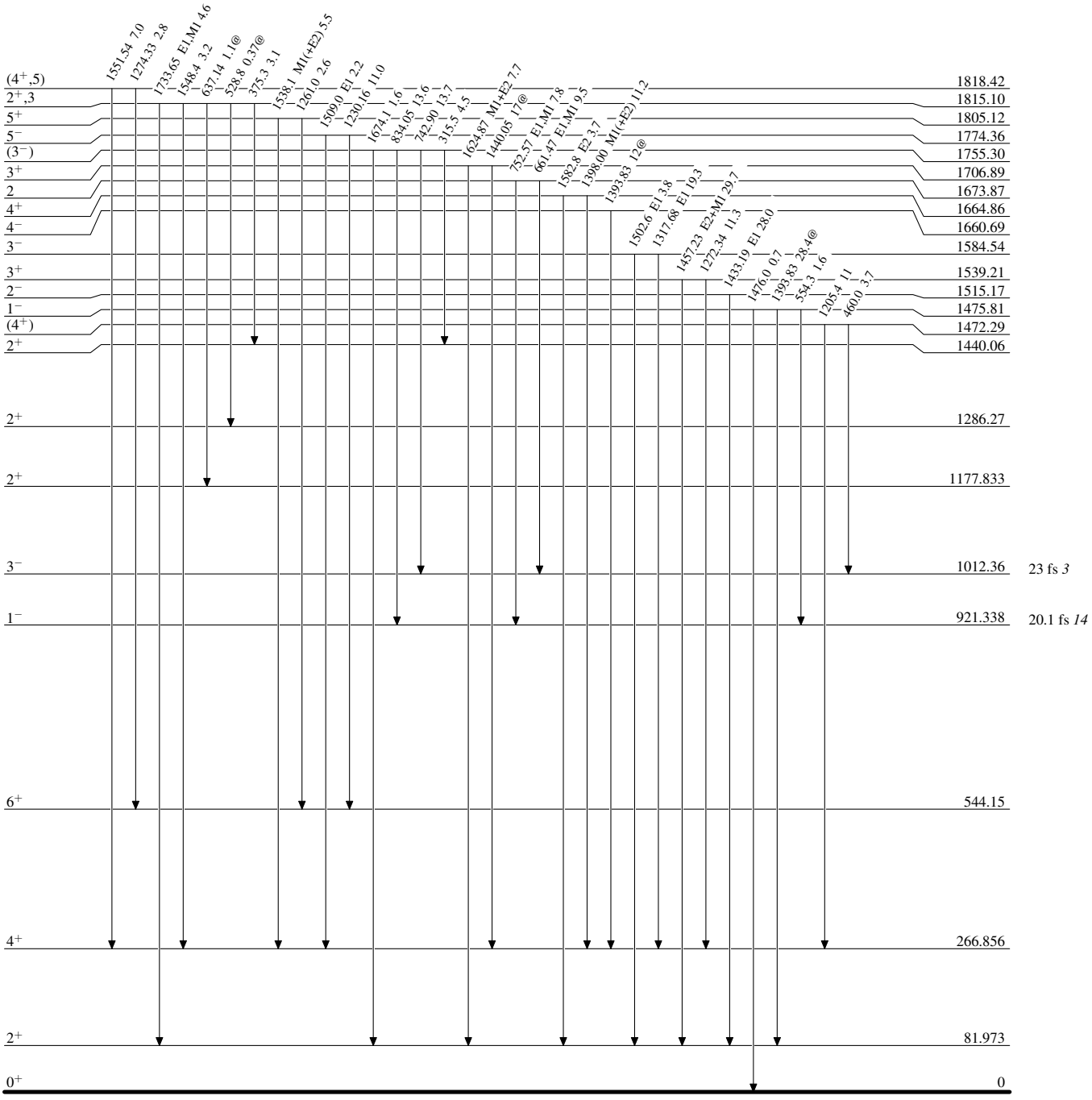
$^{154}_{62}Sm_{92}$

^{154}Sm(n,n′γ) 1986Be52,2006De19

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



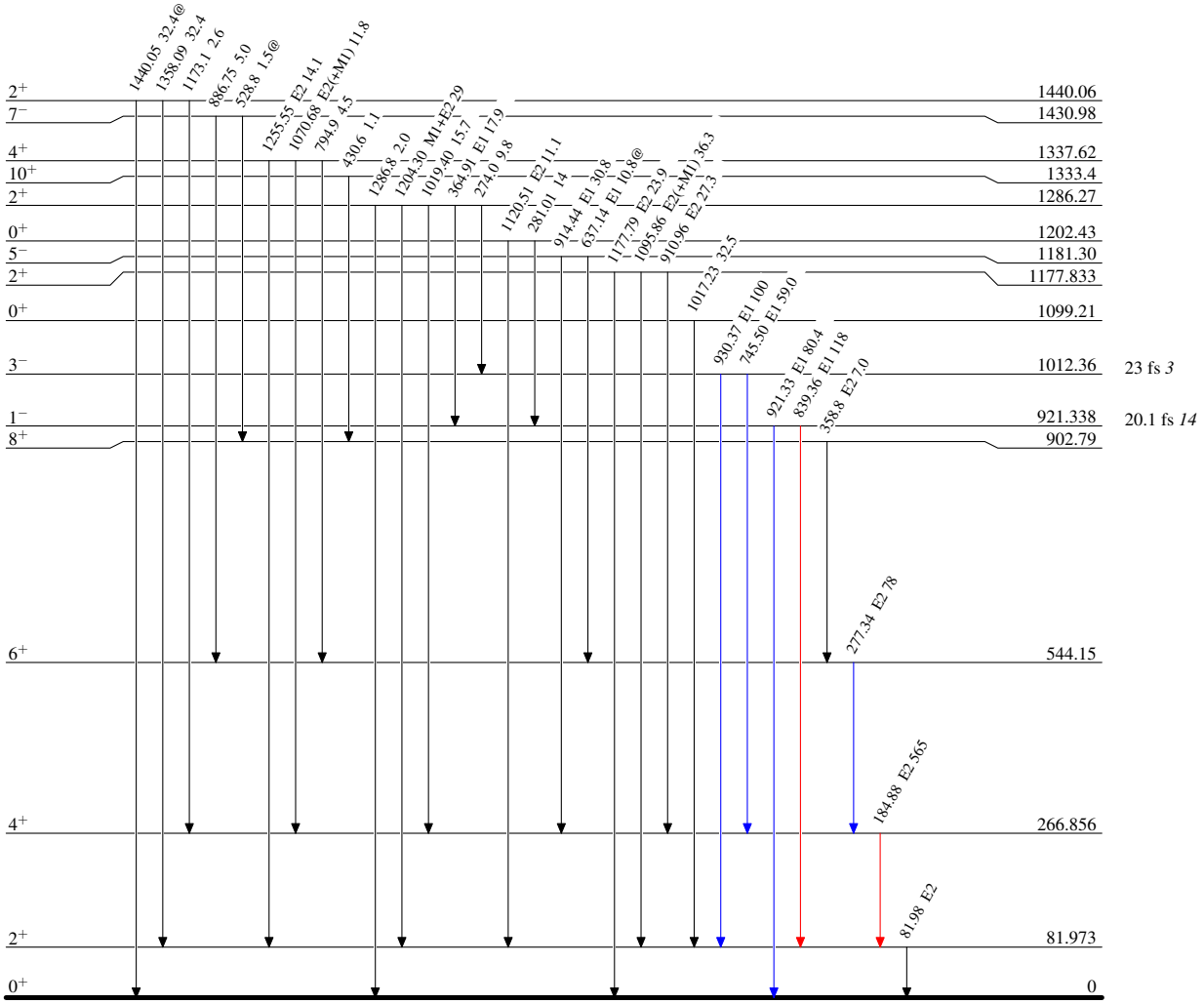
$^{154}_{62}Sm_{92}$

^{154}Sm(n,n′γ) 1986Be52,2006De19

Level Scheme (continued)

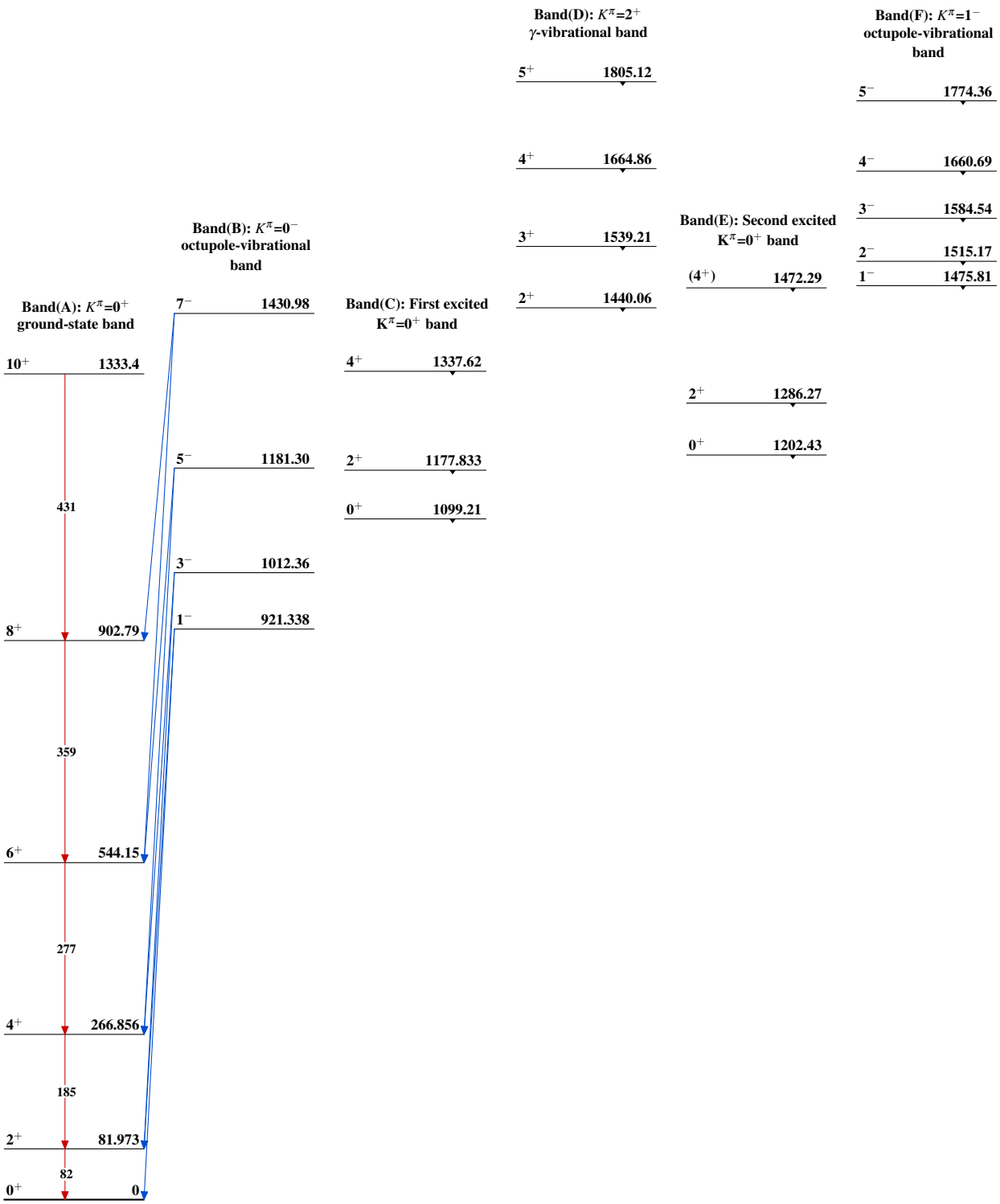
Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



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

^{154}Sm(n,n′γ) 1986Be52,2006De19



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