Adopted Levels, Gammas

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

Q(β^-)=1627.3 *12*; S(n)=5807.0 *3*; S(p)=8.97×10^3 *5*; Q(α)=−1672.7 *11* 2017Wa10
S(2n)=13773.8 *3*; S(2p)=17438 *5* 2017Wa10

Because of the relatively large uncertainties quoted for the level energies from the (d,p) data, there has been some ambiguity in deciding if a given level (or which of a group of levels) is in fact populated in this reaction. Some of these instances are indicated in the cross-reference notations.

1999As05, in (HI,xnγ), report a rotational band based on the 16.5, 5/2$^+$ state. Because of the tentatively established features of this band above the 358, 13/2$^+$ state, the data on these higher-lying levels are not further given here. For this information, see the (HI,xnγ) Data Set.

^{155}Sm Levels

Cross Reference (XREF) Flags

A	^{155}Pm β^- decay	D	^{154}Sm(d,pγ)
B	^{154}Sm(n,γ)	E	^{239}Pu(n,Fγ):isomer
C	^{154}Sm(d,p)	F	(HI,xnγ)

E(level)[†]	J$^\pi$[#]	T$_{1/2}$	XREF	Comments
0.0[&]	3/2$^-$	22.18 min *6*	ABCDE	%β^-=100 Q=1.13 *13* J$^\pi$: atomic beam (1968Ea02). log *ft*=5.5 to 5/2$^-$ level in ^{155}Eu indicates π=−. Configuration=(ν 3/2[521]). T$_{1/2}$: weighted average of: 22.180 min 26 (2010GeZX), 22.4 min *3* (1969Un01); 21.9 min *2* (1960Su03); 23.5 min *4* (1952Ru10). Others: 25 min *2* (1950Wi07); 21 min *2* (1942Ku03). Q: from 2016St14 compilation by atomic beam magnetic resonance method.
16.5467[a] *19*	5/2$^+$	2.8 μs *5*	ABCDEF	XREF: C(25). J$^\pi$: E1 transition to g.s., together with intensity of primary feeding transitions in resonance-averaged neutron capture, indicates J^π=5/2$^+$. Assigned as the 5/2[642] Nilsson state. T$_{1/2}$: from decay curve of 16.5γ in ^{239}Pu(n,Fγ):isomer (2010Si03).
53.0338[&] *12*	5/2$^-$		ABCD	J$^\pi$: resonance-averaged neutron-capture data indicate J^π=5/2$^-$. 53 γ to 3/2$^-$ g.s. has an M1 component.
76.3007[a] *21*	7/2$^+$		ABCDEF	XREF: C(80). J$^\pi$: M1+E2 transition to 5/2$^+$ state. Resonance-averaged neutron-capture data indicate J≥7/2.
127.6982[&] *9*	7/2$^-$		ABCD	J$^\pi$: M1+E2 transition to 5/2$^-$ member of g.s. band. Resonance-averaged neutron-capture results indicate J≥7/2.
152.4190[a] *23*	9/2$^+$		ABCDEF	J$^\pi$: M1 transition to 7/2$^+$ state. Resonance-averaged neutron-capture data indicate J≥7/2. Level energy near that expected for the 9/2$^+$ member of the 5/2$^+$[642] band.
220.6842[&] *14*	9/2$^-$		ABCD	XREF: C(227). J$^\pi$: M1 transition to 7/2$^-$ state. Resonance-averaged neutron-capture data indicate J≥7/2. Level energy (and π) consistent with assignment as the 9/2$^-$ member of the g.s. band.
250.5[a] *3*	11/2$^+$		DEF	J$^\pi$: γ's to 7/2$^+$ and 9/2$^+$ members of the 5/2[642] band. Level energy agrees with that expected for the 11/2$^+$ member of that band.
337.2[&] *7*	(11/2$^-$)		CD	J$^\pi$: γ's to 9/2$^+$ and 9/2$^-$ states. Level energy agrees with that expected for the 11/2$^-$ member of the g.s. band.
358.8[a] *3*	13/2$^+$		CDEF	J$^\pi$: γ's to 9/2$^+$ and 11/2$^+$ members of the 5/2[642] band. Level energy agrees

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Adopted Levels, Gammas (continued)

^{155}Sm Levels (continued)

E(level)[†]	J^{π}[#]	$T_{1/2}$	XREF	Comments
				with that expected for the 13/2$^+$ member of that band.
426.419[b] *3*	5/2$^-$		ABCD	J^{π}: resonance-averaged neutron-capture data indicate J^{π}=5/2$^-$. 5/2[523] Nilsson state.
500.002[b] *4*	7/2$^-$		ABCD	J^{π}: resonance-averaged neutron-capture data indicate J≥7/2. L=2,3 in (d,p) limits J^{π} possibilities to 7/2$^-$.
538.03 *19*	(11/2$^-$)	1.00 μs *8*	E	J^{π}: ≥11/2 from levels scheme arguments; (11/2$^-$) based on QPRM calculations in ^{239}Pu(n,Fγ):isomer (2010Si03). $T_{1/2}$: from summed decay curve of 385.6+287.5+76.5+60.0 γ rays +Kα+Kβ x rays in the delayed cascade from the 538.6 keV isomer in ^{239}Pu(n,Fγ):isomer (2010Si03). E(level): dominant configuration=11/2[505] from ^{239}Pu(n,Fγ):isomer (2010Si03).
540 *6*			C	
562 *7*			C	
595.1[b] *8*	(9/2$^-$)		CD	XREF: C(601). J^{π}: not seen in (n,γ), suggesting J>7/2. Transitions to 9/2$^+$ and (11/2$^+$) states. Level energy agrees with that expected for the 9/2$^-$ member of the K^{π}=5/2$^-$ band.
617.5440[c] *23*	3/2$^+$		ABCD	J^{π}: resonance-averaged neutron capture indicates J^{π}=1/2$^+$,3/2$^+$. E1 transition to 5/2$^-$ level eliminates 1/2$^+$.
658.388[c] *3*	5/2$^+$		ABCD	XREF: C(645). J^{π}: resonance-averaged neutron-capture results indicate J^{π}=5/2$^+$. M1 transition to 7/2$^+$ level supports π=+ assignment.
716[b] *7*	(11/2$^-$)		C	J^{π}: level energy near that expected for the 11/2$^-$ member of this band.
736.933[c] *10*	(7/2$^+$)		BCD	XREF: C(748). J^{π}: resonance-averaged n-capture data indicate J≥7/2. γ's to 9/2$^+$, 7/2$^+$ and 5/2$^-$ states, together with its level energy, support the assignment of this level as the 7/2$^+$ member of this K^{π}=3/2$^+$ band.
778.1473[d] *23*	3/2$^-$		ABCD	XREF: C(786). J^{π}: resonance-averaged n capture gives J^{π}=1/2$^-$, 3/2$^-$. E1 transition to 5/2$^+$ state rules out J=1/2. log *ft*=5.4 from ^{155}Pm g.s. indicates that both levels involved have the same asymptotic quantum numbers, [532] in this case.
819.882[e] *5*	1/2$^-$		BcD	XREF: c(824). J^{π}: resonance-averaged capture data and L=1 in (d,p) indicate J^{π}=1/2$^-$ or 3/2$^-$. Large (d,p) cross section establishes this level as the bandhead of the 1/2[521] band.
821.307[d] *11*	5/2$^-$		ABc	XREF: c(824). J^{π}: from resonance-averaged neutron capture, J^{π}=5/2$^-$ or J≥7/2. γ's to the 5/2$^+$ and 7/2$^+$, but not the 9/2$^+$, members of the 5/2[642] band lend support to the 5/2$^-$ assignment. β^- feeding pattern of this level and the 778 and 919 levels in ^{155}Sm β^- decay support the interpretation of them as members of the 3/2[532] band.
844.115[e] *5*	3/2$^-$		AB D	J^{π}: resonance-averaged capture data allow J^{π}=1/2, 3/2$^-$. M1 transition to 5/2$^-$ state rules out J=1/2.
865.850[f] *7*	3/2$^+$		Bc	XREF: c(874). E(level): 1982Sc03 identify the 874 level in (d,p) as being this state. However, this (d,p) level may also contribute to the 882.2 state seen in (n,γ). J^{π}: resonance-averaged neutron-capture results indicate J^{π}= 1/2$^+$,3/2$^+$. Transition to 5/2$^-$ state rules out 1/2$^+$.
882.165[f] *19*	5/2$^+$		ABc	XREF: c(874?). J^{π}: feeding pattern in resonance-averaged n capture indicates J^{π}=5/2$^+$.
903.468[g] *5*	(1/2)$^+$		ABc	XREF: c(909).

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Adopted Levels, Gammas (continued)

^{155}Sm Levels (continued)

E(level)[†]	Jπ[#]	XREF	Comments
			Jπ: resonance-averaged neutron-capture results indicate J^π=1/2$^+$ or 3/2$^+$. Existence of another 1/2$^+$,3/2$^+$ level at 968 keV and only one 5/2$^+$ level (at 1011 keV), together with the "completeness" aspect of the resonance-averaged neutron-capture reaction, suggest that these levels form a K^π=1/2$^+$ band. The large (d,p) peak observed in this energy region would then indicate a significant component of 1/2[400] (J=1/2) in this state.
906.838[e] *17*	5/2$^-$	BcD	XREF: c(909?). E(level): although most of the 909 peak in (d,p) is likely to be associated with the 903 level, because of its closeness in energy some part of this peak may be due to the population of this 906 state. Jπ: from population pattern in resonance-averaged n capture.
915.527[h] *5*	(1/2)$^-$	BcD	XREF: c(909?). E(level): although most of the 909 peak in (d,p) is likely to be associated with the 903 level, because of its closeness in energy some part of this peak may be due to the population of this 915 state. Jπ: resonance-averaged neutron-capture results indicate J^π=1/2$^-$,3/2$^-$. Probable assignment as head of 1/2[530] band favors J=1/2.
919.0[d]	(7/2)$^-$	A	Jπ: feeding in β^- decay from J^π=5/2$^-$ indicates π=− and J=3/2, 5/2 or 7/2. Nonobservation of this level in (n,γ) rules out 3/2 and makes 5/2 unlikely. Interpretation of this level as the 7/2$^-$ member of the 3/2[532] band clarifies the β^- feeding pattern in ^{155}Pm β^- decay (i.e., its members are populated by the three strongest β^- transitions in this region of excitation).
930.644[h] *6*	3/2$^-$	ABCD	XREF: C(937). Jπ: J^π=1/2$^-$,3/2$^-$ from resonance-averaged neutron capture. M1 component in transition to 5/2$^-$ rules out 1/2$^-$. 1975Ja19 assign this level as the 5/2$^-$ member of the 1/2$^-$[521] band.
962.46[e] *3*	7/2$^-$	ABc	XREF: c(963). Jπ: resonance-averaged n capture indicates J^π=5/2$^-$ or J≥7/2. Level energy agrees with expected position of 7/2$^-$ member of this band.
968.093[g] *20*	(3/2)$^+$	BcD	XREF: c(963). Jπ: resonance-averaged neutron capture indicates J^π=1/2$^+$,3/2$^+$. Band-structure considerations (see comment on 903.466 level) favor the 3/2$^+$ assignment.
984.452?[h] *5*	(5/2$^-$)	Bc	XREF: c(999). Jπ: from resonance-averaged n capture, J^π=5/2$^-$ or J≥7/2. γ's to 3/2$^+$ and 7/2$^-$ states restrict J^π to 5/2$^-$ or 7/2$^+$. Probably the 5/2$^-$ member of the 1/2[530] band.
1010.926[g] *9*	5/2$^+$	Bc	XREF: c(999,1018). Jπ: from population pattern in resonance-averaged neutron capture.
1043 *8*		C	
1076 *7*		C	
1106.671[i] *9*	3/2$^+$	ABC	Jπ: resonance-averaged neutron-capture results indicate J^π=1/2$^+$ or 3/2$^+$. Transition to 5/2$^-$ rules out J^π=1/2$^+$.
1154.415[i] *24*	5/2$^+$	Bc	XREF: c(1163). Jπ: from population pattern in resonance-averaged n capture.
1168.746 *9*	3/2$^-$	ABc	XREF: c(1163). Jπ: from resonance-averaged neutron capture, J^π=1/2$^-$,3/2$^-$. Transition to 5/2$^+$ level rules out 1/2$^-$.
1180 *11*		C	
1217.7? *7*	(5/2$^-$)[@]	BC	XREF: C(1225).
1282.438[j] *5*	1/2$^+$,3/2$^+$	B	Jπ: from resonance-averaged neutron capture.
1327.528[j] *7*	5/2$^+$	AB	Jπ: from resonance-averaged neutron capture.
1335.8 *7*	(5/2)[@]	BC	XREF: C(1339).
1362.134 *10*	3/2$^+$	ABC	Jπ: from resonance-averaged neutron capture, J^π=1/2$^+$,3/2$^+$. Transition to 5/2$^-$ level rules out 1/2$^+$.
1390.6 *7*	(5/2)[@]	B	
1403.8 *10*	5/2	Bc	XREF: c(1408).
1408.2 *4*	1/2$^+$,3/2$^+$	Bc	XREF: c(1408).

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Adopted Levels, Gammas (continued)

^{155}Sm Levels (continued)

E(level)†	Jπ#	XREF	Comments
1424.7 *7*	5/2	B	
1449 *8*		C	
1474.0 *5*	$1/2^-,3/2^-$	B	
1478.0 *9*	$1/2^+,3/2^+$	B	
1481.6 *8*	$1/2^+,3/2^+$	Bc	XREF: c(1487).
1499.3 *2*	$1/2^+,3/2^+$	B	
1503.1 *12*	5/2	B	
1524.8 *1*	$1/2^-,3/2^-$	Bc	XREF: c(1521).
1531.9 *9*	$5/2^+$	B	
1548.4 *2*	$1/2^+,3/2^+$	B	
1567.0 *2*	$1/2^-,3/2^-$	Bc	XREF: c(1561).
1570.9 *8*	$1/2^+,3/2^+$	B	
1584.6 *3*	$1/2^+,3/2^+$	Bc	XREF: c(1582,1589).
1600.8 *3*	$1/2^+,3/2^+$	Bc	XREF: c(1589).
1614.5 *3*	$1/2^-,3/2^-$	B	
1618.8 *3*	$1/2^-,3/2^-$	BC	XREF: C(1628).
1658.7 *3*	$5/2^+$	Bc	XREF: c(1663).
1665.9? *9*	$(5/2^+)$	Bc	XREF: c(1663).
1671.2 *3*	$1/2^+,3/2^+$	Bc	XREF: c(1663,1681).
1678.1 *8*	$(5/2^+)$	Bc	XREF: c(1681).
1696.5 *6*	5/2	B	
1708.2? *12*	(5/2)	Bc	XREF: c(1716).
1718.2 *2*	$1/2^-,3/2^-$	Bc	XREF: c(1716).
1723.9 *3*	1/2,3/2	Bc	XREF: c(1716).
1733.6 *7*	$1/2^+,3/2^+,5/2^+$	BC	XREF: C(1738).
1752.0 *2*	$1/2^-,3/2^-$	BC	XREF: C(1762).
1774.2 *3*	$1/2^+,3/2^+$	Bc	XREF: c(1781).
1787.9‡ *5*	1/2,3/2	Bc	XREF: c(1781).
1804.7‡ *2*	$1/2^-,3/2^-$	Bc	XREF: c(1801,1813).
1821.4 *6*	$5/2^+$	Bc	XREF: c(1813).
1830.7 *10*	$5/2^+$	Bc	XREF: c(1838).
1833.2 *2*	$1/2^-,3/2^-$	Bc	XREF: c(1838).
1857.2 *3*	$1/2^-,3/2^-$	Bc	XREF: c(1863).
1864.9 *6*	$1/2^+,3/2^+$	Bc	XREF: c(1863).
1875.7 *2*	$1/2^-,3/2^-$	Bc	XREF: c(1863).
1885.4 *4*	$1/2^+,3/2^+$	Bc	XREF: c(1888).
1889.5 *5*	$1/2^-,3/2^-$	Bc	XREF: c(1888).
1899.4 *10*	$5/2^+$	Bc	XREF: c(1888).
1904.5 *4*	1/2,3/2	B	
1920.1 *10*	$1/2^+,3/2^+,5/2^+$	B	
1925.7 *6*	$1/2^-,3/2^-$	Bc	XREF: c(1932).
1929.1 *7*	$1/2^-,3/2^-$	Bc	XREF: c(1932).
1954.2 *2*	1/2,3/2	Bc	XREF: c(1964).
1965.2 *6*	1/2,3/2	b	XREF: b(1964).
1978.8 *5*	$5/2^+$	B	
1987.2 *5*	$1/2^+,3/2^+$	BC	XREF: C(1989).
2010 *10*		C	
2043 *10*		C	
2066 *10*		C	
2094 *10*		C	
2113 *10*		C	
2122 *13*		C	
2180 *10*		C	
2209 *10*		C	
2245 *10*		C	
2302 *10*		C	

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Adopted Levels, Gammas (continued)

^{155}Sm Levels (continued)

E(level)[†]	Jπ[#]	XREF	Comments
2344 *10*		C	
2363 *10*		C	
2382 *10*		C	
2400 *10*		C	
2431 *12*		C	
2446 *10*		C	
2480 *10*		C	
2513 *13*		C	
2547 *13*		C	
2566 *10*		C	
2584 *10*		C	
2599 *12*		C	
2627 *14*		C	
2670 *12*		C	
2719 *14*		C	
2785 *10*		C	
2829 *10*		C	
2860 *10*		C	
2887 *10*		C	
2917 *10*		C	
2945 *10*		C	
2960 *10*		C	
3020 *10*		C	
3034 *14*		C	
3075 *14*		C	
3096 *15*		C	
3127 *11*		C	
3165 *14*		C	
3201 *11*		C	
3216 *15*		C	
3261 *14*		C	
3281 *11*		C	
3300 *11*		C	
3330 *11*		C	
3350 *11*		C	
3362 *13*		C	
3400 *15*		C	
3420 *15*		C	
3450 *11*		C	
5806.96 *27*	$1/2^+$	B	E(level): neutron capture resonance energy; 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 ($J^\pi=0^+$).

[†] From least-squares fit to Eγ's.

[‡] Observed as an unresolved doublet in the capture γ-ray spectrum (1982Sc03).

[#] For the levels above 1391 keV, the listed J^π values are those in 1982Sc03 and are based on the measured reduced transition probabilities of the primary γ-ray transitions in resonance-averaged neutron capture.

[@] Tentatively adopted value reported in 1982Sc03 in (n,γ) with no arguments for the assigned value.

[&] Band(A): g.s. band. $K^\pi=3/2^-$. configuration=3/2(521). A=10.70 keV, B=−6.1 eV, A_3=−7.4 eV (from $3/2^-$, $5/2^-$, $7/2^-$ and $9/2^-$ levels).

[a] Band(B): $K^\pi=5/2^+$ band. Dominant configuration=5/2(642). A=8.60 keV, B=−4.9 eV (from $5/2^+$, $7/2^+$ and $9/2^+$ levels).

[b] Band(C): $K^\pi=5/2^-$ band. configuration=5/2(523). A=10.51 keV (from $5/2^-$ and $7/2^-$ levels).

[c] Band(D): $K^\pi=3/2^+$ band. Dominant configuration=3/2(651). A=9.2 keV, A_3=−0.17 keV (from $3/2^+$, $5/2^+$ and $7/2^+$ levels).

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Adopted Levels, Gammas (continued)

^{155}Sm Levels (continued)

Large A_3 value implied by the assumed band structure indicates presence of Coriolis mixing (with 1/2[660]). Δ' N=2 mixing (with 3/2[402]) also expected to be present in this band.

[d] Band(E): $K^\pi=3/2^-$ band. Dominant configuration=3/2(532). A=10.4 keV, $A_3=-0.30$ keV (from $3/2^-$, $5/2^-$ and $7/2^-$ levels). The deduced A value is quite reasonable, although the A_3 value seems large. (Note that a B term was not included due to the lack of additional band members.).

[e] Band(F): $K^\pi=1/2^-$ band. Conf=1/2(521). A=10.4 keV, B=−6.7 eV and a=−0.22 (from $1/2^-$, $3/2^-$, $5/2^-$ and $7/2^-$ levels). Note that the decoupling parameter implied by this assignment of band members is negative. For a pure 1/2[521] Nilsson state, the decoupling parameter is expected to be positive (and≈0.8 in this mass region).

[f] Band(G): $K^\pi=3/2^+$ band. Dominant configuration=$3/2(402)^+$... . The small A-value (≈3.3 keV) implied by the $3/2^+$, $5/2^+$ level spacing indicates strong mixing with other positive-parity bands.

[g] Band(H): $K^\pi=1/2^+$ band. Conf=1/2(400). A=15.05 keV, a=+0.431 (from $1/2^+$, $3/2^+$ and $5/2^+$ levels).

[h] Band(I): $K^\pi=1/2^-$ band. Conf=1/2(530). A=7.90 keV, a=−0.362 (from $1/2^-$, $3/2^-$ and $5/2^-$ band members).

[i] Band(J): $K^\pi=3/2^+$ band. Probable $K^\pi=0^-$ octupole vibration built on g.s. band. A=9.55 keV (from $3/2^+$ and $5/2^+$ levels).

[j] Band(K): $K^\pi=1/2^+$ band. Conf=1/2(660) ?

$\gamma(^{155}Sm)$

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[b]	Comments
16.5467	$5/2^+$	16.547 *10*	100	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* B(E1)(W.u.)=2.48×10^{-6} *45* Mult.: also from α(M)exp in ^{239}Pu(n,Fγ):isomer (2010Si03).
53.0338	$5/2^-$	53.033 *2*	100	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*
76.3007	$7/2^+$	59.753 *1*	100	16.5467	$5/2^+$	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*
127.6982	$7/2^-$	74.664 *1*	100 *5*	53.0338	$5/2^-$	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*
		111.154 *2*	9.08 *91*	16.5467	$5/2^+$	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*
		127.698 *1*	16.0 *10*	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*
152.4190	$9/2^+$	76.118 *1*	100 *12*	76.3007	$7/2^+$	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*
		135.873 *5*	14.8 *22*	16.5467	$5/2^+$				
220.6842	$9/2^-$	92.986 *1*	100 *16*	127.6982	$7/2^-$	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*
		144.382 *15*	25 *5*	76.3007	$7/2^+$				
		167.650 *5*	56 *8*	53.0338	$5/2^-$				
250.5	$11/2^+$	98.3[#]		152.4190	$9/2^+$				
		174[#]		76.3007	$7/2^+$				
337.2	$(11/2^-)$	116.5[#]		220.6842	$9/2^-$				
		184.8[#]		152.4190	$9/2^+$				
358.8	$13/2^+$	108.3[#]		250.5	$11/2^+$				
		206.6[#]		152.4190	$9/2^+$				
426.419	$5/2^-$	298.79 *3*	1.5 *5*	127.6982	$7/2^-$				
		350.114 *3*	24.8 *20*	76.3007	$7/2^+$	E1		0.01001	α(K)=0.00855 *12*; α(L)=0.001152 *17*; α(M)=0.000246 *4* α(N)=5.54×10^{-5} *8*; α(O)=8.16×10^{-6} *12*; α(P)=4.75×10^{-7} *7*
		409.873 *2*	100 *6*	16.5467	$5/2^+$	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*
500.002	$7/2^-$	347.580 *4*	51 *8*	152.4190	$9/2^+$	(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*
		423.704 *4*	100 *7*	76.3007	$7/2^+$	(E1)		0.00632	α(K)=0.00541 *8*; α(L)=0.000722 *11*; α(M)=0.0001539 *22*

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

Adopted Levels, Gammas (continued)

$\gamma(^{155}Sm)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult. [‡]	δ [‡]	α [b]	Comments
									α(N)=3.47×10^{-5} *5*; α(O)=5.13×10^{-6} *8*; α(P)=3.04×10^{-7} *5*
538.03	(11/2$^-$)	179.2[@] *2*	8[@] *4*	358.8	13/2$^+$	[E1]		0.0567	α(K)=0.0482 *7*; α(L)=0.00672 *10*; α(M)=0.001436 *21* α(N)=0.000322 *5*; α(O)=4.66×10^{-5} *7*; α(P)=2.52×10^{-6} *4* B(E1)(W.u.)=2.6×10^{-9} *+13−11*
		287.5[@] *2*	15[@] *4*	250.5	11/2$^+$	[E1]		0.01639	α(K)=0.01398 *20*; α(L)=0.00190 *3*; α(M)=0.000406 *6* α(N)=9.13×10^{-5} *13*; α(O)=1.340×10^{-5} *19*; α(P)=7.66×10^{-7} *11* B(E1)(W.u.)=1.18×10^{-9} *31*
		385.6[@] *2*	100[@] *9*	152.4190	9/2$^+$	[E1]		0.00791	α(K)=0.00676 *10*; α(L)=0.000907 *13*; α(M)=0.000193 *3* α(N)=4.36×10^{-5} *7*; α(O)=6.44×10^{-6} *9*; α(P)=3.79×10^{-7} *6* B(E1)(W.u.)=3.28×10^{-9} *+32−29*
595.1	(9/2$^-$)	344.6[#]		250.5	11/2$^+$				
		442.7[#]		152.4190	9/2$^+$				
617.5440	3/2$^+$	564.507 *4*	19.2 *12*	53.0338	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*
		600.993 *4*	100 *6*	16.5467	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*
		617.549 *7*	36.0 *22*	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*
658.388	5/2$^+$	530.685 *15*	28.9 *23*	127.6982	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*
		582.072 *5*	100 *6*	76.3007	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*
		605.381 *14*	21.1 *21*	53.0338	5/2$^-$				
		641.88 *3*	42 *3*	16.5467	5/2$^+$				
		658.396 *9*	39 *3*	0.0	3/2$^-$				
736.933	(7/2$^+$)	584.511[c] *11*	135 *14*	152.4190	9/2$^+$				
		660.640 *21*	78 *12*	76.3007	7/2$^+$				
		683.88 *5*	100 *16*	53.0338	5/2$^-$				
778.1473	3/2$^-$	119.758 *2*	3.6 *4*	658.388	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*
		160.603 *1*	11.7 *7*	617.5440	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*
		725.123 *7*	72 *4*	53.0338	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*
		761.631 *20*	28.9 *17*	16.5467	5/2$^+$				

$^{155}_{62}Sm_{93}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{155}Sm)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[†]	E_f	J^{π}_f	Mult.[‡]	δ[‡]	α[b]	Comments
778.1473	3/2⁻	778.156 *8*	100 *6*	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*
819.882	1/2⁻	819.880 *5*	100	0.0	3/2⁻	M1+E2	1.5 *+7−4*	0.0046 *4*	α(N)=2.67×10⁻⁵ *18*; α(O)=4.0×10⁻⁶ *3*; α(P)=2.36×10⁻⁷ *22* α(K)=0.0039 *4*; α(L)=0.00055 *4*; α(M)=0.000118 *8*
821.307	5/2⁻	745.004 *12*	50 *4*	76.3007	7/2⁺				
		804.758 *19*	100 *6*	16.5467	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*
844.115	3/2⁻	791.083 *7*	100 *6*	53.0338	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*
		827.61[c] *10*	7.1 *14*	16.5467	5/2⁺				
		844.108 *12*	89 *5*	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*
865.850	3/2⁺	812.819 *17*	45 *5*	53.0338	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*
		865.843 *9*	100 *6*	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*
882.165	5/2⁺	754.459 *24*	98 *7*	127.6982	7/2⁻				
		829.15 *4*	68 *8*	53.0338	5/2⁻				
		882.16 *5*	100 *11*	0.0	3/2⁻				
903.468	(1/2)⁺	285.923 *4*	100 *6*	617.5440	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*
		886.927 *18*	54 *4*	16.5467	5/2⁺				
906.838	5/2⁻	779.131 *24*	100 *9*	127.6982	7/2⁻				
		853.805 *23*	94 *8*	53.0338	5/2⁻				
		906.99 *15*	18 *4*	0.0	3/2⁻				
915.527	(1/2)⁻	297.990[c] *8*	3.1 *5*	617.5440	3/2⁺				
		915.490 *20*	100 *6*	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*
930.644	3/2⁻	272.250[c] *15*	2.1 *4*	658.388	5/2⁺				

$^{155}_{62}Sm_{93}$-9

Adopted Levels, Gammas (continued)

γ(^{155}Sm) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[b]	Comments
930.644	3/2⁻	877.600 *15*	100 *6*	53.0338	5/2⁻	E2+M1	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*
		930.654 *11*	55 *3*	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*
962.46	7/2⁻	80.238[d] *2*	100 *10*	882.165	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*
		741.79 *3*	64 *8*	220.6842	9/2⁻				
		909.36 *6*	77 *8*	53.0338	5/2⁻				
968.093	(3/2)⁺	968.090 *20*	100	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*
984.452?	(5/2⁻)	366.909[c] *4*	83 *8*	617.5440	3/2⁺	&			
		856.67 *5*	100 *11*	127.6982	7/2⁻				
1010.926	5/2⁺	584.511[c] *11*	41 *4*	426.419	5/2⁻				
		883.26 *4*	100 *10*	127.6982	7/2⁻				
		1010.99 *4*	100 *8*	0.0	3/2⁻				
1106.671	3/2⁺	191.156 *10*	4.1 *8*	915.527	(1/2)⁻				
		240.82 *3*	5.5 *8*	865.850	3/2⁺				
		1053.598 *22*	49 *4*	53.0338	5/2⁻				
		1090.20 *20*	8.5 *17*	16.5467	5/2⁺				
		1106.640 *24*	100 *6*	0.0	3/2⁻				
1154.415	5/2⁺	272.250[c] *15*	22 *4*	882.165	5/2⁺				
		1026.70 *8*	100 *10*	127.6982	7/2⁻				
1168.746	3/2⁻	302.888 *14*	33 *8*	865.850	3/2⁺				
		551.189 *12*	100 *10*	617.5440	3/2⁺				
		1152.16 *20*	54 *11*	16.5467	5/2⁺				
1282.438	1/2⁺,3/2⁺	297.990[c] *8*	23 *3*	984.452?	(5/2⁻)				
		351.795 *7*	54 *5*	930.644	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*
		366.909[c] *4*	54 *5*	915.527	(1/2)⁻	&			
		438.324 *5*	48 *4*	844.115	3/2⁻				
		664.868 *15*	100 *8*	617.5440	3/2⁺				
1327.528	5/2⁺	483.411 *5*	100 *7*	844.115	3/2⁻	(E1)		0.00466	α(K)=0.00399 *6*; α(L)=0.000529 *8*; α(M)=0.0001127 *16*

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

$\gamma(^{155}Sm)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Comments
						α(N)=2.54×10^{-5} *4*; α(O)=3.77×10^{-6} *6*; α(P)=2.26×10^{-7} *4*
1327.528	5/2$^+$	669.29 *10*	18 *4*	658.388	5/2$^+$	
		827.61[c] *10*	35 *7*	500.002	7/2$^-$	
		1327.84 *14*	71 *7*	0.0	3/2$^-$	
1362.134	3/2$^+$	193.382 *7*	12.2 *18*	1168.746	3/2$^-$	
		351.226 *13*	15.0 *23*	1010.926	5/2$^+$	
		935.55 *13*	26 *7*	426.419	5/2$^-$	
		1309.14 *18*	57 *5*	53.0338	5/2$^-$	
		1345.78 *11*	100 *10*	16.5467	5/2$^+$	
5806.96	1/2$^+$	4876.3[a] *3*	62.3[a] *30*	930.644	3/2$^-$	
		4891.12[a] *23*	2.73[a] *35*	915.527	(1/2)$^-$	
		4941.6[a] *3*	2.12[a] *27*	865.850	3/2$^+$	
		4963.11[a] *23*	1.19[a] *15*	844.115	3/2$^-$	
		4987.06[a] *10*	100[a] *5*	819.882	1/2$^-$	
		5028.86[a] *10*	19.6[a] *12*	778.1473	3/2$^-$	
		5790.22[a] *17*	1.27[a] *12*	16.5467	5/2$^+$	
		5807.10[a] *14*	2.31[a] *15*	0.0	3/2$^-$	

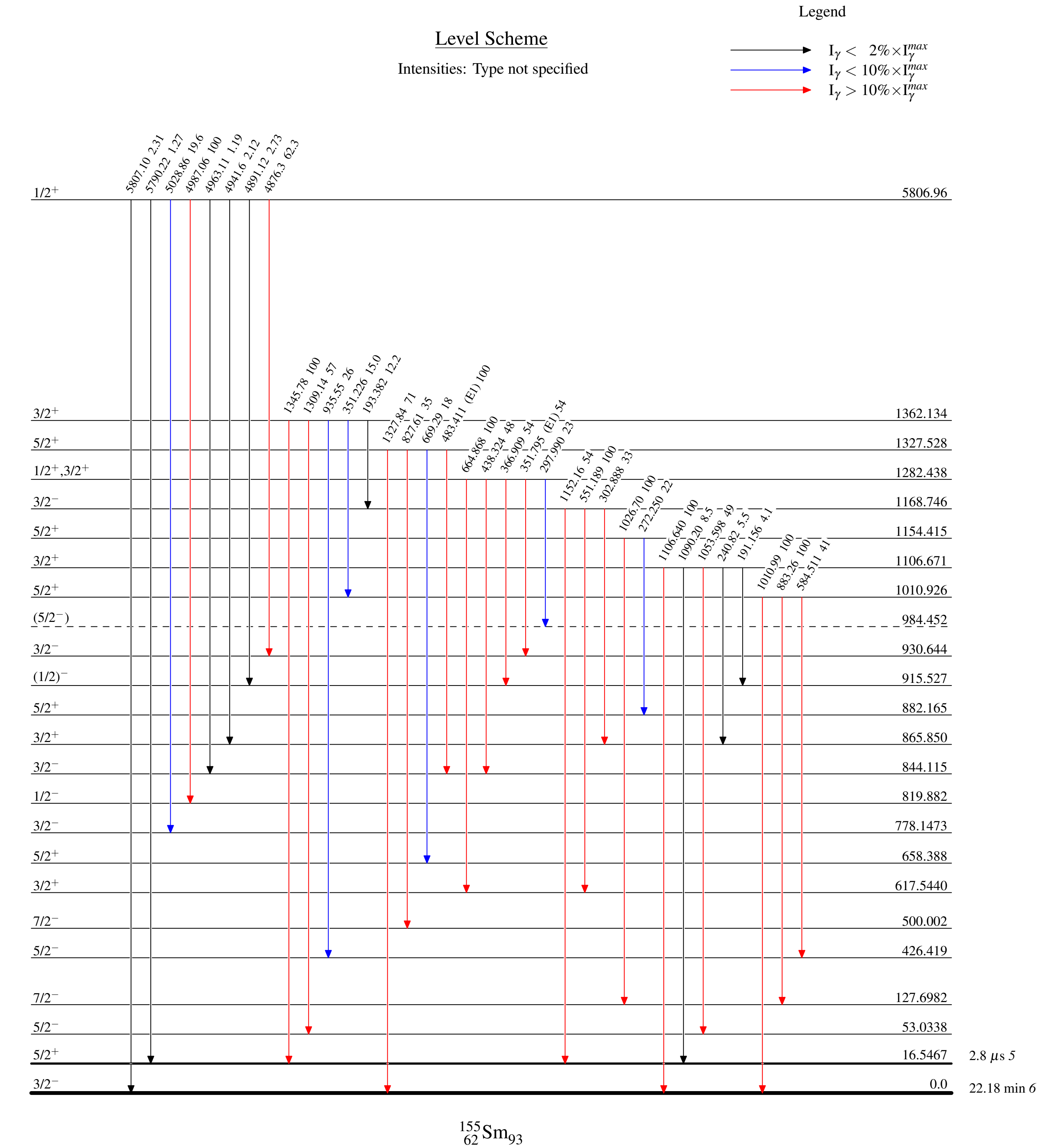
[†] From ^{154}Sm(n,γ) dataset unless otherwise noted.
[‡] From ^{154}Sm(n,γ) dataset (1982Sc03).
[#] From ^{154}Sm(d,pγ) dataset.
[@] From ^{239}Pu(n,fγ):isomer dataset.
[&] α(K)exp<0.03 allows mult=E1 or E2 for the doubly placed 366.9 γ.
[a] Primary capture γ rays from ^{154}Sm(n,γ) dataset. These transitions are expected to represent only a small fraction of the total γ intensity deexciting this state.
[b] Additional information 1.
[c] Multiply placed.
[d] Placement of transition in the level scheme is uncertain.

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

Adopted Levels, Gammas

Level Scheme

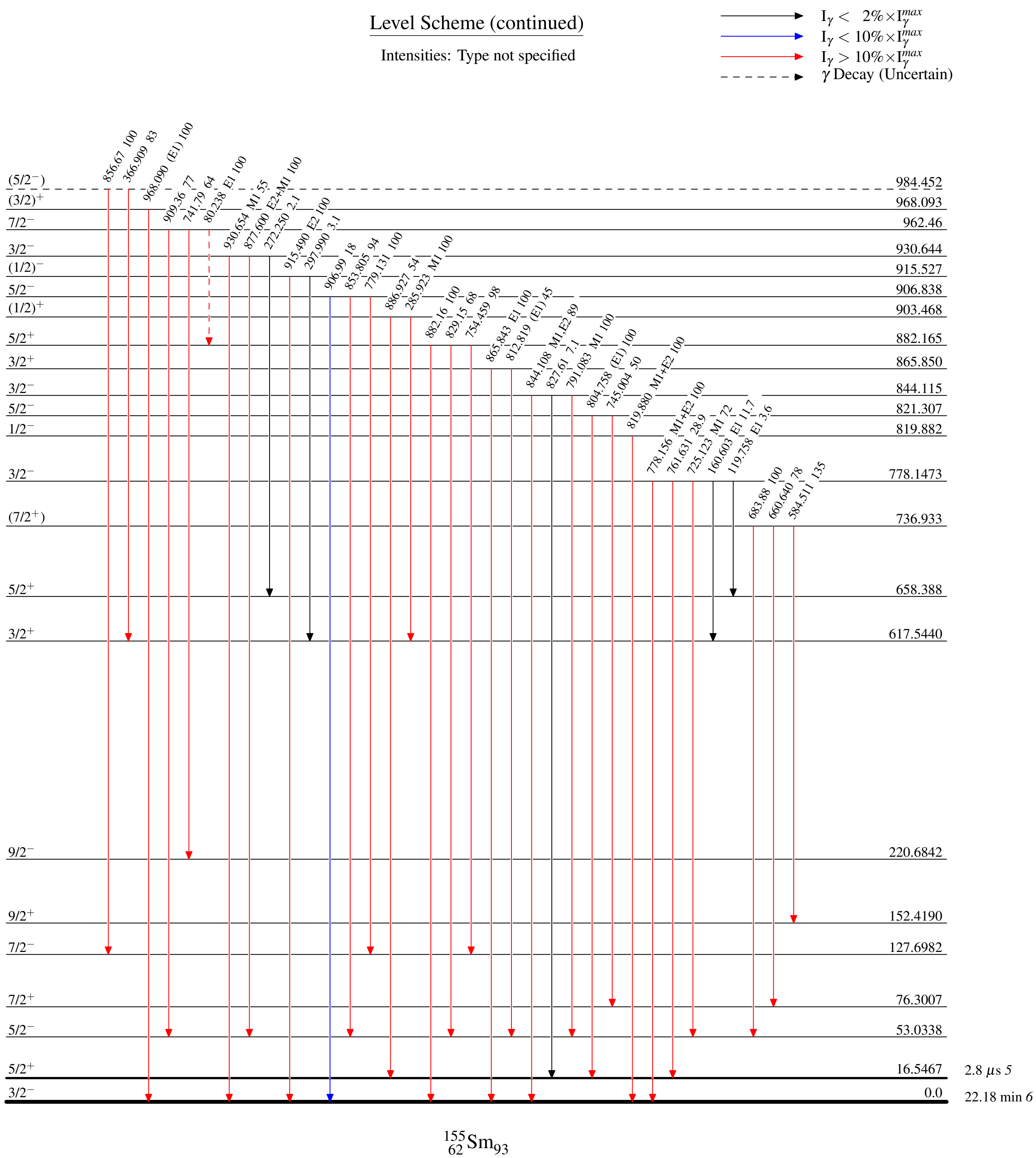
Intensities: Type not specified



Adopted Levels, Gammas

Level Scheme (continued)

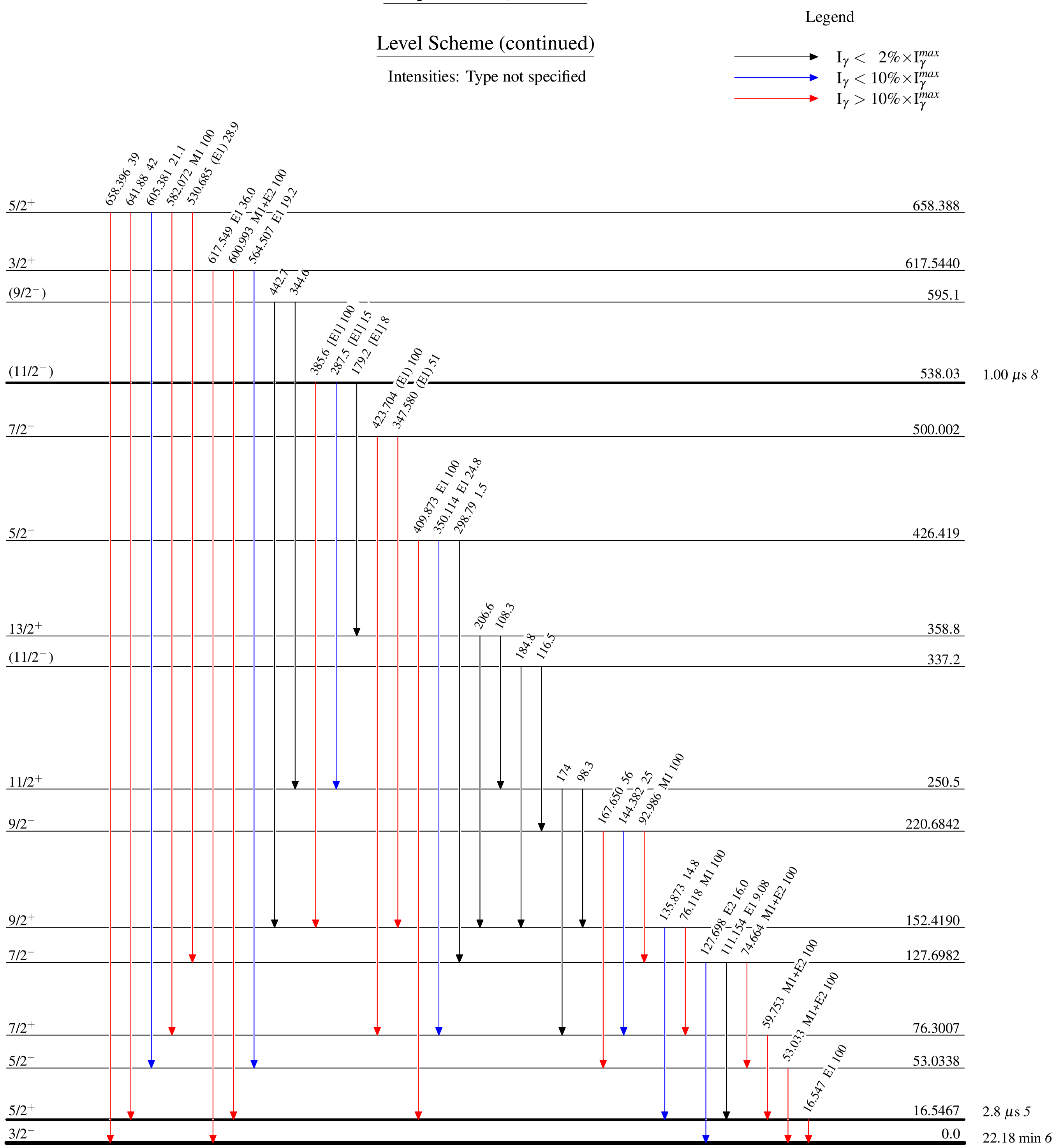
Intensities: Type not specified



Adopted Levels, Gammas

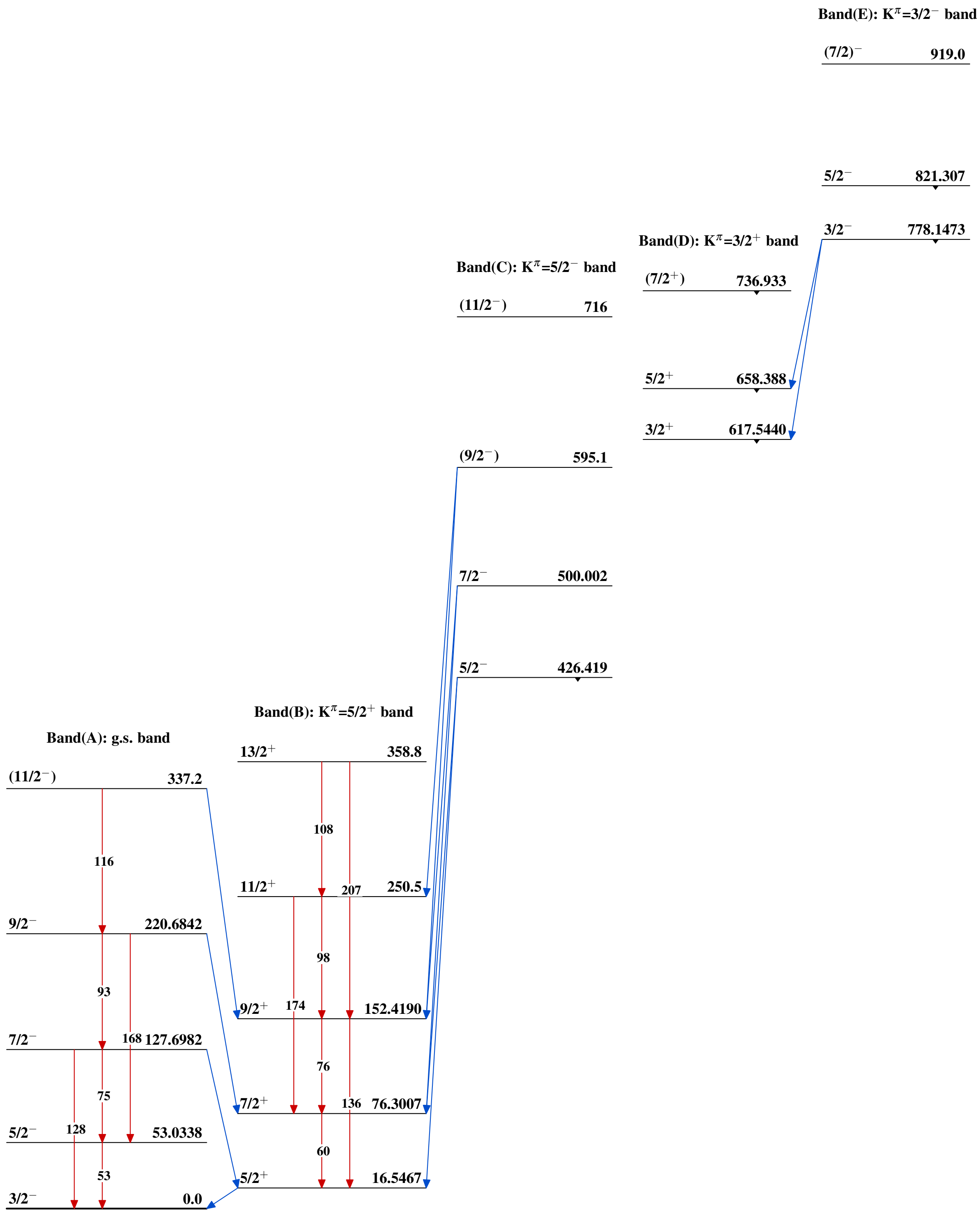
Level Scheme (continued)

Intensities: Type not specified



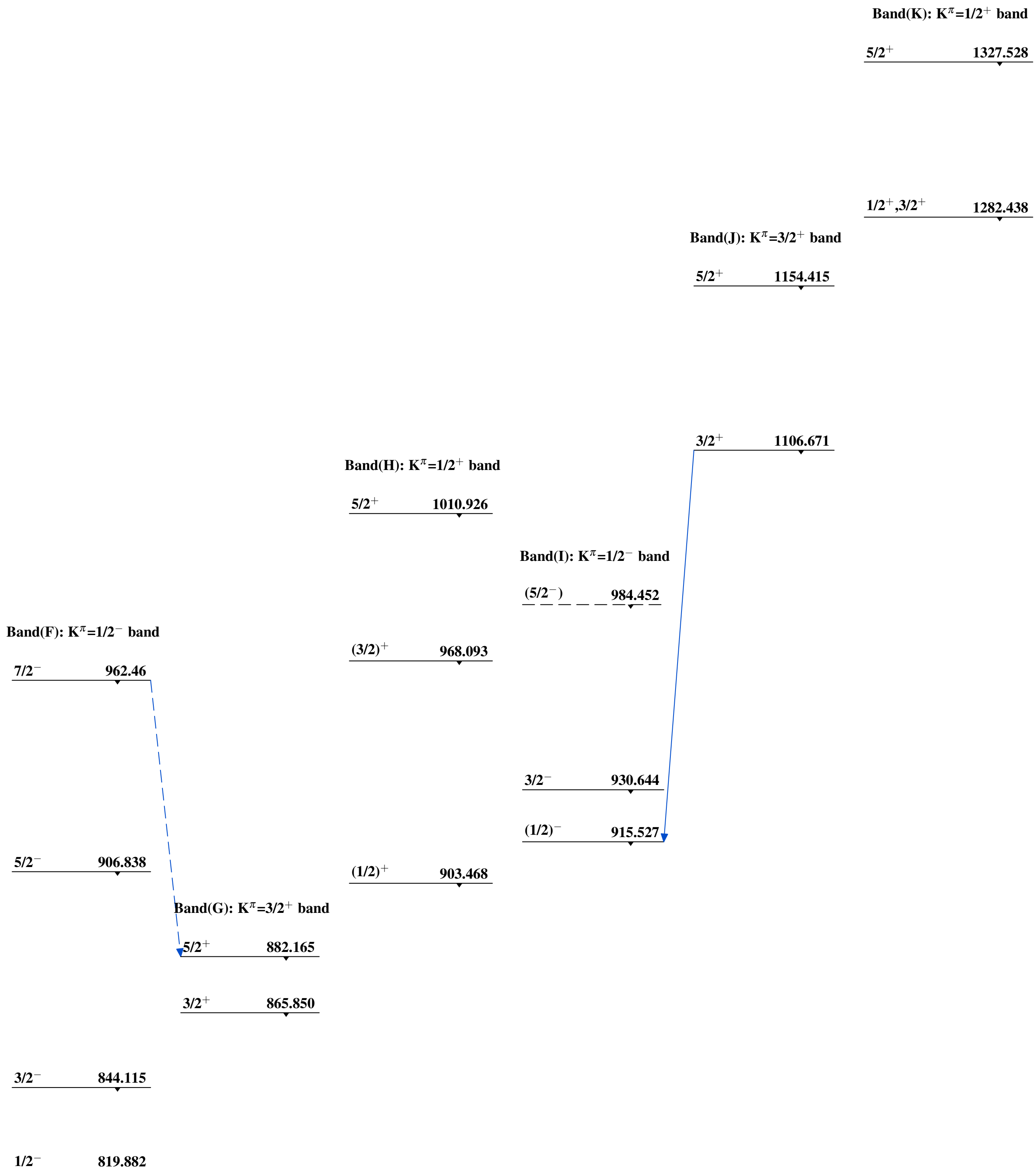
$^{155}_{62}Sm_{93}$

Adopted Levels, Gammas



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

Adopted Levels, Gammas (continued)



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