^{154}Sm(n,γ) 1982Sc03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 160, 1 (2019)	21-Oct-2019

E(n)=thermal. Measured capture γ-ray spectrum from 100-mg targets of enriched (99.996% ^{154}Sm) ^{154}Sm oxide. The capture γ-ray spectrum from 50 to 2000 keV was measured using the GAMS curved-crystal spectrometers and the primary capture γ rays were studied using a pair spectrometer. The conversion-electron spectrum was measured using the magnetic spectrometer BILL.

Resonance-averaged primary capture γ-ray spectra were also measured at E(n)≥100 eV on a 4-gram sample of SmO_2 (enriched to 99.54% ^{154}Sm) and at E(n)=2 keV and 24 keV on a 63-gram sample of Sm oxide (98.7% ^{154}Sm).

^{155}Sm Levels

E(level)	J$^{\pi}$[#]	Comments
0.0[c]	3/2$^-$[@]	
16.547[d] 2	5/2$^+$	
53.034[c] 1	5/2$^-$	
76.299[d] 2	7/2$^+$[a]	
127.698[c] 1	7/2$^-$[a]	
152.417[d] 3	9/2$^+$[a]	
220.684[c] 2	9/2$^-$[a]	
426.418[e] 4	5/2$^-$	
500.000[e] 4	7/2$^-$[a]	
617.543[f] 3	3/2$^+$[&]	
658.387[f] 4	5/2$^+$	
736.930?[f] 10	(7/2$^+$)[a]	
778.146[g] 3	3/2$^-$[@]	
819.880[h] 5	1/2$^-$	
821.304[g] 11	5/2$^-$[b]	
844.113[h] 5	3/2$^-$[@]	
865.848[i] 7	3/2$^+$[&]	
882.181[i] 16	5/2$^+$	
903.466[j] 5	(1/2)$^+$[&]	
906.836[h] 17	5/2$^-$	
915.525[k] 20	(1/2)$^-$	
930.642[k] 7	3/2$^-$[@]	
962.420[h] 18	7/2$^-$[b]	
968.090[j] 20	(3/2)$^+$	
984.450?[k] 20	(5/2$^-$)[b]	
1010.924[j] 25	5/2$^+$	
1106.668[l] 10	3/2$^+$[&]	
1154.43[l] 8	5/2$^+$	
1168.743 9	3/2$^-$[@]	
1217.7? 7	(5/2$^-$)	
1282.435[m] 6	1/2$^+$,3/2$^+$	
1327.525[m] 12	5/2$^+$	
1335.8 7	5/2	
1362.131 12	3/2$^+$[&]	
1390.6 7	5/2	
1403.8 10	5/2	
1408.2 4	1/2$^+$,3/2$^+$	E(level): given as 1508.2 in 1982Sc03 (their Table 1). This is clearly a misprint. From its position in the table, the evaluator assumes that the misprint involves the second digit in the value.

Continued on next page (footnotes at end of table)

^{154}Sm(n,γ) 1982Sc03 (continued)

^{155}Sm Levels (continued)

E(level)	J$^{\pi}$ [#]	Comments
1424.7 *7*	5/2	
1474.0 *5*	$1/2^-,3/2^-$	
1478.0 *9*	$1/2^+,3/2^+$	
1481.6 *8*	$1/2^+,3/2^+$	
1499.3 *2*	$1/2^+,3/2^+$	
1503.1 *12*	5/2	
1524.8 *1*	$1/2^-,3/2^-$	
1531.9 *9*	$5/2^+$	
1548.4 *2*	$1/2^+,3/2^+$	
1567.0 *2*	$1/2^-,3/2^-$	
1570.9 *8*	$1/2^+,3/2^+$	
1584.6 *3*	$1/2^+,3/2^+$	
1600.8 *3*	$1/2^+,3/2^+$	
1614.5 *3*	$1/2^-,3/2^-$	
1618.8 *3*	$1/2^-,3/2^-$	
1658.7 *3*	$5/2^+$	
1665.9? *9*	$(5/2^+)$	
1671.2 *3*	$1/2^+,3/2^+$	
1678.1 *8*	$(5/2^+)$	
1696.5 *6*	5/2	
1708.2? *12*	(5/2)	
1718.2 *2*	$1/2^-,3/2^-$	
1723.9 *3*	1/2,3/2	
1733.6 *7*	$1/2^+,3/2^+,5/2^+$	
1752.0 *2*	$1/2^-,3/2^-$	
1774.2 *3*	$1/2^+,3/2^+$	
1787.9[†] *5*	1/2,3/2	
1804.7[†] *2*	$1/2^-,3/2^-$	
1821.4 *6*	$5/2^+$	
1830.7 *10*	$5/2^+$	
1833.2 *2*	$1/2^-,3/2^-$	
1857.2 *3*	$1/2^-,3/2^-$	
1864.9 *6*	$1/2^+,3/2^+$	
1875.7 *2*	$1/2^-,3/2^-$	
1885.4 *4*	$1/2^+,3/2^+$	
1889.5 *5*	$1/2^-,3/2^-$	
1899.4 *10*	$5/2^+$	
1904.5 *4*	1/2,3/2	
1920.1 *10*	$1/2^+,3/2^+,5/2^+$	
1925.7 *6*	$1/2^-,3/2^-$	
1929.1 *7*	$1/2^-,3/2^-$	
1954.2 *2*	1/2,3/2	
1965.2 *6*	1/2,3/2	
1978.8 *5*	$5/2^+$	
1987.2 *5*	$1/2^+,3/2^+$	
5806.96 *27*	$1/2^+$ [‡]	E(level): listed value represents the neutron binding energy. J$^{\pi}$: capture state is formed by s-wave (L=0) neutron capture on a doubly even nucleus ($J^{\pi}=0^+$).

[†] Unresolved doublet.
[‡] Neutron-capturing "state".
[#] From the Adopted Values.
[@] Intensities of primary γ rays in resonance-averaged n capture indicate $J^{\pi}=1/2^-,3/2^-$.

Continued on next page (footnotes at end of table)

^{154}Sm(n,γ) 1982Sc03 (continued)

^{155}Sm Levels (continued)

[&] Intensities of primary γ rays in resonance-averaged n capture indicate J^π=1/2$^+$,3/2$^+$.
[a] Intensities of primary γ rays in resonance-averaged n capture indicate J≥7/2.
[b] Intensities of primary γ rays in resonance-averaged n capture indicate J^π=5/2$^-$ or J≥7/2.
[c] Band(A): 3/2[521] band member.
[d] Band(B): 5/2[642] band member.
[e] Band(C): 5/2[523] band member.
[f] Band(D): 3/2[651] band member.
[g] Band(E): 3/2[532] band member.
[h] Band(F): 1/2[521] band member.
[i] Band(G): 3/2[402] band member.
[j] Band(H): 1/2[400] band member.
[k] Band(I): 1/2[530] band member.
[l] Band(J): K$^\pi$=3/2$^+$ band member. Probable octupole vibration built on the 3/2[521] g.s.
[m] Band(K): 1/2[660] band member.

γ(^{155}Sm)

Iγ normalization: The absolute Iγ data of 1982Sc03 (given for the secondary transitions only) were based on a value of 72 γ's per 100 decays for the intensity of the 104.3 γ from the ^{155}Sm decay. With the present choice of the value 74.6 *37* γ's per 100 ^{155}Sm decays for this quantity, the data of 1982Sc03 must be scaled up by the indicated factor in order to represent γ's per 100 n captures.

E$_\gamma$[†]	I$_\gamma$[‡c]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[#]	δ[@]	α[b]	Comments
16.547 *10*	3.8 *13*	16.547	5/2$^+$	0.0	3/2$^-$	E1		6.74	α(L)=5.30 *8*; α(M)=1.163 *17* α(N)=0.247 *4*; α(O)=0.0285 *4*; α(P)=0.000779 *11* Mult.: from 4≤α(exp)≤9 (1982Sc03). E$_\gamma$,I$_\gamma$: from Si(Li) measurement.
^{x}40.324 *5*	0.41 *5*					M1		3.66	α(L)=2.88 *4*; α(M)=0.618 *9* α(N)=0.1401 *20*; α(O)=0.0209 *3*; α(P)=0.001286 *18* ce(L3)/ce(L1)<0.3; ce(M1)/ce(L1)=0.17.
53.033 *2*	3.13 *19*	53.034	5/2$^-$	0.0	3/2$^-$	M1+E2	0.167 *4*	10.99	α(K)=8.79 *13*; α(L)=1.73 *4*; α(M)=0.380 *8* α(N)=0.0852 *16*; α(O)=0.01209 *22*; α(P)=0.000565 *8* ce(L3)/ce(L1)=0.24 *1*.
59.753 *1*	1.18 *9*	76.299	7/2$^+$	16.547	5/2$^+$	M1+E2	0.218 *+15−16*	7.88 *13*	α(K)=6.20 *9*; α(L)=1.32 *6*; α(M)=0.291 *14* α(N)=0.065 *3*; α(O)=0.0091 *4*; α(P)=0.000395 *6* ce(L3)/ce(L1)=0.31 *4*.
74.664 *1*	1.30 *7*	127.698	7/2$^-$	53.034	5/2$^-$	M1+E2	0.205 *+19−20*	4.04	α(K)=3.28 *5*; α(L)=0.593 *24*; α(M)=0.130 *6* α(N)=0.0292 *12*; α(O)=0.00419 *15*; α(P)=0.000208 *3* α(K)exp=3.3 *4*, ce(L3)/ce(L1)=0.18 *3*.
76.118 *1*	0.31 *4*	152.417	9/2$^+$	76.299	7/2$^+$	M1		3.71	α(K)=3.14 *5*; α(L)=0.447 *7*; α(M)=0.0960 *14* α(N)=0.0218 *3*; α(O)=0.00326 *5*; α(P)=0.000201 *3* α(K)exp=2.9 *3*.
^{x}79.047 *2*	0.47 *5*					E1		0.520	α(K)=0.436 *7*; α(L)=0.0662 *10*; α(M)=0.01419 *20* α(N)=0.00315 *5*; α(O)=0.000439 *7*; α(P)=2.04×10^{-5} *3* α(K)exp<0.5.
80.238 *2*	0.47[&] *5*	962.420	7/2$^-$	882.181	5/2$^+$	E1		0.500	α(K)=0.419 *6*; α(L)=0.0635 *9*; α(M)=0.01360 *19* α(N)=0.00302 *5*; α(O)=0.000422 *6*; α(P)=1.97×10^{-5} *3* α(K)exp<0.5.
92.986 *1*	0.17 *3*	220.684	9/2$^-$	127.698	7/2$^-$	M1		2.08	α(K)=1.764 *25*; α(L)=0.250 *4*; α(M)=0.0538 *8* α(N)=0.01219 *17*; α(O)=0.00183 *3*; α(P)=0.0001126 *16* α(K)exp=2.4 *4*.
^{x}93.594 *3*	0.060 *12*								
^{x}97.981 *2*	0.090 *18*								
111.154 *2*	0.118 *12*	127.698	7/2$^-$	16.547	5/2$^+$	E1		0.207	α(K)=0.1746 *25*; α(L)=0.0253 *4*; α(M)=0.00542 *8* α(N)=0.001210 *17*; α(O)=0.0001718 *24*; α(P)=8.59×10^{-6} *12* α(K)exp<0.8.
^{x}117.223 *3*	0.097[&] *19*					(E1)		0.179	α(K)=0.1512 *22*; α(L)=0.0218 *3*; α(M)=0.00467 *7* α(N)=0.001042 *15*; α(O)=0.0001485 *21*; α(P)=7.49×10^{-6} *11* α(K)exp<0.8.

$^{155}_{62}$Sm$_{93}$-4

γ(^{155}Sm) (continued)

E_γ[†]	I_γ[‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[b]	Comments
119.758 *2*	0.086 *9*	778.146	3/2⁻	658.387	5/2⁺	E1	0.1688	α(K)=0.1427 *20*; α(L)=0.0206 *3*; α(M)=0.00440 *7* α(N)=0.000982 *14*; α(O)=0.0001400 *20*; α(P)=7.09×10⁻⁶ *10* α(K)exp<0.5.
127.698 *1*	0.208 *12*	127.698	7/2⁻	0.0	3/2⁻	E2	0.977	α(K)=0.590 *9*; α(L)=0.301 *5*; α(M)=0.0692 *10* α(N)=0.01521 *22*; α(O)=0.00195 *3*; α(P)=2.64×10⁻⁵ *4* α(K)exp<0.5, ce(L3)/ce(L1)>2.0.
[x]132.698 *6*	0.031[&] *8*							
135.873 *5*	0.046[&] *7*	152.417	9/2⁺	16.547	5/2⁺			
[x]136.162 *2*	0.116[&] *14*					E1	0.1191	α(K)=0.1009 *15*; α(L)=0.01436 *21*; α(M)=0.00307 *5* α(N)=0.000687 *10*; α(O)=9.84×10⁻⁵ *14*; α(P)=5.10×10⁻⁶ *8* α(K)exp<0.3.
[x]136.521 *3*	0.079 *9*					E2,M1	0.73 *4*	α(K)=0.54 *6*; α(L)=0.154 *71*; α(M)=0.035 *17* α(N)=0.0077 *37*; α(O)=1.04×10⁻³ *43*; α(P)=2.98×10⁻⁵ *80* α(K)exp=0.54 *12*.
[x]137.947 *3*	0.071[&] *9*							
144.382 *15*	0.043[&] *9*	220.684	9/2⁻	76.299	7/2⁺			
[x]146.568 *7*	0.032[&] *6*							
160.603 *1*	0.280 *17*	778.146	3/2⁻	617.543	3/2⁺	E1	0.0761	α(K)=0.0646 *9*; α(L)=0.00908 *13*; α(M)=0.00194 *3* α(N)=0.000435 *6*; α(O)=6.27×10⁻⁵ *9*; α(P)=3.33×10⁻⁶ *5* α(K)exp<0.2.
167.650 *5*	0.096 *15*	220.684	9/2⁻	53.034	5/2⁻			
191.156 *10*	0.068 *14*	1106.668	3/2⁺	915.525	(1/2)⁻			
193.382 *7*	0.088 *13*	1362.131	3/2⁺	1168.743	3/2⁻			
[x]196.426 *8*	0.099[&] *18*							
240.82 *3*	0.090[&] *14*	1106.668	3/2⁺	865.848	3/2⁺			
272.250[d] *15*	0.084[d] *17*	930.642	3/2⁻	658.387	5/2⁺			
272.250[d] *15*	0.084[d] *17*	1154.43	5/2⁺	882.181	5/2⁺			
285.923 *4*	1.60 *10*	903.466	(1/2)⁺	617.543	3/2⁺	M1	0.0919	α(K)=0.0781 *11*; α(L)=0.01083 *16*; α(M)=0.00232 *4* α(N)=0.000527 *8*; α(O)=7.91×10⁻⁵ *11*; α(P)=4.94×10⁻⁶ *7* α(K)exp=0.080 *7*.
297.990[d] *8*	0.125[d] *19*	915.525	(1/2)⁻	617.543	3/2⁺			
297.990[d] *8*	0.125[d] *19*	1282.435	1/2⁺,3/2⁺	984.450?	(5/2⁻)			
298.79 *3*	0.040 *12*	426.418	5/2⁻	127.698	7/2⁻			
302.888 *14*	0.080 *20*	1168.743	3/2⁻	865.848	3/2⁺			
[x]315.176 *12*	0.110 *16*							
347.580 *4*	0.19 *3*	500.000	7/2⁻	152.417	9/2⁺	(E1)	0.01019	α(K)=0.00870 *13*; α(L)=0.001173 *17*; α(M)=0.000250 *4* α(N)=5.64×10⁻⁵ *8*; α(O)=8.31×10⁻⁶ *12*; α(P)=4.84×10⁻⁷ *7* Mult.: α(K)exp<0.035 allows E1 or E2. Decay scheme rules out E2.
350.114 *3*	0.66 *5*	426.418	5/2⁻	76.299	7/2⁺	E1	0.01001	α(K)=0.00855 *12*; α(L)=0.001152 *17*; α(M)=0.000246 *4*

$^{155}_{62}Sm_{93}$-5

γ(^{155}Sm) (continued)

E_γ[†]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[b]	Comments
								α(N)=5.54×10^{-5} *8*; α(O)=8.16×10^{-6} *12*; α(P)=4.75×10^{-7} *7* α(K)exp<0.01.
351.226 *13*	0.108 *16*	1362.131	3/2$^+$	1010.924	5/2$^+$			α(K)exp<0.03.
351.795 *7*	0.29 *3*	1282.435	1/2$^+$,3/2$^+$	930.642	3/2$^-$	(E1)	0.00989	α(K)=0.00845 *12*; α(L)=0.001138 *16*; α(M)=0.000243 *4* α(N)=5.47×10^{-5} *8*; α(O)=8.06×10^{-6} *12*; α(P)=4.70×10^{-7} *7* Mult.: α(K)exp<0.03 allows E1 or E2. Level scheme rules out E2.
366.909[d] *4*	0.29[d] *3*	984.450?	(5/2$^-$)	617.543	3/2$^+$			Mult.: α(K)exp<0.03 for this doubly placed γ allows mult=E1 or E2.
366.909[d] *4*	0.29[d] *3*	1282.435	1/2$^+$,3/2$^+$	915.525	(1/2)$^-$			Mult.: α(K)exp<0.03 for this doubly placed γ allows mult=E1 or E2.
^{x}375.09 *3*	0.04 *1*							
^{x}375.827 *4*	0.19 *3*							
^{x}400.44 *3*	0.12[&] *2*							
^{x}400.738 *8*	0.15[&] *3*							
409.873 *2*	2.66 *16*	426.418	5/2$^-$	16.547	5/2$^+$	E1	0.00684	α(K)=0.00585 *9*; α(L)=0.000782 *11*; α(M)=0.0001667 *24* α(N)=3.76×10^{-5} *6*; α(O)=5.56×10^{-6} *8*; α(P)=3.28×10^{-7} *5* α(K)exp=0.0053 *6*.
423.704 *4*	0.37 *3*	500.000	7/2$^-$	76.299	7/2$^+$	(E1)	0.00632	α(K)=0.00541 *8*; α(L)=0.000722 *11*; α(M)=0.0001539 *22* α(N)=3.47×10^{-5} *5*; α(O)=5.13×10^{-6} *8*; α(P)=3.04×10^{-7} *5* Mult.: α(K)exp<0.02 allows mult=E1 or E2. Decay scheme rules out E2.
438.324 *5*	0.26 *2*	1282.435	1/2$^+$,3/2$^+$	844.113	3/2$^-$			
^{x}460.922 *21*	0.11 *2*							
^{x}467.74 *4*	0.051[&] *7*							
^{x}475.022 *7*	0.32[&] *3*							
^{x}481.543 *13*	0.19[&] *3*							
483.411 *5*	0.49 *3*	1327.525	5/2$^+$	844.113	3/2$^-$	(E1)	0.00466	α(K)=0.00399 *6*; α(L)=0.000529 *8*; α(M)=0.0001127 *16* α(N)=2.54×10^{-5} *4*; α(O)=3.77×10^{-6} *6*; α(P)=2.26×10^{-7} *4* Mult.: α(K)exp<0.01 allows E1 or E2. Level scheme rules out E2.
^{x}492.772 *7*	0.34[&] *3*							
^{x}496.459 *23*	0.23[&] *3*							
^{x}522.638 *15*	0.22 *3*							
530.685 *15*	0.48 *4*	658.387	5/2$^+$	127.698	7/2$^-$	(E1)	0.00377	α(K)=0.00323 *5*; α(L)=0.000427 *6*; α(M)=9.09×10^{-5} *13* α(N)=2.05×10^{-5} *3*; α(O)=3.05×10^{-6} *5*; α(P)=1.84×10^{-7} *3* Mult.: α(K)exp<0.009 allows E1 or E2. Level scheme rules out E2. Note: the authors give α(K)exp<0.09, but the evaluator has assumed that this is a misprint.
^{x}533.27 *4*	0.06 *1*							
^{x}541.318 *20*	0.13 *2*							
551.189 *12*	0.24 *2*	1168.743	3/2$^-$	617.543	3/2$^+$			
564.507 *4*	1.21 *7*	617.543	3/2$^+$	53.034	5/2$^-$	E1	0.00329	α(K)=0.00282 *4*; α(L)=0.000372 *6*; α(M)=7.91×10^{-5} *11* α(N)=1.79×10^{-5} *3*; α(O)=2.66×10^{-6} *4*; α(P)=1.609×10^{-7} *23*

γ(^{155}Sm) (continued)

E_γ [†]	I_γ [‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	δ [@]	α [b]	Comments
									α: the authors give α(K)exp<0.04. The evaluator has assumed that this is a misprint (otherwise, the mult could not be uniquely established) and that the correct entry should have been <0.004.
[x]574.70 *3*	0.12 [&] *2*								
[x]577.08 *4*	0.10 *2*								
[x]579.90 *3*	0.10 [&] *2*								
582.072 *5*	1.66 *10*	658.387	$5/2^+$	76.299	$7/2^+$	M1		0.01469	α(K)=0.01254 *18*; α(L)=0.001698 *24*; α(M)=0.000363 *5* α(N)=8.24×10^{-5} *12*; α(O)=1.239×10^{-5} *18*; α(P)=7.83×10^{-7} *11* α(K)exp=0.0139 *14*.
584.511 [d] *11*	0.31 [d] *3*	736.930?	$(7/2^+)$	152.417	$9/2^+$				
584.511 [d] *11*	0.31 [d] *3*	1010.924	$5/2^+$	426.418	$5/2^-$				
600.993 *4*	6.3 *4*	617.543	$3/2^+$	16.547	$5/2^+$	M1+E2	1.04 *+43−30*	0.0107 *10*	α(K)=0.0090 *9*; α(L)=0.00130 *9*; α(M)=0.000281 *18* α(N)=6.3×10^{-5} *4*; α(O)=9.4×10^{-6} *7*; α(P)=5.5×10^{-7} *6* α(K)exp=0.0090 *8*.
605.381 *14*	0.35 *4*	658.387	$5/2^+$	53.034	$5/2^-$				
617.549 *7*	2.27 *14*	617.543	$3/2^+$	0.0	$3/2^-$	E1		0.00271	α(K)=0.00232 *4*; α(L)=0.000305 *5*; α(M)=6.49×10^{-5} *9* α(N)=1.466×10^{-5} *21*; α(O)=2.18×10^{-6} *3*; α(P)=1.329×10^{-7} *19* α(K)exp<0.003.
[x]621.54 *3*	0.11 *2*								
[x]633.98 *4*	0.18 *2*								
641.88 *3*	0.69 *6*	658.387	$5/2^+$	16.547	$5/2^+$				
658.396 *9*	0.65 *5*	658.387	$5/2^+$	0.0	$3/2^-$				
660.640 *21*	0.18 *3*	736.930?	$(7/2^+)$	76.299	$7/2^+$				
664.868 *15*	0.54 *4*	1282.435	$1/2^+,3/2^+$	617.543	$3/2^+$				
[x]668.49 *10*	0.09 *2*								
[x]668.987 *24*	0.27 *3*								
669.29 *10*	0.09 *2*	1327.525	$5/2^+$	658.387	$5/2^+$				
[x]677.40 *10*	0.19 *4*								
[x]677.99 *3*	0.35 *4*								
683.88 *5*	0.23 *4*	736.930?	$(7/2^+)$	53.034	$5/2^-$				
[x]684.82 *10*	0.13 [&] *3*								
[x]692.142 *20*	0.15 *2*								
[x]702.854 *16*	0.38 *3*								
[x]714.671 *16*	0.36 *3*								
[x]721.064 *9*	0.82 *5*								
725.123 *7*	1.72 *10*	778.146	$3/2^-$	53.034	$5/2^-$	M1		0.00854	α(K)=0.00729 *11*; α(L)=0.000980 *14*; α(M)=0.000210 *3* α(N)=4.75×10^{-5} *7*; α(O)=7.15×10^{-6} *10*; α(P)=4.54×10^{-7} *7* α(K)exp=0.009 *2*.
[x]729.64 *3*	0.18 *2*								

$^{155}_{62}$Sm$_{93}$-7

γ(^{155}Sm) (continued)

Eγ[†]	Iγ[‡c]	Ei(level)	J_i^π	Ef	J_f^π	Mult.[#]	δ[@]	α[b]	Comments
x731.45 *3*	0.18 *2*								
x736.22 *8*	0.16 *2*								
741.79 *3*	0.30 *4*	962.420	7/2$^-$	220.684	9/2$^-$				
745.004 *12*	0.66 *5*	821.304	5/2$^-$	76.299	7/2$^+$				
x750.496 *9*	0.99 *6*					E1,E2			α(K)exp<0.005.
754.459 *24*	0.65 *5*	882.181	5/2$^+$	127.698	7/2$^-$				
761.631 *20*	0.69 *4*	778.146	3/2$^-$	16.547	5/2$^+$				
x767.67 *6*	0.11 *2*								
x769.05 *6*	0.16 *3*								
778.156 *8*	2.39 *14*	778.146	3/2$^-$	0.0	3/2$^-$	M1+E2	1.1 *+8−4*	0.0056 *7*	α(K)=0.0048 *6*; α(L)=0.00067 *7*; α(M)=0.000143 *15* α(N)=3.2×10^{-5} *4*; α(O)=4.8×10^{-6} *6*; α(P)=2.9×10^{-7} *4* α(K)exp=0.0048 *6*.
779.131 *24*	0.62 *6*	906.836	5/2$^-$	127.698	7/2$^-$				
791.083 *7*	2.38 *14*	844.113	3/2$^-$	53.034	5/2$^-$	M1		0.00691	α(K)=0.00590 *9*; α(L)=0.000791 *11*; α(M)=0.0001690 *24* α(N)=3.83×10^{-5} *6*; α(O)=5.77×10^{-6} *8*; α(P)=3.67×10^{-7} *6* α(K)exp=0.0058 *9*.
x798.15 *10*	0.19[&] *4*								
x802.56 *10*	0.07[&] *2*								
804.758 *19*	1.32 *8*	821.304	5/2$^-$	16.547	5/2$^+$	(E1)		1.57×10^{-3}	α(K)=0.001347 *19*; α(L)=0.0001747 *25*; α(M)=3.71×10^{-5} *6* α(N)=8.40×10^{-6} *12*; α(O)=1.254×10^{-6} *18*; α(P)=7.77×10^{-8} *11* Mult.: α(K)exp<0.004 allows E1 or E2. Level scheme rules out E2.
x807.55 *4*	0.37 *7*								
812.819 *17*	1.00 *10*	865.848	3/2$^+$	53.034	5/2$^-$	(E1)		1.54×10^{-3}	α(K)=0.001321 *19*; α(L)=0.0001712 *24*; α(M)=3.64×10^{-5} *5* α(N)=8.23×10^{-6} *12*; α(O)=1.230×10^{-6} *18*; α(P)=7.62×10^{-8} *11* Mult.: α(K)exp<0.004 allows E1 or E2. Level scheme rules out E2.
x815.145 *23*	0.83 *8*								
819.880 *5*	7.9 *5*	819.880	1/2$^-$	0.0	3/2$^-$	M1+E2	1.5 *+7−4*	0.0046 *4*	α(K)=0.0039 *4*; α(L)=0.00055 *4*; α(M)=0.000118 *8* α(N)=2.67×10^{-5} *18*; α(O)=4.0×10^{-6} *3*; α(P)=2.36×10^{-7} *22* α(K)exp=0.0039 *3*.
x823.63 *5*	0.39 *5*								
827.61[d] *10*	0.17[d] *3*	844.113	3/2$^-$	16.547	5/2$^+$				
827.61[d] *10*	0.17[d&] *3*	1327.525	5/2$^+$	500.000	7/2$^-$				
829.15 *4*	0.45 *5*	882.181	5/2$^+$	53.034	5/2$^-$				
x830.99 *5*	0.54 *7*								
x831.95 *4*	0.55 *7*								

γ(^{155}Sm) (continued)

E_γ [†]	I_γ [‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	δ [@]	α [b]	Comments
844.108 *12*	2.11[&] *13*	844.113	3/2$^-$	0.0	3/2$^-$	M1,E2		0.0047 *12*	α(K)=0.0040 *11*; α(L)=0.00056 *12*; α(M)=0.000120 *25* α(N)=2.7×10^{-5} *6*; α(O)=4.0×10^{-6} *9*; α(P)=2.46×10^{-7} *67* α(K)exp=0.0040 *15*.
^{x}852.33 *10*	0.29 *4*								
853.805 *23*	0.58 *5*	906.836	5/2$^-$	53.034	5/2$^-$				
^{x}855.52 *10*	0.12[&] *2*								
856.67 *5*	0.35 *4*	984.450?	(5/2$^-$)	127.698	7/2$^-$				
^{x}860.61 *10*	0.23 *3*								
^{x}864.50 *12*	0.15 *3*								
865.843 *9*	2.24 *13*	865.848	3/2$^+$	0.0	3/2$^-$	E1		1.36×10^{-3}	α(K)=0.001167 *17*; α(L)=0.0001509 *22*; α(M)=3.21×10^{-5} *5* α(N)=7.25×10^{-6} *11*; α(O)=1.084×10^{-6} *16*; α(P)=6.74×10^{-8} *10* α(K)exp=0.00125 *25*.
^{x}868.55 *10*	0.25 *5*								
877.600 *15*	3.90 *23*	930.642	3/2$^-$	53.034	5/2$^-$	M1+E2	1.6 *+11−5*	0.0039 *4*	α(K)=0.0033 *4*; α(L)=0.00046 *4*; α(M)=9.9×10^{-5} *8* α(N)=2.24×10^{-5} *18*; α(O)=3.3×10^{-6} *3*; α(P)=1.99×10^{-7} *21* α(K)exp=0.0033 *3*.
^{x}880.64 *15*	0.22[&] *4*								
882.16 *5*	0.66 *7*	882.181	5/2$^+$	0.0	3/2$^-$				
^{x}882.98 *9*	0.75 *8*								
883.26 *4*	0.75 *8*	1010.924	5/2$^+$	127.698	7/2$^-$				
^{x}884.76 *10*	0.17 *3*								
886.927 *18*	0.87 *7*	903.466	(1/2)$^+$	16.547	5/2$^+$				
^{x}890.53 *7*	0.48 *5*								
^{x}891.55 *6*	0.36 *4*								
^{x}892.80 *15*	0.18 *4*								
^{x}898.55 *9*	0.18 *3*								
^{x}901.91 *10*	0.40 *8*								
^{x}902.447 *23*	0.92 *7*								
^{x}902.94 *7*	0.66 *9*								
^{x}904.723 *23*	0.66 *7*								
906.99 *15*	0.11 *2*	906.836	5/2$^-$	0.0	3/2$^-$				
909.36 *6*	0.36 *4*	962.420	7/2$^-$	53.034	5/2$^-$				
915.490 *20*	4.00 *24*	915.525	(1/2)$^-$	0.0	3/2$^-$	E2		0.00300	α(K)=0.00254 *4*; α(L)=0.000364 *5*; α(M)=7.83×10^{-5} *11* α(N)=1.768×10^{-5} *25*; α(O)=2.61×10^{-6} *4*; α(P)=1.507×10^{-7} *21* α(K)exp=0.0024 *2*.
^{x}929.24 *14*	0.17 *3*								

γ(^{155}Sm) (continued)

E_γ[†]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[b]	Comments
930.654 *11*	2.15 *13*	930.642	3/2$^-$	0.0	3/2$^-$	M1	0.00467	α(K)=0.00400 *6*; α(L)=0.000533 *8*; α(M)=0.0001137 *16* α(N)=2.58×10^{-5} *4*; α(O)=3.89×10^{-6} *6*; α(P)=2.47×10^{-7} *4* α(K)exp=0.0039 *4*.
935.55 *13*	0.19[&] *5*	1362.131	3/2$^+$	426.418	5/2$^-$			
^{x}936.77 *20*	0.13[&] *3*							
^{x}940.94 *12*	0.33 *5*							
^{x}957.43 *15*	0.25 *4*							
^{x}959.74 *15*	0.15 *3*							
968.090 *20*	1.96 *14*	968.090	(3/2)$^+$	0.0	3/2$^-$	(E1)	1.10×10^{-3}	α(K)=0.000943 *14*; α(L)=0.0001213 *17*; α(M)=2.58×10^{-5} *4* α(N)=5.83×10^{-6} *9*; α(O)=8.73×10^{-7} *13*; α(P)=5.45×10^{-8} *8* Mult.: α(K)exp<0.002 allows E1 or E2. Level scheme rules out E2.
^{x}982.14 *4*	1.30 *10*							
^{x}983.635 *25*	1.25 *8*							
1010.99 *4*	0.75 *6*	1010.924	5/2$^+$	0.0	3/2$^-$			
^{x}1012.91 *3*	0.62 *6*							
^{x}1014.37 *10*	0.68 *5*							
^{x}1026.54 *9*	0.38 *8*							
1026.70 *8*	0.38 *4*	1154.43	5/2$^+$	127.698	7/2$^-$			
^{x}1034.71 *9*	0.16 *2*							
1053.598 *22*	0.81 *7*	1106.668	3/2$^+$	53.034	5/2$^-$			
^{x}1075.51 *20*	0.11 *3*							
1090.20 *20*	0.14 *3*	1106.668	3/2$^+$	16.547	5/2$^+$			
1106.640 *24*	1.64 *10*	1106.668	3/2$^+$	0.0	3/2$^-$			
^{x}1125.76 *20*	0.20 *4*							
1152.16 *20*	0.13 *3*	1168.743	3/2$^-$	16.547	5/2$^+$			
^{x}1184.21 *13*	0.49 *5*							
^{x}1187.09 *17*	0.34 *5*							
^{x}1192.46 *17*	0.27 *4*							
^{x}1285.10 *21*	0.51 *5*							
1309.14 *18*	0.41 *4*	1362.131	3/2$^+$	53.034	5/2$^-$			
1327.84 *14*	0.35 *4*	1327.525	5/2$^+$	0.0	3/2$^-$			
1345.78 *11*	0.72 *7*	1362.131	3/2$^+$	16.547	5/2$^+$			
^{x}1361.60 *20*	0.37 *4*							
^{x}1406.12 *21*	0.68 *7*							
^{x}1410.22 *19*	0.70 *10*							
^{x}1525.02 *17*	0.06 *1*							
^{x}1619.59 *13*	1.73 *16*							
^{x}1625.13 *13*	1.20 *12*							
^{x}1928.17 *5*	0.64 *10*							
^{x}1950.84 *3*	0.95 *14*							
^{x}1958.75 *4*	0.64 *13*							
4876.3 *3*	16.2[a] *8*	5806.96	1/2$^+$	930.642	3/2$^-$			
4891.12 *23*	0.71[a] *9*	5806.96	1/2$^+$	915.525	(1/2)$^-$			

$^{155}_{62}$Sm$_{93}$-10

γ(^{155}Sm) (continued)

E_γ[†]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f
4941.6 *3*	0.55[a] *7*	5806.96	1/2$^+$	865.848	3/2$^+$
4963.11 *23*	0.31[a] *4*	5806.96	1/2$^+$	844.113	3/2$^-$
4987.06 *10*	26.0[a] *13*	5806.96	1/2$^+$	819.880	1/2$^-$
5028.86 *10*	5.1[a] *3*	5806.96	1/2$^+$	778.146	3/2$^-$
5790.22 *17*	0.33[a] *3*	5806.96	1/2$^+$	16.547	5/2$^+$
5807.10 *14*	0.60[a] *4*	5806.96	1/2$^+$	0.0	3/2$^-$

† Uncertainty for the absolute calibration to Sm x-rays is not included. For primary capture γ′s, an additional systematic uncertainty of 0.3 keV should be added.

‡ Uncertainty in the intensity normalization resulting from the uncertainty in the Iγ value of the 104.3 γ from ^{155}Sm β^- decay used for intensity calibration is not included.

\# Deduced by 1982Sc03 from α(K)exp, unless otherwise noted under comments. The calibration of the electron intensity scale relative to that of the γ rays was carried out assuming the theoretical value, α(K)=0.26, for the 104.3 E1 γ transition from ^{155}Sm β^- decay.

@ From 1982Sc03 from α(K)exp and α(L) ratios (when available).

& Time dependence of Iγ does not preclude assignment to ^{156}Eu.

a For the primary capture γ rays, 1982Sc03 quote only relative Iγ values. These authors do not give a factor through which these values can be converted to photons per 100 n captures. Note that these transitions are expected to represent only a small fraction of the total γ intensity deexciting this state.

b Additional information 1.

c For intensity per 100 neutron captures, multiply by 1.036.

d Multiply placed with undivided intensity.

x γ ray not placed in level scheme.

$^{155}_{62}$Sm$_{93}$-11

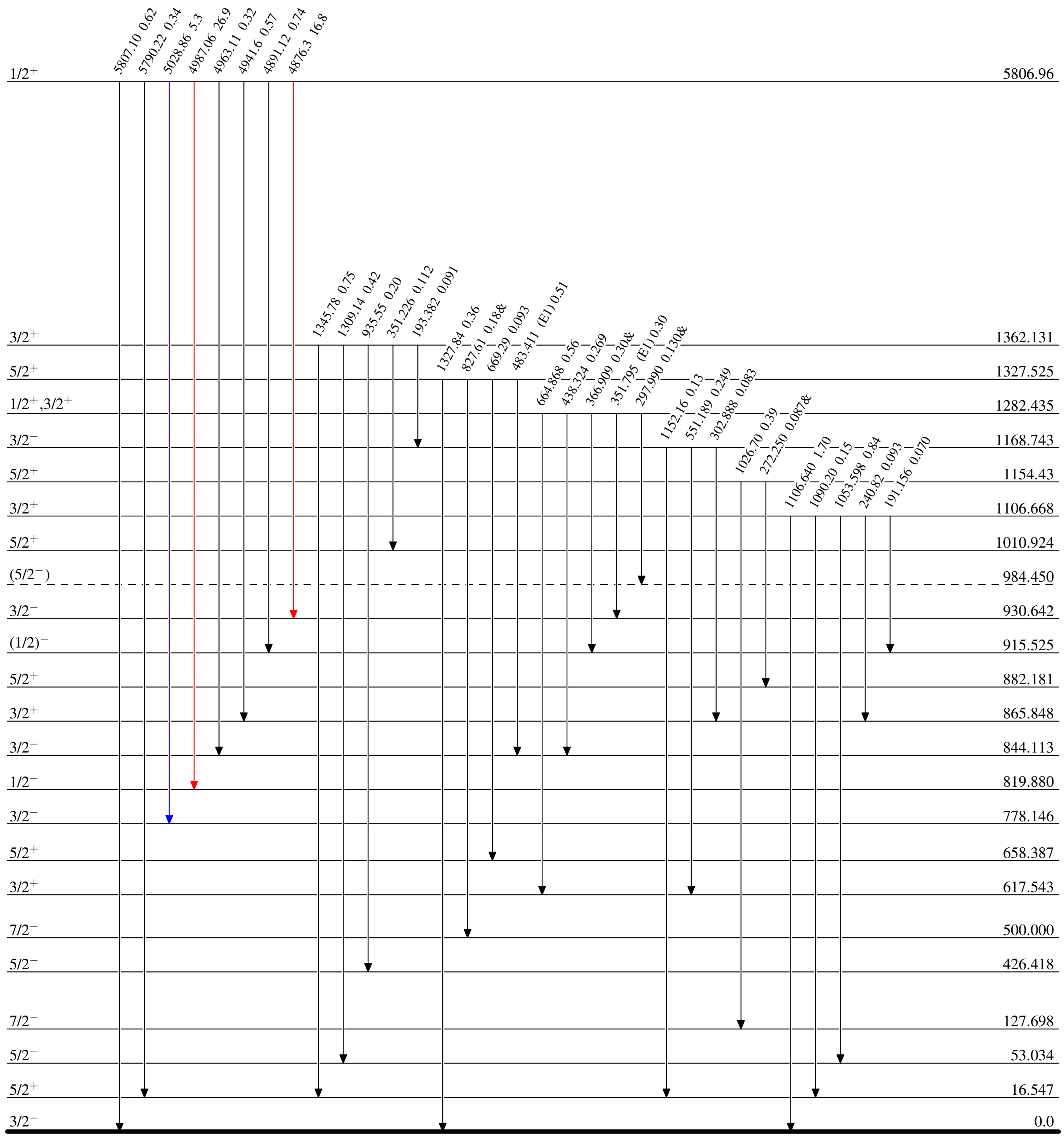
^{154}Sm(n,γ) 1982Sc03

Level Scheme

Intensities: Iγ per 100 N captures
& Multiply placed: undivided intensity given

Legend

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



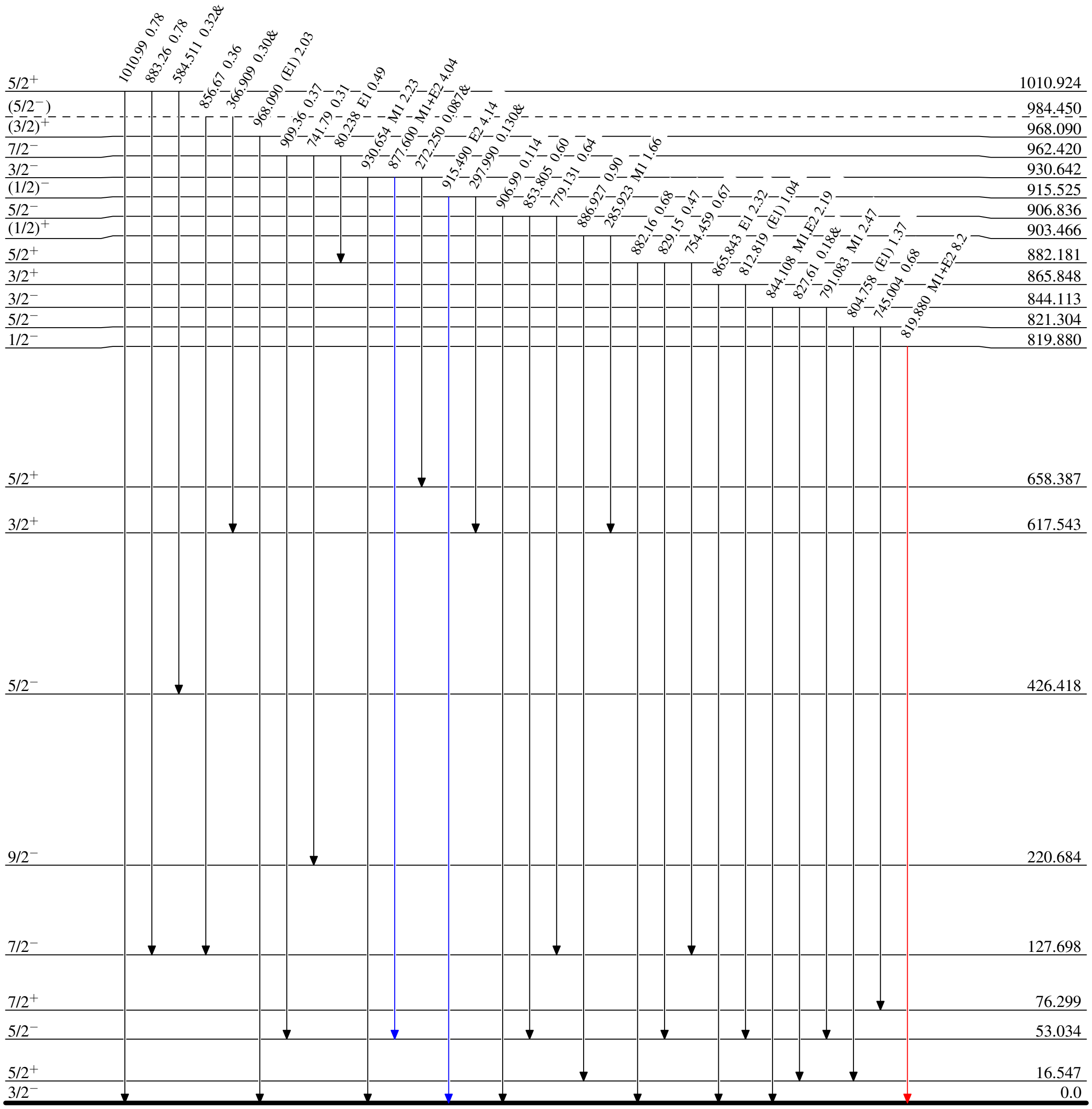
$^{155}_{62}Sm_{93}$

^{154}Sm(n,γ) 1982Sc03

Level Scheme (continued)

Intensities: Iγ per 100 N captures
& Multiply placed: undivided intensity given

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



$^{155}_{62}Sm_{93}$

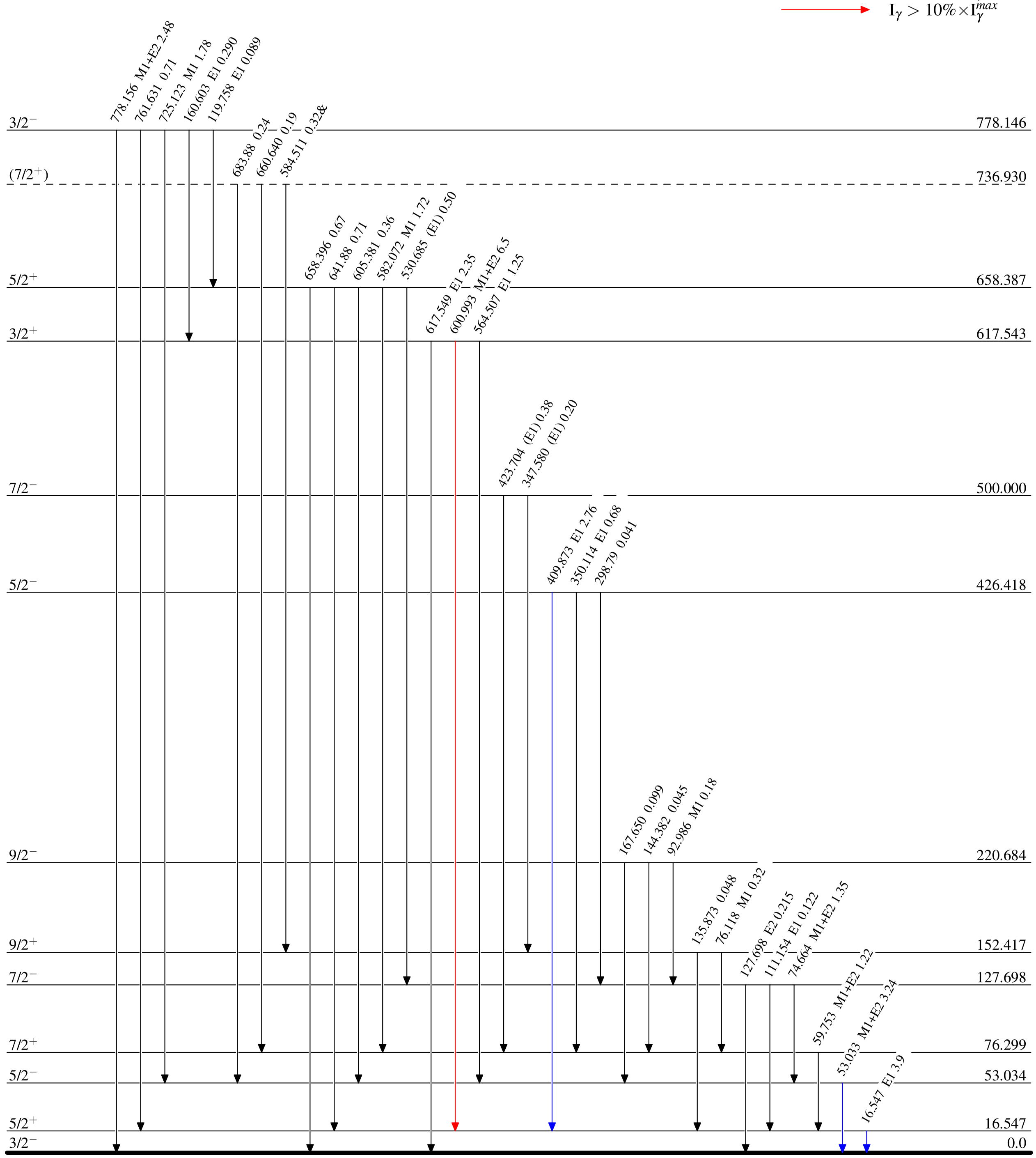
^{154}Sm(n,γ) 1982Sc03

Level Scheme (continued)

Intensities: Iγ per 100 N captures
& Multiply placed: undivided intensity given

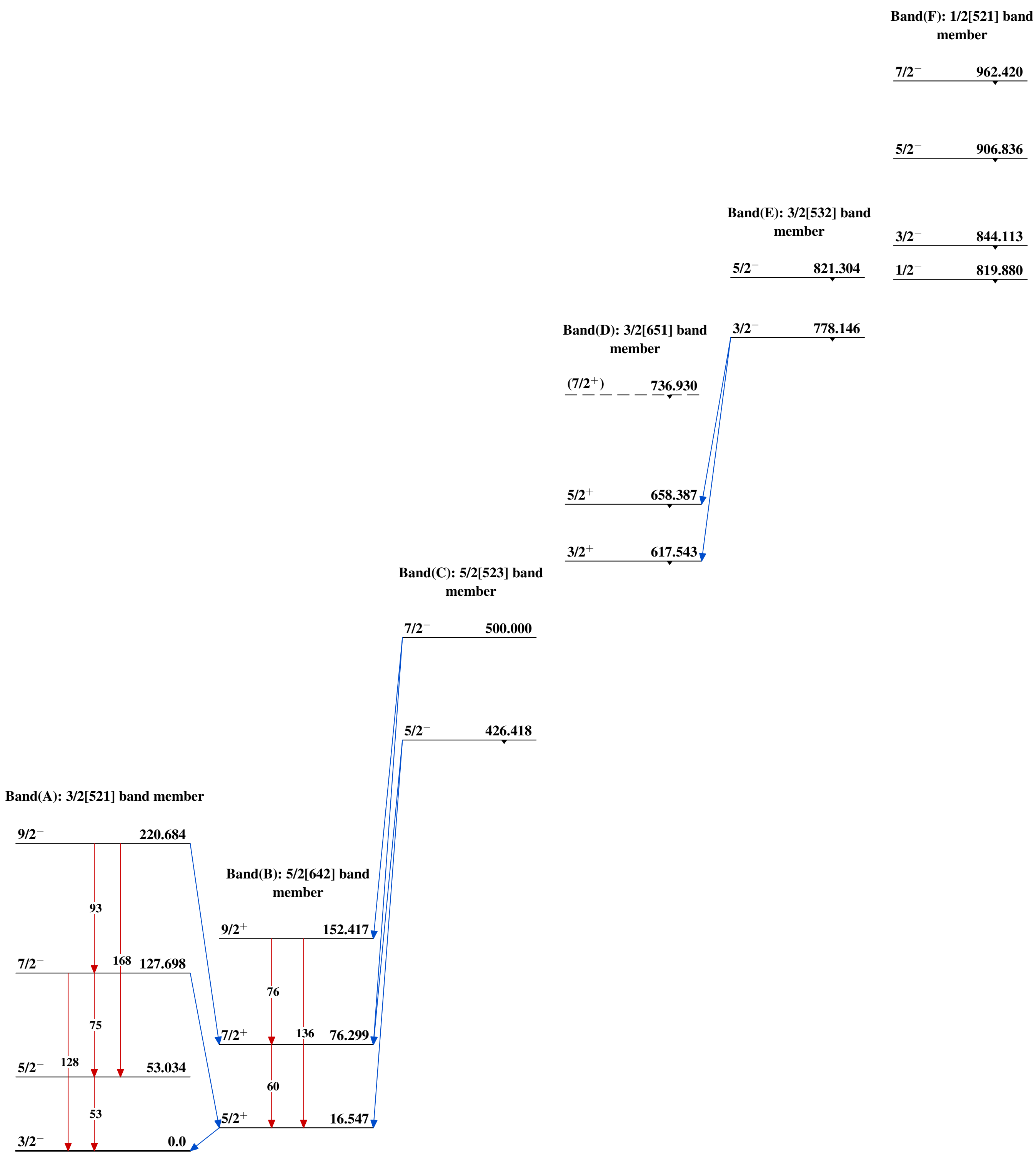
Legend

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



$^{155}_{62}Sm_{93}$

^{154}Sm(n,γ) 1982Sc03



$^{155}_{62}Sm_{93}$

^{154}Sm(n,γ) 1982Sc03 (continued)