^{147}Eu ε decay (24.1 d) 1989Ad09,1989Ad10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181, 1 (2022)	9-Mar-2022

Parent: ^{147}Eu: E=0.0; J$^{\pi}$=5/2^{+}; $T_{1/2}$=24.1 d *6*; Q(ε)=1721.4 *23*; %ε+%β^{+} decay=99.9978 *6*

^{147}Eu-E,J$^{\pi}$,$T_{1/2}$: From ^{147}Eu Adopted Levels.

^{147}Eu-Q(ε): From 2021Wa16.

^{147}Eu-%ε+%β^{+} decay: %α decay=0.0022 *6* (^{147}Eu Adopted Levels, 1962Si14).

1989Ad09, 1989Ad10: ^{147}Eu source produced from deep Erbium fission induced by protons, E=680 MeV at JINR Dubna, and mass separation. Used Ge(Li)-NaI(Tl) anti-Compton spectrometer. Measured Eγ, Iγ, $T_{1/2}$, δ. Data from other references are extensively combined in the reported data.

Others: 1962Al19, 1962Be40, 1962Sc09, 1964Mc17, 1964Pr07, 1965Ad05, 1966Av02, 1966Go26, 1967Ad03, 1968Bo47, 1970Be67, 1970Ko38, 1970Va38, 1971Be53, 1974GrYX, 1974HeYW, 1977Kr13, 1978VyZV, 1989Ad10, 1987Ad03, 1987AdZX, 1996Vy01, 1998Om01, 2001MiZT, 2004Mi17.

^{147}Sm Levels

E(level)[†]	J$^{\pi}$[‡#]	$T_{1/2}$	Comments
0.0	7/2^{-}	1.073×10^{11} y *10*	%α=100 $T_{1/2}$: from Adopted Levels.
121.212 *5*	5/2^{-}	0.798 ns *17*	$T_{1/2}$: weighted av: 0.80 ns *4* (1968Bo47), 0.78 ns *3* (1970Ko38), 0.77 ns *4* (1971Be53), 0.83 ns *3* (1978VyZV) via $\gamma\gamma$(t); other: 0.62 ns *18* (1989Ad10).
197.284 *5*	3/2^{-}	1.25 ns *4*	$T_{1/2}$: weighted av. (ext. unc.) of 1.30 ns *5* (1978VyZV), 1.26 ns *4* (1971Be53), 1.10 ns *5* (1970Ko30), 1.35 ns *10* (1968Bo47), 1.2 ns *1* (1964Pr07), 1.31 ns *5* (1962Be40). g-factor=−0.19 *7* (1968Bo47) $\gamma\gamma(\theta$,H). Other: 1970Be67.
716.62 *4*	11/2^{-}	2.35 ps *5*	$T_{1/2}$: from Adopted Levels.
798.731 *4*	3/2^{-}	1.00 ps *21*	$T_{1/2}$: from Adopted Levels; other: <0.2 ns (1971Be53) (K x ray)(678γ)(t).
809.355 *13*	9/2^{-}	3.1 ps *5*	$T_{1/2}$: from Adopted Levels.
1043.528 *9*	1/2^{-},3/2^{-}		
1054.218 *6*	3/2^{+}		
1063.390 *6*	5/2^{+}		
1077.049 *5*	5/2^{-}		
1106.861 *17*	(3/2^{-} to 9/2^{-})		
1172.66 *5*	($^{-}$)		
1180.253 *7*	5/2^{+}		
1219.797 *11*	1/2^{+}		
1317.677 *10*	1/2^{-},3/2^{-},5/2^{-}		
1317.859 *13*	5/2^{-},7/2^{-},9/2^{-}		
1318.076 *12*	3/2^{-},5/2^{-}		
1349.650 *16*	(3/2^{-},5/2^{-})		
1449.113 *11*	7/2^{-}		
1453.220 *8*	3/2^{-}		
1471.417 *15*	3/2^{-},5/2^{-},7/2^{-}		
1471.885 *14*	$^{-}$		
1548.634 *7*	3/2^{+},5/2^{+}		
1600.937 *21*	3/2$^{(-)}$,5/2$^{(+)}$		
1641.95 *7*			

[†] From least-squares fit to Eγ's; normalized χ^2=1.8 is greater than critical χ^2=1.5.

[‡] From Adopted Levels.

[#] $\gamma\gamma(\theta)$ correlations reported in 1978VyZV establish J for several low-lying levels. Given δ(76γ)=±0.65 *5*, δ(121γ)=±0.33 *3*, δ(678γ)=±0.47 *4*, δ(857γ)=pure E1 and δ(197γ)=pure E2, all from ce data, the correlations (76γ)(121γ)(θ),

Continued on next page (footnotes at end of table)

^{147}Eu ε decay (24.1 d) 1989Ad09,1989Ad10 (continued)

^{147}Sm Levels (continued)

(857γ)(197γ)(θ), and (678γ)(121γ)(θ) establish J(121)=5/2, J(197)=3/2, J(799)=3/2 or 5/2, with δ(76γ)=+, δ(121γ)=−, and δ(678γ)=−. The correlations (601γ)(197γ)(θ) and (601γ)(76γ)(θ), given the above J and δ results, establish J(799)=3/2, with δ(601γ)=0.00 *4* or −4.0 *7*. The large δ solution is ruled out by γ(θ) in in-beam work. Correlation data are summarized in 1977Kr13.

ε,β^+ radiations

Iβ/I(ce(K) 197γ)=0.07 *1* (1967Ad03), 0.10 *2* (1965Dz09), 0.022 *4* (1964Mc17).

E(decay)	E(level)	$I\beta^+$ †	$I\varepsilon$†	Log *ft*	$I(\varepsilon+\beta^+)$†	Comments
(79.5 *23*)	1641.95		0.00159 *11*	9.32 *6*	0.00159 *11*	εK=0.524 *21*; εL=0.356 *15*; εM+=0.120 *6*
(120.5 *23*)	1600.937		0.036 *5*	8.55 *7*	0.036 *5*	εK=0.697 *5*; εL=0.230 *4*; εM+=0.0731 *13*
(172.8 *23*)	1548.634		0.624 *11*	7.739 *22*	0.624 *11*	εK=0.7598 *17*; εL=0.1837 *13*; εM+=0.0566 *5*
(249.5 *23*)	1471.885		0.0475 *15*	9.252 *21*	0.0475 *15*	εK=0.7933 *7*; εL=0.1589 *5*; εM+=0.04785 *17*
(250.0 *23*)	1471.417		0.126 *4*	8.831 *22*	0.126 *4*	εK=0.7934 *7*; εL=0.1588 *5*; εM+=0.04781 *17*
(268.2 *23*)	1453.220		1.16 *3*	7.939 *20*	1.16 *3*	εK=0.7979 *6*; εL=0.1555 *4*; εM+=0.04666 *14*
(272.3 *23*)	1449.113		0.289 *9*	8.558 *21*	0.289 *9*	εK=0.7988 *5*; εL=0.1548 *4*; εM+=0.04642 *13*
(371.8 *23*)	1349.650		0.0228 *7*	9.970 *20*	0.0228 *7*	εK=0.8137 *3*; εL=0.14374 *18*; εM+=0.04259 *7*
(403.3 *23*)	1318.076		0.237 *8*	9.032 *21*	0.237 *8*	εK=0.8166 *2*; εL=0.14153 *15*; εM+=0.04182 *5*
(403.5 *23*)	1317.859		0.130 *5*	9.294 *22*	0.130 *5*	εK=0.8167 *2*; εL=0.14152 *15*; εM+=0.04182 *5*
(403.7 *23*)	1317.677		0.184 *6*	9.143 *20*	0.184 *6*	εK=0.8167 *2*; εL=0.14150 *15*; εM+=0.04181 *5*
(541.1 *23*)	1180.253		0.155 *7*	9.496 *24*	0.155 *7*	εK=0.8251 *1*; εL=0.13522 *8*; εM+=0.03965 *3*
(548.7 *23*)	1172.66		0.0006 *6*	11.9 *5*	0.0006 *6*	εK=0.8255 *1*; εL=0.13498 *8*; εM+=0.03957 *3*
(614.5 *23*)	1106.861		0.0321 *11*	10.405[1u] *21*	0.0321 *11*	εK=0.7990 *3*; εL=0.15451 *18*; εM+=0.04649 *7*
(644.4 *23*)	1077.049		10.0 *4*	7.849 *22*	10.0 *4*	εK=0.8289; εL=0.13242 *6*; εM+=0.03869 *2*
(658.0 *23*)	1063.390		0.298 *8*	9.394 *18*	0.298 *8*	εK=0.8293; εL=0.13212 *5*; εM+=0.03859 *2*
(667.2 *23*)	1054.218		5.55 *13*	8.137 *17*	5.55 *13*	εK=0.8296; εL=0.13193 *5*; εM+=0.03852 *2*
(677.9 *23*)	1043.528		≤0.006	≥11.1	≤0.006	εK=0.8298; εL=0.13171 *5*; εM+=0.03845 *2*
(912.0 *23*)	809.355		0.0273 *19*	11.20[1u] *4*	0.0273 *19*	εK=0.81781 *9*; εL=0.14061 *7*; εM+=0.04158 *3*
(922.7 *23*)	798.731		19.9 *6*	7.879 *19*	19.9 *6*	εK=0.8346; εL=0.12818 *3*; εM+=0.037237 *9*
(1524.1 *23*)	197.284	0.086 *4*	24.1 *10*	8.247 *22*	24.2 *10*	av Eβ=237.9 *11*; εK=0.8366; εL=0.12405 *2*; εM+=0.035852 *6*
(1600.2 *23*)	121.212	0.117 *6*	19.1 *9*	8.393 *24*	19.2 *9*	av Eβ=271.3 *10*; εK=0.8347; εL=0.12346 *2*; εM+=0.035670 *6*
(1721.4 *23*)	0.0	0.224 *17*	17.7 *13*	8.49 *4*	17.9 *13*	av Eβ=324.5 *10*; εK=0.8299 *2*; εL=0.12231 *3*; εM+=0.035317 *8*

† For absolute intensity per 100 decays, multiply by 0.999978 *6*.

γ(^{147}Sm)

Iγ normalization: 24.08 *19*, weighted average of %I(197γ)=24.4 *4* (1989Ad10) and %I(197γ)=23.98 *22* (2004Mi17) (%I(γ) is per 100 (ε+$β^+$) decays of ^{147}Eu parent).

I(K x ray)=470 (1964Mc17), 850 (1962Sc09).

$E_γ$[‡]	$I_γ$[‡&]	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult.[@]	δ[†@]	α[a]	Comments
76.073 *10*	3.44 *11*	197.284	3/2⁻	121.212	5/2⁻	M1+E2	+0.655 *34*	4.53 *9*	%Iγ=0.828 *27* α(K)=2.91 *5*; α(L)=1.26 *7*; α(M)=0.288 *15* α(N)=0.064 *4*; α(O)=0.0083 *4*; α(P)=0.000170 *4* $E_γ$: others: 76.2 *1* (1971Be53), 76.4 *2* (1974HeYW). α(K)exp=1.82 *20* (1989Ad10). δ: from 1989Ad10; +0.65 *5* from L1/L3=0.75 *10*, K/L=2.3 *3* (1966Av02); sign from γγ(θ). L1:L2:L3=82 *12*:91 *14*:100 (1962Sc09), 75 *10*:107 *15*:100 (1966Av02). α(K)exp=2.4 *5*.
121.220 *17*	86 *1*	121.212	5/2⁻	0.0	7/2⁻	M1+E2	−0.33 *3*	0.996 *15*	%Iγ=20.71 *29* α(K)=0.814 *12*; α(L)=0.143 *5*; α(M)=0.0312 *12* α(N)=0.00702 *25*; α(O)=0.00101 *3*; α(P)=5.06×10^{-5} *8* $I_γ$: weighted average of 87 *3* (1989Ad09) and 85.9 *11* (2014Mi17). α(K)exp=0.76 *4*. δ: −0.33 *3* from L1:L2:L3=63 *9*:15 *2*:10 (1962Sc09), sign from γγ(θ); −0.278 *20* (1989Ad10), see also comments in Adopted Gammas and Coulomb excitation. For other δ from γγ(θ), see 1977Kr13. K:L1+L2:L3=450 *40*:73 *7*:10 *1* (1966Av02). α(K)exp=1.05 *6* (1962Sc09), 0.70 (1987Ad03).
165.558 *28*	0.0418 *26*	1219.797	1/2⁺	1054.218	3/2⁺				%Iγ=0.0101 *6*
197.299 *12*	100 *3*	197.284	3/2⁻	0.0	7/2⁻	E2		0.218	%Iγ=24.08 *19* α(K)=0.1565 *22*; α(L)=0.0482 *7*; α(M)=0.01092 *16* α(N)=0.00241 *4*; α(O)=0.000320 *5*; α(P)=7.73×10^{-6} *11* $E_γ$: others: 197.25 *15* (1974HeYW). α(K)exp=0.139 *8*. L1:L2:L3=125 *19*:113 *19*:100 (1962Sc09), K/L=3.0 *5* (1966Av02).
[x]212.40 *15*	0.0052 *9*								%Iγ=0.00125 *22*
244.832 *17*	0.090 *4*	1043.528	1/2⁻,3/2⁻	798.731	3/2⁻				%Iγ=0.0217 *10*
254.09 *3*	0.0360 *22*	1063.390	5/2⁺	809.355	9/2⁻				%Iγ=0.0087 *5*
255.64 *15*	0.0076 *12*	1054.218	3/2⁺	798.731	3/2⁻				%Iγ=0.00183 *29*
263.95 *15*	0.0038 *10*	1318.076	3/2⁻,5/2⁻	1054.218	3/2⁺				%Iγ=0.00092 *24*
267.74 *3*	0.0435 *22*	1077.049	5/2⁻	809.355	9/2⁻	(E2)		0.0804	%Iγ=0.0105 *5* α(K)=0.0615 *9*; α(L)=0.01474 *21*; α(M)=0.00330 *5*

γ(^{147}Sm) (continued)

Eγ[‡]	Iγ[‡&]	Ei(level)	J_i^π	Ef	J_f^π	Mult.[@]	δ[†@]	α[a]	Comments
									α(N)=0.000733 *11*; α(O)=9.99×10^{-5} *14*; α(P)=3.24×10^{-6} *5* α(K)exp=0.14 *8* (1989Ad09).
273.14 *16*	0.0082 *16*	1453.220	3/2$^-$	1180.253	5/2$^+$				%Iγ=0.0020 *4*
278.352 *14*	0.195 *6*	1077.049	5/2$^-$	798.731	3/2$^-$	M1+E2	0.086 *48*	0.0985	%Iγ=0.0470 *15* α(K)=0.0837 *12*; α(L)=0.01165 *17*; α(M)=0.00250 *4* α(N)=0.000567 *8*; α(O)=8.50×10^{-5} *12*; α(P)=5.29×10^{-6} *8* α(K)exp=0.074 *7* (1989Ad09). δ: from 1989Ad10.
286.282 *20*	0.0504 *19*	1349.650	(3/2$^-$,5/2$^-$)	1063.390	5/2$^+$				%Iγ=0.0121 *5*
295.40 *6*	0.0123 *15*	1349.650	(3/2$^-$,5/2$^-$)	1054.218	3/2$^+$				%Iγ=0.0030 *4*
328.828 *13*	0.139 *4*	1548.634	3/2$^+$,5/2$^+$	1219.797	1/2$^+$	M1		0.0635	%Iγ=0.0335 *10* α(K)=0.0540 *8*; α(L)=0.00746 *11*; α(M)=0.001598 *23* α(N)=0.000362 *5*; α(O)=5.44×10^{-5} *8*; α(P)=3.41×10^{-6} *5* α(K)exp=0.085 *7* (1989Ad09).
368.360 *12*	0.285 *9*	1548.634	3/2$^+$,5/2$^+$	1180.253	5/2$^+$	M1		0.0472	%Iγ=0.0686 *22* α(K)=0.0401 *6*; α(L)=0.00552 *8*; α(M)=0.001183 *17* α(N)=0.000268 *4*; α(O)=4.03×10^{-5} *6*; α(P)=2.53×10^{-6} *4* α(K)exp=0.044 *4* (1989Ad09).
380.83 *25*	0.034 *10*	1600.937	3/2$^{(-)}$,5/2$^{(+)}$	1219.797	1/2$^+$				%Iγ=0.0082 *24*
385.69 *10*	0.0094 *22*	1449.113	7/2$^-$	1063.390	5/2$^+$				%Iγ=0.0023 *5*
389.90 *8*	0.0150 *16*	1453.220	3/2$^-$	1063.390	5/2$^+$				%Iγ=0.0036 *4*
420.69 *4*	0.045 *14*	1600.937	3/2$^{(-)}$,5/2$^{(+)}$	1180.253	5/2$^+$				%Iγ=0.0108 *34*
421.064 *17*	0.083 *14*	1219.797	1/2$^+$	798.731	3/2$^-$				%Iγ=0.0200 *34*
428.24 *7*	0.0127 *20*	1600.937	3/2$^{(-)}$,5/2$^{(+)}$	1172.66	($^-$)				%Iγ=0.0031 *5*
471.600 *12*	0.212 *7*	1548.634	3/2$^+$,5/2$^+$	1077.049	5/2$^-$	E1		0.00493	%Iγ=0.0510 *17* α(K)=0.00422 *6*; α(L)=0.000560 *8*; α(M)=0.0001194 *17* α(N)=2.69×10^{-5} *4*; α(O)=3.99×10^{-6} *6*; α(P)=2.39×10^{-7} *4* α(K)exp=0.0059 *13* (1989Ad09).
^{x}490.87 *20*	0.012 *3*								%Iγ=0.0029 *7*
494.419 *16*	0.150 *5*	1548.634	3/2$^+$,5/2$^+$	1054.218	3/2$^+$	M1		0.0221	%Iγ=0.0361 *12* α(K)=0.0189 *3*; α(L)=0.00257 *4*; α(M)=0.000550 *8* α(N)=0.0001248 *18*; α(O)=1.88×10^{-5} *3*; α(P)=1.183×10^{-6} *17* α(K)exp=0.030 *6* (1989Ad09).
505.121 *11*	0.351 *11*	1548.634	3/2$^+$,5/2$^+$	1043.528	1/2$^-$,3/2$^-$	E1		0.00422	%Iγ=0.0845 *27* α(K)=0.00361 *5*; α(L)=0.000478 *7*; α(M)=0.0001018 *15* α(N)=2.30×10^{-5} *4*; α(O)=3.41×10^{-6} *5*;

$^{147}_{62}$Sm$_{85}$-4

γ(^{147}Sm) (continued)

E_γ[‡]	I_γ[‡&]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	δ[†@]	α[a]	Comments
									α(P)=2.05×10^{-7} *3* α(K)exp=0.0028 *4* (1989Ad09).
518.96 *3*	0.068 *4*	1317.677	1/2$^-$,3/2$^-$,5/2$^-$	798.731	3/2$^-$	M1		0.0196	%Iγ=0.0164 *10* α(K)=0.01671 *24*; α(L)=0.00227 *4*; α(M)=0.000486 *7* α(N)=0.0001103 *16*; α(O)=1.658×10^{-5} *24*; α(P)=1.046×10^{-6} *15* α(K)exp=0.018 *4* (1989Ad09).
[x]531.6 *4*	0.0041 *17*								%Iγ=0.0010 *4*
537.22 *16*	0.009 *3*	1600.937	3/2$^{(-)}$,5/2$^{(+)}$	1063.390	5/2$^+$				%Iγ=0.0022 *7*
601.450 *4*	24.2 *9*	798.731	3/2$^-$	197.284	3/2$^-$	M1(+E2)	0.005 *8*	0.01354	%Iγ=5.83 *22* α(K)=0.01156 *17*; α(L)=0.001563 *22*; α(M)=0.000334 *5* α(N)=7.58×10^{-5} *11*; α(O)=1.141×10^{-5} *16*; α(P)=7.21×10^{-7} *10* I_γ: weighted average of 22.2 *7* (1989Ad09) and 24.6 *3* (2014Mi17). α(K)exp=0.0123 *7* (1989Ad09). δ: from 1989Ad10; 0.00 *4* from A_2=+0.056 *9* (1970Va38) (601γ)(197γ)(θ) Others: −0.08 *6* from A_2=+0.075 *11* (1970Be67), −0.03 *9* from A_2=+0.064 *19* (1966Go26).
654.55 *11*	0.0161 *24*	1453.220	3/2$^-$	798.731	3/2$^-$				%Iγ=0.0039 *6*
677.516 *7*	40.7 *20*	798.731	3/2$^-$	121.212	5/2$^-$	M1+E2	−0.48 *2*	0.00931 *14*	%Iγ=9.8 *5* α(K)=0.00793 *12*; α(L)=0.001087 *16*; α(M)=0.000233 *4* α(N)=5.27×10^{-5} *8*; α(O)=7.90×10^{-6} *12*; α(P)=4.91×10^{-7} *8* I_γ: weighted average of 36.9 *11* (1989Ad09) and 41.8 *6* (2014Mi17). α(K)exp=0.0094 *5* (1989Ad09). δ: from 1989Ad10; −0.47 *4* from A_2=+0.126 *4* (1970Va38), −0.47 *5* from A_2=+0.128 *11* (1966Go26), −0.48 *5* from A_2=+0.130 *8* (1970Be67) via (678γ)(121γ)(θ); see also 1962Al19, 1962Sc09, 1964Mc17. α(K)exp=0.0087 *10*.
688.15 *4*	0.039 *3*	809.355	9/2$^-$	121.212	5/2$^-$	E2		0.00574	%Iγ=0.0094 *7* α(K)=0.00480 *7*; α(L)=0.000737 *11*; α(M)=0.0001595 *23* α(N)=3.59×10^{-5} *5*; α(O)=5.24×10^{-6} *8*; α(P)=2.82×10^{-7} *4* Mult.: from Adopted Gammas.
716.45[#] *5*	0.0289 *22*	716.62	11/2$^-$	0.0	7/2$^-$				%Iγ=0.0070 *5*

$^{147}_{62}Sm_{85}$-5

γ(^{147}Sm) (continued)

E_γ[‡]	I_γ[‡&]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	δ[†@]	α[a]	Comments
732.33[#] *5*	0.0291 *22*	1449.113	7/2⁻	716.62	11/2⁻				%Iγ=0.0070 *5*
749.895 *17*	0.98 *3*	1548.634	3/2⁺,5/2⁺	798.731	3/2⁻	E1		0.00181	%Iγ=0.236 *7* α(K)=0.001552 *22*; α(L)=0.000202 *3*; α(M)=4.29×10⁻⁵ *6* α(N)=9.70×10⁻⁶ *14*; α(O)=1.448×10⁻⁶ *21*; α(P)=8.93×10⁻⁸ *13* α(K)exp=0.0021 *4* (1989Ad09).
798.729 *5*	18.3 *6*	798.731	3/2⁻	0.0	7/2⁻	E2		0.00406	%Iγ=4.41 *15* α(K)=0.00342 *5*; α(L)=0.000505 *7*; α(M)=0.0001089 *16* α(N)=2.46×10⁻⁵ *4*; α(O)=3.61×10⁻⁶ *5*; α(P)=2.02×10⁻⁷ *3* α(K)exp=0.00365 *19* (1989Ad09).
809.380 *16*	0.156 *6*	809.355	9/2⁻	0.0	7/2⁻	M1+E2	0.46	0.00608	%Iγ=0.0376 *15* α(K)=0.00519 *8*; α(L)=0.000703 *10*; α(M)=0.0001503 *21* α(N)=3.41×10⁻⁵ *5*; α(O)=5.11×10⁻⁶ *8*; α(P)=3.21×10⁻⁷ *5* α(K)exp=0.0063 *9* (1989Ad09). δ: from 1989Ad10.
ˣ829.0 *7*									ce(K)=0.00033 (1965Ad05)
846.242 *11*	0.261 *9*	1043.528	1/2⁻,3/2⁻	197.284	3/2⁻	M1+E2	−0.24 *6*	0.00574 *11*	%Iγ=0.0628 *22* α(K)=0.00491 *9*; α(L)=0.000658 *12*; α(M)=0.0001406 *24* α(N)=3.19×10⁻⁵ *6*; α(O)=4.80×10⁻⁶ *9*; α(P)=3.04×10⁻⁷ *6* α(K)exp=0.0048 *6* (1989Ad09). δ: from 1989Ad10.
856.929 *5*	10.2 *3*	1054.218	3/2⁺	197.284	3/2⁻	E1		1.39×10⁻³	%Iγ=2.46 *7* α(K)=0.001191 *17*; α(L)=0.0001540 *22*; α(M)=3.27×10⁻⁵ *5* α(N)=7.40×10⁻⁶ *11*; α(O)=1.107×10⁻⁶ *16*; α(P)=6.88×10⁻⁸ *10* α(K)exp=0.00124 *8* (1989Ad09).
ˣ867.9 *7*									ce(K)=0.00027 (1965Ad05)
879.761 *8*	0.742 *23*	1077.049	5/2⁻	197.284	3/2⁻	M1+E2	−0.124 *7*	0.00531	%Iγ=0.179 *6* α(K)=0.00454 *7*; α(L)=0.000607 *9*; α(M)=0.0001297 *19* α(N)=2.94×10⁻⁵ *5*; α(O)=4.43×10⁻⁶ *7*; α(P)=2.82×10⁻⁷ *4* α(K)exp=0.00451 *27* (1989Ad09). δ: from 1989Ad10.

$^{147}_{62}Sm_{85}$-6

γ(^{147}Sm) (continued)

E_γ [‡]	I_γ [‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [†@]	α [a]	Comments
922.36 *12*	0.0097 *21*	1043.528	1/2⁻,3/2⁻	121.212	5/2⁻				%Iγ=0.0023 *5*
933.005 *8*	13.0 *4*	1054.218	3/2⁺	121.212	5/2⁻	E1		1.18×10^{-3}	%Iγ=3.13 *10* α(K)=0.001011 *15*; α(L)=0.0001303 *19*; α(M)=2.77×10^{-5} *4* α(N)=6.26×10^{-6} *9*; α(O)=9.37×10^{-7} *14*; α(P)=5.85×10^{-8} *9* α(K)exp=0.00111 *7* (1989Ad09).
942.177 *7*	0.695 *21*	1063.390	5/2⁺	121.212	5/2⁻	E1		1.15×10^{-3}	%Iγ=0.167 *5* α(K)=0.000992 *14*; α(L)=0.0001278 *18*; α(M)=2.72×10^{-5} *4* α(N)=6.14×10^{-6} *9*; α(O)=9.19×10^{-7} *13*; α(P)=5.74×10^{-8} *8* α(K)exp=0.00160 *21* (1989Ad09).
955.832 *5*	14.5 *4*	1077.049	5/2⁻	121.212	5/2⁻	M1+E2	+0.16 *4*	0.00434 *7*	%Iγ=3.49 *10* α(K)=0.00371 *6*; α(L)=0.000495 *8*; α(M)=0.0001057 *16* α(N)=2.40×10^{-5} *4*; α(O)=3.61×10^{-6} *6*; α(P)=2.30×10^{-7} *4* α(K)exp=0.00363 *21* (1989Ad09). Additional information 1.
[x]964.0 *8*									ce(K)=0.00022 (1965Ad05)
982.97 *5*	0.0336 *19*	1180.253	5/2⁺	197.284	3/2⁻				%Iγ=0.0081 *5*
985.34 *12*	0.0148 *13*	1106.861	(3/2⁻ to 9/2⁻)	121.212	5/2⁻				%Iγ=0.00356 *31*
1022.47 *4*	0.0344 *19*	1219.797	1/2⁺	197.284	3/2⁻				%Iγ=0.0083 *5*
1054.35 *24*	0.008 *5*	1054.218	3/2⁺	0.0	7/2⁻				%Iγ=0.0019 *12*
1059.041 *12*	0.275 *9*	1180.253	5/2⁺	121.212	5/2⁻				%Iγ=0.0662 *22*
1063.380 *9*	0.591 *18*	1063.390	5/2⁺	0.0	7/2⁻	E1		9.20×10^{-4}	%Iγ=0.142 *4* α(K)=0.000791 *11*; α(L)=0.0001015 *15*; α(M)=2.15×10^{-5} *3* α(N)=4.88×10^{-6} *7*; α(O)=7.30×10^{-7} *11*; α(P)=4.59×10^{-8} *7* α(K)exp=0.00056 *10* (1989Ad09).
1077.043 *6*	26.1 *12*	1077.049	5/2⁻	0.0	7/2⁻	M1+E2	−0.071 *5*	0.00330	%Iγ=6.28 *29* α(K)=0.00282 *4*; α(L)=0.000374 *6*; α(M)=7.99×10^{-5} *12* α(N)=1.81×10^{-5} *3*; α(O)=2.73×10^{-6} *4*; α(P)=1.743×10^{-7} *25* I_γ: weighted average of 23.3 *7* (1989Ad09) and 26.6 *3* (2014Mi17). α(K)exp=0.00279 *14*. δ: from 1989Ad10.
1106.863 *17*	0.118 *4*	1106.861	(3/2⁻ to 9/2⁻)	0.0	7/2⁻	(E2(+M1))		0.0026 *6*	%Iγ=0.0284 *10*

$^{147}_{62}Sm_{85}$-7

γ(^{147}Sm) (continued)

E_γ ‡	I_γ ‡&	E_i(level)	J^π_i	E_f	J^π_f	Mult.@	δ†@	α a	Comments
									α(K)=0.0022 *5*; α(L)=0.00029 *6*; α(M)=6.3×10^{-5} *13* α(N)=1.4×10^{-5} *3*; α(O)=2.1×10^{-6} *5*; α(P)=1.3×10^{-7} *4*; α(IPF)=4.27×10^{-7} *16* Mult.: from Adopted Gammas.
1120.387 *9*	0.691 *21*	1317.677	1/2⁻,3/2⁻,5/2⁻	197.284	3/2⁻	M1(+E2)	−0.018 *17*	0.00301	%Iγ=0.166 *5* α(K)=0.00258 *4*; α(L)=0.000341 *5*; α(M)=7.28×10^{-5} *11* α(N)=1.652×10^{-5} *24*; α(O)=2.49×10^{-6} *4*; α(P)=1.591×10^{-7} *23*; α(IPF)=7.24×10^{-7} *11* α(K)exp=0.026 *6* (1989Ad09). δ: from 1989Ad10.
1152.330 *26*	0.0320 *15*	1349.650	(3/2⁻,5/2⁻)	197.284	3/2⁻				%Iγ=0.0077 *4*
ˣ1158.2 *9*	0.03 *2*								%Iγ=0.007 *5* α(K)exp≈0.01 α(K)exp: based on ce(K)=0.0003 (1965Ad05).
1172.63 *6*	0.0151 *18*	1172.66	(⁻)	0.0	7/2⁻				%Iγ=0.0036 *4*
ˣ1172.81 *12*	0.015 *2*								%Iγ=0.0036 *5*
1180.231 *10*	0.686 *21*	1180.253	5/2⁺	0.0	7/2⁻	E1		7.79×10^{-4}	%Iγ=0.165 *5* α(K)=0.000655 *10*; α(L)=8.37×10^{-5} *12*; α(M)=1.776×10^{-5} *25* α(N)=4.02×10^{-6} *6*; α(O)=6.03×10^{-7} *9*; α(P)=3.80×10^{-8} *6*; α(IPF)=1.83×10^{-5} *3* α(K)exp=0.00066 *16* (1989Ad09).
1196.858 *11*	0.98 *3*	1318.076	3/2⁻,5/2⁻	121.212	5/2⁻	E2		1.72×10^{-3}	%Iγ=0.236 *7* α(K)=0.001462 *21*; α(L)=0.000200 *3*; α(M)=4.29×10^{-5} *6* α(N)=9.70×10^{-6} *14*; α(O)=1.444×10^{-6} *21*; α(P)=8.71×10^{-8} *13*; α(IPF)=5.38×10^{-6} *8* α(K)exp=0.00100 *19* (1989Ad09).
1251.841 *24*	0.291 *10*	1449.113	7/2⁻	197.284	3/2⁻				%Iγ=0.0701 *25*
1255.930 *8*	3.44 *10*	1453.220	3/2⁻	197.284	3/2⁻	M1+E2		0.0019 *4*	%Iγ=0.828 *25* α(K)=0.0017 *4*; α(L)=0.00022 *4*; α(M)=4.7×10^{-5} *9* α(N)=1.07×10^{-5} *20*; α(O)=1.6×10^{-6} *3*; α(P)=1.00×10^{-7} *22*; α(IPF)=1.36×10^{-5} *5* α(K)exp=0.0015 *4* (1989Ad09).
1274.592 *14*	0.186 *6*	1471.885	⁻	197.284	3/2⁻	E2		1.53×10^{-3}	%Iγ=0.0448 *15* α(K)=0.001291 *18*; α(L)=0.0001754 *25*; α(M)=3.75×10^{-5} *6* α(N)=8.48×10^{-6} *12*; α(O)=1.265×10^{-6} *18*; α(P)=7.69×10^{-8} *11*; α(IPF)=1.606×10^{-5} *23* α(K)exp=0.0012 *4* (1989Ad09).

$^{147}_{62}Sm_{85}$-8

γ(^{147}Sm) (continued)

Eγ[‡]	Iγ[‡&]	Ei(level)	Jπi	Ef	Jπf	Mult.[@]	δ[†@]	α[a]	Comments
1317.853 *13*	0.539 *17*	1317.859	5/2⁻,7/2⁻,9/2⁻	0.0	7/2⁻	M1		0.00209	%Iγ=0.130 *4* α(K)=0.001766 *25*; α(L)=0.000233 *4*; α(M)=4.97×10^{-5} *7* α(N)=1.126×10^{-5} *16*; α(O)=1.698×10^{-6} *24*; α(P)=1.088×10^{-7} *16*; α(IPF)=2.57×10^{-5} *4* α(K)exp=0.0022 *5* (1989Ad09).
1327.98 *5*	0.050 *7*	1449.113	7/2⁻	121.212	5/2⁻				%Iγ=0.0120 *17*
1331.997 *13*	1.24 *4*	1453.220	3/2⁻	121.212	5/2⁻	M1+E2	1.7 *11*	0.0016 *3*	%Iγ=0.299 *10* α(K)=0.0013 *3*; α(L)=0.00018 *4*; α(M)=3.8×10^{-5} *7* α(N)=8.6×10^{-6} *16*; α(O)=1.28×10^{-6} *24*; α(P)=8.0×10^{-8} *17*; α(IPF)=2.75×10^{-5} *11* Mult.,δ: from Adopted Gammas; pure M1 from α(K)exp. α(K)exp=0.0022 *5* (1989Ad09).
1350.198 *14*	0.524 *16*	1471.417	3/2⁻,5/2⁻,7/2⁻	121.212	5/2⁻	M1+E2		0.0017 *3*	%Iγ=0.126 *4* α(K)=0.0014 *3*; α(L)=0.00019 *4*; α(M)=4.0×10^{-5} *7* α(N)=9.1×10^{-6} *16*; α(O)=1.36×10^{-6} *25*; α(P)=8.6×10^{-8} *18*; α(IPF)=3.23×10^{-5} *13* α(K)exp=0.0014 *3* (1989Ad09).
1427.408 *17*	0.441 *14*	1548.634	3/2⁺,5/2⁺	121.212	5/2⁻	(E1)		7.01×10^{-4}	%Iγ=0.1062 *35* α(K)=0.000470 *7*; α(L)=5.96×10^{-5} *9*; α(M)=1.264×10^{-5} *18* α(N)=2.86×10^{-6} *4*; α(O)=4.30×10^{-7} *6*; α(P)=2.73×10^{-8} *4*; α(IPF)=0.0001561 *22* α(K)exp=0.0014 *4* (1989Ad09). Mult.: from 1989Ad10; they propose M1(E1), but M1 is not compatible with the decay scheme.
1449.106 *12*	0.82 *3*	1449.113	7/2⁻	0.0	7/2⁻	M1		1.72×10^{-3}	%Iγ=0.197 *7* α(K)=0.001420 *20*; α(L)=0.000187 *3*; α(M)=3.98×10^{-5} *6* α(N)=9.03×10^{-6} *13*; α(O)=1.362×10^{-6} *19*; α(P)=8.73×10^{-8} *13*; α(IPF)=6.37×10^{-5} *9* α(K)exp=0.0016 *3* (1989Ad09).
1453.24 *4*	0.096 *4*	1453.220	3/2⁻	0.0	7/2⁻				%Iγ=0.0231 *10*
[x]1467.1 *12*									ce(K)=0.00020 (1965Ad05)
1471.90 *4*	0.0110 *5*	1471.885	⁻	0.0	7/2⁻				%Iγ=0.00265 *12*
1479.71 *3*	0.0161 *6*	1600.937	3/2$^{(-)}$,5/2$^{(+)}$	121.212	5/2⁻				%Iγ=0.00388 *15*
[x]1482 *1*	0.015 *4*								%Iγ=0.0036 *10*
1520.58 *13*	0.0016 *3*	1641.95		121.212	5/2⁻				%Iγ=0.00039 *7*
[x]1542.0 *12*									ce(K)=0.00008 (1965Ad05)
1548.50 *16*	0.0017 *3*	1548.634	3/2⁺,5/2⁺	0.0	7/2⁻				%Iγ=0.00041 *7*

$^{147}_{62}$Sm$_{85}$-9

$\gamma(^{147}Sm)$ (continued)

E_γ[‡]	I_γ[‡&]	E_i(level)	J^π_i	E_f	J^π_f	Comments
1601.00 *5*	0.0308 *12*	1600.937	$3/2^{(-)},5/2^{(+)}$	0.0	$7/2^-$	%Iγ=0.00742 *29*
1641.98 *7*	0.0050 *3*	1641.95		0.0	$7/2^-$	%Iγ=0.00120 *7*

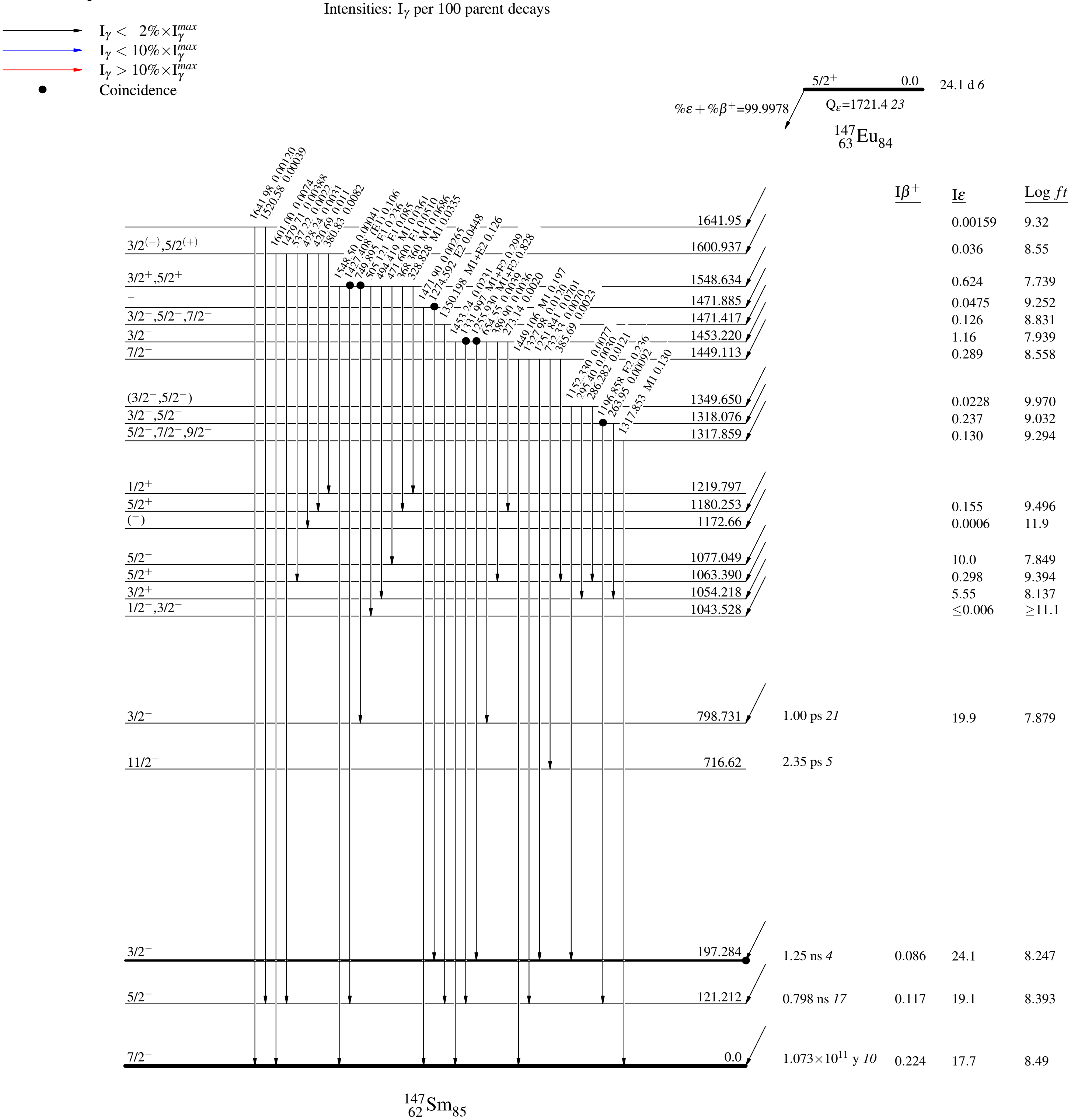
† Additional information 2.
‡ From 1989Ad09, except if noted.
\# Differ by 3σ from calculated value.
@ From Adopted Gammas. Most values were deduced in this dataset from α(K)exp normalized to α(K)(197γ)=0.157 (E2 theory) (1989Ad09), unless otherwise noted.
& For absolute intensity per 100 decays, multiply by 0.2408 *19*.
a Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
x γ ray not placed in level scheme.

$^{147}_{62}Sm_{85}$-10

^{147}Eu ε decay (24.1 d) 1989Ad09,1989Ad10

Decay Scheme

Intensities: I_γ per 100 parent decays



^{147}Eu ε decay (24.1 d) 1989Ad09,1989Ad10

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays