^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01

History

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

Parent: ^{147}Gd: E=0.0; $J^\pi=7/2^-$; $T_{1/2}$=38.06 h *12*; Q(ε)=2187.7 *25*; %ε+%$β^+$ decay=100.0

^{147}Gd-E,J^π,$T_{1/2}$: from ^{147}Gd Adopted Levels.

^{147}Gd-Q(ε): From 2021Wa16.

1977Gr23: measured Eγ, Iγ, I(ce).

1980Vy01: measured Eγ, Iγ, I(ce), ceγ, Eβ+, $Iβ^+$.

Others: 1951Ho30, 1956St23, 1957Sh46, 1958An36, 1958Ad38, 1958An36, 1959Dz05, 1960Be27, 1960Bo34, 1961So03, 1962Be20, 1962Sc09, 1963Da16, 1963Fr02, 1965Gr36, 1966Av02, 1968Mi12, 1969Ad04, 1969Av04, 1969Ch32, 1970Kl07, 1971Va37, 1972Gr18, 1975VyZV, 1985JuZY, 1996Vy02.

Eβ, Iβ measurements: 1996Vy02, 1956St23, 1960Bo34, 1965Gr36, 1969Ad04.

γγ coin: 1959Dz05, 1961So03, 1968Mi12, 1972Gr18.

^{147}Eu Levels

E(level)[†‡]	J^π[#]	$T_{1/2}$	Comments
0.0	$5/2^+$	24.1 d *6*	$T_{1/2}$: from Adopted Levels.
229.323 *19*	$7/2^+$	0.18 ns *2*	$T_{1/2}$: 0.18 ns *2* (1962Be20) γγ(t).
625.27 *5*	$11/2^-$	0.765 μs *15*	$T_{1/2}$: 0.765 μs *15* (1970Kl07) γγ(t); others: 0.80 μs *6* (1961So03) γγ(t); 0.71 μs *4* (1960Be27) γγ(t). g-factor=+1.09 *6* (1970Kl07) γγ(θ,H,t).
755.10 *5*	$3/2^+$,$5/2^+$		
776.39 *5*	$9/2^+$		
778.01 *5*	$7/2^+$		
861.63 *5*	$5/2^+$,$7/2^+$		
995.17 *5*	$9/2^-$		
1007.41[@] *10*	$5/2^+$,$7/2^+$,$9/2^+$		
1069.39 *6*	$7/2^-$		
1122.83 *6*	$7/2^+$		
1212.93 *11*	$5/2^-$,$7/2^-$		
1235.77 *5*	$7/2^-$		
1244.31 *7*	$11/2^-$		
1337.78[@] *8*	$5/2^+$,$7/2^+$,$9/2^+$		
1360.34 *9*	$9/2^-$		J^π: 5/2,7/2,9/2 allowed by E1 to $7/2^+$, but only $9/2^-$ is consistent with (1131γ)(229γ)(θ) in 1971Va37.
1378.14 *11*	$^+$		
1389.61 *8*	$5/2^-$,$7/2^-$,$9/2^-$		
1399.26 *8*	$3/2^+$		
1474.82 *14*	$(3/2^+)$		
1554.29 *5*	$9/2^-$		
1565.15 *10*	$7/2^+$,$9/2^+$		
1696.21 *12*	$7/2^+$		
1771.88[@] *5*	$5/2^+$,$7/2^+$,$9/2^+$		
1773.91 *21*	$5/2^{(-)}$ to $9/2^{(-)}$		
1795.41 *9*	$5/2^-$,$7/2^-$		
1807.34 *12*	$5/2^+$,$7/2^+$,$9/2^+$		
1816.19 *11*	$5/2^+$,$7/2^+$		
1838.45[@] *12*			
1858.19 *11*	$7/2^-$,$9/2^+$		
1874.66[@] *13*	$7/2^-$,$9/2^-$		
1905.64 *13*	$5/2^+$		
1910.10 *22*	5/2,7/2,$9/2^+$		
1950.59 *9*	$5/2^-$,$7/2^-$,$9/2^-$		

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^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

^{147}Eu Levels (continued)

E(level)[†‡]	Jπ[#]
1961.24 *25*	5/2+,7/2,9/2+
1986.88 *18*	5/2(−),7/2,9/2+
1995.42 *15*	7/2−,9/2−
2165.44 *12*	5/2−,7/2−,9/2−

† From least-squares fit to Eγ's.
‡ Observed by 1977Gr23, unless noted otherwise.
# Adopted values, unless otherwise noted.
@ Observed by 1980Vy01.

ε,β+ radiations

E(decay)	E(level)	Iβ+ [†]	Iε[†]	Log *ft*	I(ε+β+)[†]	Comments
(22 *3*)	2165.44		0.41 *5*	4.03 *16*	0.41 *5*	εL=0.63 *3*; εM+=0.37 *3*
(192 *3*)	1995.42		0.260 *20*	7.00 *4*	0.260 *20*	εK=0.7663 *15*; εL=0.1787 *11*; εM+=0.0550 *4*
(201 *3*)	1986.88		0.28 *7*	7.01 *11*	0.28 *7*	εK=0.7708 *13*; εL=0.1753 *10*; εM+=0.0539 *4*
(226 *3*)	1961.24		0.056 *21*	7.84 *17*	0.056 *21*	εK=0.7818 *10*; εL=0.1672 *7*; εM+=0.05099 *25*
(237 *3*)	1950.59		0.95 *10*	6.66 *5*	0.95 *10*	εK=0.7855 *9*; εL=0.1645 *6*; εM+=0.05003 *22*
(278 *3*)	1910.10		0.19 *4*	7.52 *10*	0.19 *4*	εK=0.7963 *6*; εL=0.1565 *5*; εM+=0.04722 *15*
(282 *3*)	1905.64		1.63 *10*	6.60 *3*	1.63 *10*	εK=0.7972 *6*; εL=0.1558 *4*; εM+=0.04697 *14*
(313 *3*)	1874.66		0.41 *5*	7.31 *6*	0.41 *5*	εK=0.8030 *5*; εL=0.1515 *3*; εM+=0.04548 *11*
(330 *3*)	1858.19		0.174 *13*	7.73 *4*	0.174 *13*	εK=0.8055 *4*; εL=0.1497 *3*; εM+=0.04482 *10*
(349 *3*)	1838.45		0.061 *16*	8.24 *12*	0.061 *16*	εK=0.8082 *4*; εL=0.14769 *24*; εM+=0.04414 *9*
(372 *3*)	1816.19		1.32 *9*	6.97 *3*	1.32 *9*	εK=0.8108 *3*; εL=0.14575 *21*; εM+=0.04346 *8*
(380 *3*)	1807.34		0.84 *20*	7.19 *11*	0.84 *20*	εK=0.8117 *3*; εL=0.14505 *20*; εM+=0.04322 *7*
(392 *3*)	1795.41		1.47 *9*	6.98 *3*	1.47 *9*	εK=0.8129 *3*; εL=0.14417 *18*; εM+=0.04291 *7*
(414 *3*)	1773.91		0.76 *4*	7.315 *24*	0.76 *4*	εK=0.8149 *3*; εL=0.14273 *16*; εM+=0.04241 *6*
(416 *3*)	1771.88		1.30 *7*	7.086 *25*	1.30 *7*	εK=0.8150 *3*; εL=0.14260 *16*; εM+=0.04237 *6*
(491 *3*)	1696.21		0.32 *22*	7.9 *3*	0.32 *22*	εK=0.8203 *2*; εL=0.1387 *1*; εM+=0.04101 *4*
(623 *3*)	1565.15		1.49 *12*	7.41 *4*	1.49 *12*	εK=0.82609 *9*; εL=0.13439 *7*; εM+=0.03952 *3*
(633 *3*)	1554.29		37.1 *18*	6.029 *22*	37.1 *18*	εK=0.8265; εL=0.13412 *7*; εM+=0.03943 *3*
(713 *3*)	1474.82					I(ε+β+): GTOL upper limit (method 1): 0.02.
(788 *3*)	1399.26					I(ε+β+): GTOL upper limit (method 1): 0.07.
(798 *3*)	1389.61		0.65 *6*	8.00 *4*	0.65 *6*	εK=0.8307; εL=0.13099 *4*; εM+=0.03835 *2*
(810 *3*)	1378.14		0.27 *4*	8.39 *7*	0.27 *4*	εK=0.8309; εL=0.13082 *4*; εM+=0.03829 *2*
(827 *3*)	1360.34		6.1 *6*	7.06 *5*	6.1 *6*	εK=0.8312; εL=0.13057 *4*; εM+=0.03821 *2*
(850 *3*)	1337.78		0.25 *4*	8.47 *7*	0.25 *4*	εK=0.8316; εL=0.13028 *4*; εM+=0.03811 *2*
(943 *3*)	1244.31					I(ε+β+): GTOL upper limit (method 1): 0.20.
(952 *3*)	1235.77		3.5 *3*	7.43 *4*	3.5 *3*	εK=0.8332; εL=0.12911 *3*; εM+=0.037704 *9*
(975 *3*)	1212.93		0.28 *6*	8.55 *10*	0.28 *6*	εK=0.8335; εL=0.12888 *3*; εM+=0.037627 *9*
(1065 *3*)	1122.83		10.2 *6*	7.07 *3*	10.2 *6*	εK=0.8346; εL=0.12809 *2*; εM+=0.037355 *7*
(1118 *3*)	1069.39		2.7 *6*	7.69 *10*	2.7 *6*	εK=0.8351; εL=0.12768 *2*; εM+=0.037215 *7*
(1180 *3*)	1007.41		0.12 *7*	9.1 *3*	0.12 *7*	εK=0.8357; εL=0.12726 *2*; εM+=0.037069 *6*
(1193 *3*)	995.17		19.8 *13*	6.88 *3*	19.8 *13*	εK=0.8358; εL=0.12718 *2*; εM+=0.037042 *6*
(1326 *3*)	861.63		0.39 *18*	8.68 *20*	0.39 *18*	εK=0.8365; εL=0.12638 *2*; εM+=0.036770 *5*
(1410 *3*)	778.01	0.0033 *5*	2.9 *4*	7.86 *6*	2.9 *4*	av Eβ=187.8 *12*; εK=0.8364; εL=0.12589 *2*; εM+=0.036607 *5*
(1411 *3*)	776.39	0.0008 *5*	0.7 *4*	8.48 *25*	0.7 *4*	av Eβ=188.5 *12*; εK=0.8364; εL=0.12588 *2*; εM+=0.036604 *5*
(1433 *3*)	755.10	0.00066 *24*	0.46 *17*	8.68 *16*	0.46 *17*	av Eβ=198.0 *12*; εK=0.8363; εL=0.12575 *2*; εM+=0.036562 *5*
(1562 *3*)	625.27	≤0.011	≤2.6	≥8.0	≤2.6	av Eβ=255.3 *11*; εK=0.8345; εL=0.12488 *2*;

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^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
						εM+=0.036282 *6*
(1958 *3*)	229.323	≤0.2	≤6	≥7.9	≤6	I(ε+β+): GTOL upper limit (method 1): 3.48. av Eβ=429.0 *11*; εK=0.8125 *3*; εL=0.12028 *5*; εM+=0.03489 *2* Iε: %β+=0.14 *3* (1969Ad04).
(2187.7 *25*)	0.0	0.04 *1*	0.6 *2*	8.97 *15*	0.6 *2*	I(ε+β+): GTOL upper limit (method 1): 7.42. av Eβ=530.0 *11*; εK=0.7844 *4*; εL=0.11560 *6*; εM+=0.03351 *2* E(decay): 2185 *5* (1980Vy01). I(ε+β+): from 1980Vy01.

† Absolute intensity per 100 decays.

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu)

Iγ normalization: based on measured I(ε+β$^+$)=0.6% *2* to g.s. (1980Vy01) one obtains Iγ normalization=0.099 *4*.
α(K)exp from 1977Gr23 normalized to α(K)(625.2γ)=0.015 (E3 theory); those from 1980Vy01 normalized to α(K)(395.94γ)=0.128 (M2 theory).
Relative ce(K) are normalized to I(ce(K) 625γ)=0.66 (1977Gr23). I(ce) data are from 1972Gr18, 1969Av04 and others quoted by 1977Gr23.
Annihilation radiation was reported by 1977Gr23 with an intensity of 5.2 *10* (relative to 229γ).
Unplaced γ′s are from 1977Gr23.

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	δ	α [g]	$I_{(\gamma+ce)}$ [f]	Comments
[x]64.4	1.06 *16*					M1+E2	0.292 *+13−6*	7.06 *11*	8.7 *10*	%Iγ=0.107 *16* ce(K)/(γ+ce)=0.664 *7*; ce(L)/(γ+ce)=0.165 *6*; ce(M)/(γ+ce)=0.0370 *15*; ce(N+)/(γ+ce)=0.0096 *4* ce(N)/(γ+ce)=0.0083 *4*; ce(O)/(γ+ce)=0.00123 *5*; ce(P)/(γ+ce)=7.28×10^{-5} *15* I_γ: from ce(L1)=0.75 *9*, α(L1)=7.05. δ: from L1/L2=(0.75 *9*)/(0.34 *13*). $I_{(\gamma+ce)}$: from ce(L1), α(L1) and α. ce(K)=0.26 *6*.
[x]102.8 *2*										
106.52 *2*	0.9 *3*	861.63	5/2$^+$,7/2$^+$	755.10	3/2$^+$,5/2$^+$	M1,E2		1.73 *20*		%Iγ=0.089 *30* α(K)=1.15 *16*; α(L)=0.5 *3*; α(M)=0.10 *7*; α(N+..)=0.027 *16* α(N)=0.023 *15*; α(O)=0.0033 *19*; α(P)=0.00011 *4* α(K)exp=1.1 *4*
111.17 *5*	2.9 *8*	1807.34	5/2$^+$,7/2$^+$,9/2$^+$	1696.21	7/2$^+$	M1+E2	0.41 *+14−6*	1.40 *4*		%Iγ=0.29 *8* α(K)=1.11 *3*; α(L)=0.23 *4*; α(M)=0.051 *10*; α(N+..)=0.0133 *23* α(N)=0.0114 *21*; α(O)=0.0017 *3*; α(P)=0.000119 *6* α(K)exp=0.84 *30*; ce(K)=2.4 *3*; ce(L1)=0.23 *3*; ce(L2)=0.08 *3* δ: from K:L1:L2 (1977Gr23). 1966Av02 obtain 0.44.
164.6 *1*	0.37[#] *8*	1554.29	9/2$^-$	1389.61	5/2$^-$,7/2$^-$,9/2$^-$	M1,E2 [d]		0.434 *19*		%Iγ=0.037 *8* α(K)=0.33 *6*; α(L)=0.08 *3*; α(M)=0.018 *7*; α(N+..)=0.0048 *17* α(N)=0.0041 *15*; α(O)=0.00060 *18*;

$^{147}_{63}Eu_{84}$-4

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[g]	Comments
									α(P)=3.2×10^{-5} *10* α(K)exp=0.266 *97* (1980Vy01); ce(K)=0.12 (1977Gr23).
166.34 *10*	3.1 *8*	1235.77	7/2$^-$	1069.39	7/2$^-$	M1+E2	0.58 *5*	0.429 *7*	%Iγ=0.31 *8* α(K)=0.345 *6*; α(L)=0.0656 *19*; α(M)=0.0145 *5*; α(N+..)=0.00383 *12* α(N)=0.00329 *10*; α(O)=0.000498 *13*; α(P)=3.61×10^{-5} *8* α(K)exp=0.35 *8*; ce(K)=1.07 *13*; ce(L1)=0.10 *1*; ce(L2)=0.031 *15* δ: from K:L1:L2.
176.7 *1*	0.33 *8*	1389.61	5/2$^-$,7/2$^-$,9/2$^-$	1212.93	5/2$^-$,7/2$^-$	(M1)		0.370	%Iγ=0.033 *8* α(K)=0.313 *5*; α(L)=0.0444 *7*; α(M)=0.00960 *14*; α(N+..)=0.00258 *4* α(N)=0.00220 *3*; α(O)=0.000349 *5*; α(P)=3.46×10^{-5} *5* α(K)exp=0.51 *17*
[x]209.2 *1*									ce(K)=0.19 *3*. Iγ(209.2γ+210.4γ)<0.6.
[x]210.4 *1*									ce(K)=0.15 *3*.
[x]213.5 *2*									ce(K)=0.07 *2*.
214.95[#] *5*	2.32[#] *20*	1337.78	5/2$^+$,7/2$^+$,9/2$^+$	1122.83	7/2$^+$	M1,E2[d]		0.193 *24*	%Iγ=0.230 *22* α(K)=0.15 *3*; α(L)=0.031 *6*; α(M)=0.0070 *14*; α(N+..)=0.0018 *4* α(N)=0.0016 *3*; α(O)=0.00023 *4*; α(P)=1.5×10^{-5} *5* α(K)exp=0.15 *5* (1977Gr23), α(K)exp=0.234 *25* (1980Vy01).
[x]216.9 *1*	12.4 *17*					E1		0.0354	%Iγ=1.23 *18* α(K)=0.0300 *5*; α(L)=0.00419 *6*; α(M)=0.000900 *13*; α(N+..)=0.000238 *4* α(N)=0.000204 *3*; α(O)=3.15×10^{-5} *5*; α(P)=2.76×10^{-6} *4* α(K)exp=0.034 *6*.
217.2 *1*	5.0 *17*	995.17	9/2$^-$	778.01	7/2$^+$	E1		0.0352	%Iγ=0.50 *17* α(K)=0.0299 *5*; α(L)=0.00417 *6*; α(M)=0.000897 *13*; α(N+..)=0.000238 *4* α(N)=0.000203 *3*; α(O)=3.14×10^{-5} *5*; α(P)=2.76×10^{-6} *4* α(K)exp=0.032 *10*
229.32 *2*	607 *30*	229.323	7/2$^+$	0.0	5/2$^+$	M1+E2	+0.13 *2*	0.180	%Iγ=60 *4* α(K)=0.1526 *22*; α(L)=0.0217 *3*; α(M)=0.00470 *7*; α(N+..)=0.001262 *18* α(N)=0.001075 *16*; α(O)=0.0001704 *24*;

$^{147}_{63}Eu_{84}$-5

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[g]	Comments
									α(P)=1.674×10^{-5} *24* α(K)exp=0.145 *10*; ce(K)=86.5 *40* δ: +0.13 *2* from (396γ)(229γ)(θ): A_2=−0.016 *8* (1971Va37); +0.10 *4* from (766γ)(229γ)(θ): A_2=+0.022 *13* (1971Va37); +0.14 *5* from (1131γ)(229γ)(θ): A_2=+0.009 *14* (1971Va37). K:L1:L2:L3=100:14.2:≤1.8:≤0.23 (1966Av02). α(K)exp: other: 0.16 *2* (1958Ad38).
240.64 *5*	14.8 *8*	1235.77	7/2$^-$	995.17	9/2$^-$	M1		0.1588	%Iγ=1.47 *10* α(K)=0.1347 *19*; α(L)=0.0190 *3*; α(M)=0.00409 *6*; α(N+..)=0.001100 *16* α(N)=0.000937 *14*; α(O)=0.0001488 *21*; α(P)=1.480×10^{-5} *21* α(K)exp=0.115 *15* (1966Av02) K:L1:L2:L3=100:13:≤0.9:≤ 0.55 (1966Av02).
249.15 *10*	3.8 *2*	1244.31	11/2$^-$	995.17	9/2$^-$	M1,E2		0.125 *20*	%Iγ=0.376 *25* α(K)=0.100 *23*; α(L)=0.0189 *18*; α(M)=0.0042 *5*; α(N+..)=0.00110 *11* α(N)=0.00095 *10*; α(O)=0.000143 *9*; α(P)=1.0×10^{-5} *4* α(K)exp=0.11 *4*
252.30[#] *8*	1.2[#] *6*	1007.41	5/2$^+$,7/2$^+$,9/2$^+$	755.10	3/2$^+$,5/2$^+$	M1,E2[d]		0.120 *20*	%Iγ=0.12 *6* α(K)=0.097 *22*; α(L)=0.0182 *16*; α(M)=0.0040 *5*; α(N+..)=0.00106 *10* α(N)=0.00091 *9*; α(O)=0.000138 *8*; α(P)=1.0×10^{-5} *4* α(K)exp=0.07 *3* (1980Vy01)
261.1 *1*	19.0 *9*	1122.83	7/2$^+$	861.63	5/2$^+$,7/2$^+$	M1+E2	0.6 *+5−3*	0.118 *11*	%Iγ=1.88 *12* α(K)=0.097 *12*; α(L)=0.0157 *7*; α(M)=0.00344 *19*; α(N+..)=0.00092 *4* α(N)=0.00078 *4*; α(O)=0.000121 *3*; α(P)=1.04×10^{-5} *17* α(K)exp=0.096 *9*
[x]286.6 *3*	1.80[@] *10*								%Iγ=0.178 *12* ce(K)=0.09 *4*
[x]287.4 *1*	0.3[@] *4*								%Iγ=0.03 *4* ce(K)=0.06 *4*
291.7 *2*	1.9 *4*	1069.39	7/2$^-$	778.01	7/2$^+$	[E1]		0.01644	%Iγ=0.19 *4* α(K)=0.01399 *20*; α(L)=0.00192 *3*; α(M)=0.000412 *6*; α(N+..)=0.0001097 *16* α(N)=9.38×10^{-5} *14*; α(O)=1.458×10^{-5} *21*; α(P)=1.325×10^{-6} *19* Mult.: (E1) in 1977Gr23 but no ce observed.

$^{147}_{63}Eu_{84}$-6

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[g]	Comments
293.05[#] *7*	0.92[#] *6*	1858.19	7/2⁻,9/2⁺	1565.15	7/2⁺,9/2⁺		0.06[e] *4*	%Iγ=0.091 *7*
297.4 *2*	3.4 *6*	1696.21	7/2⁺	1399.26	3/2⁺	E2	0.0598	%Iγ=0.34 *6* α(K)=0.0461 *7*; α(L)=0.01069 *16*; α(M)=0.00240 *4*; α(N+..)=0.000624 *9* α(N)=0.000540 *8*; α(O)=7.92×10⁻⁵ *12*; α(P)=4.28×10⁻⁶ *6* α(K)exp=0.047 *17*
309.96 *10*	40.5 *17*	1554.29	9/2⁻	1244.31	11/2⁻	M1	0.0806	%Iγ=4.01 *23* α(K)=0.0685 *10*; α(L)=0.00956 *14*; α(M)=0.00206 *3*; α(N+..)=0.000555 *8* α(N)=0.000472 *7*; α(O)=7.51×10⁻⁵ *11*; α(P)=7.50×10⁻⁶ *11* α(K)exp=0.066 *3*; K:L1:L2:L3=100:14:0.65:0.3 (1966Av02) δ: δ<0.14 (L2/L3 in 1966Av02).
318.60 *10*	21.0 *8*	1554.29	9/2⁻	1235.77	7/2⁻	M1(+E2)	0.062 *14*	%Iγ=2.08 *12* α(K)=0.051 *13*; α(L)=0.0086 *3*; α(M)=0.00189 *4*; α(N+..)=0.000501 *16* α(N)=0.000430 *11*; α(O)=6.6×10⁻⁵ *4*; α(P)=5.3×10⁻⁶ *18* α(K)exp: 0.055 *3* (1977Gr23); 0.061 *4* (1980Vy01). K:L1:L2:L3 = 100:11:≤1.4:≤0.6 (1966Av02). δ: δ≤0.35 (L2/L3 in 1966Av02).
327.07[#] *11*	1.34[#] *11*	2165.44	5/2⁻,7/2⁻,9/2⁻	1838.45			0.04[e] *3*	%Iγ=0.133 *12*
329.7[i] *10*	<0.29[i]	1337.78	5/2⁺,7/2⁺,9/2⁺	1007.41	5/2⁺,7/2⁺,9/2⁺	[M1,E2]	0.056 *13*	%Iγ=0.014 *14* α(K)=0.046 *12*; α(L)=0.0078 *4*; α(M)=0.00170 *6*; α(N+..)=0.000451 *21* α(N)=0.000387 *16*; α(O)=5.9×10⁻⁵ *5*; α(P)=4.8×10⁻⁶ *16* placement changed to this level by 1980Vy01 from 1399 level (1977Gr23); 1980Vy01 report Eγ=330.2 *3*, Iγ=0.38 *6*, which corresponds to 329.7γ doublet of 1977Gr23 (the other γ placed at 1565 level).
329.7[ik] *10*	<0.29[i]	1565.15	7/2⁺,9/2⁺	1235.77	7/2⁻			%Iγ=0.014 *14*
341.31[#] *13*	1.65[#] *19*	1816.19	5/2⁺,7/2⁺	1474.82	(3/2⁺)			%Iγ=0.163 *20* α(K)exp=0.026 *16* (1980Vy01). Mult.: (E1) based on α(K)exp in 1980Vy01. This value is not adopted since contradicts Δπ=no (see Adopted Levels).
341.8[k] *5*	1.65 *15*	1554.29	9/2⁻	1212.93	5/2⁻,7/2⁻			%Iγ=0.163 *16*
346.3 *3*	20.5 *8*	1122.83	7/2⁺	776.39	9/2⁺	M1	0.0602	%Iγ=2.03 *11* α(K)=0.0511 *8*; α(L)=0.00712 *10*; α(M)=0.001535 *22*; α(N+..)=0.000413 *6* α(N)=0.000352 *5*; α(O)=5.59×10⁻⁵ *8*; α(P)=5.59×10⁻⁶ *8* α(K)exp=0.060 *4*

$^{147}_{63}Eu_{84}$-7

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[g]	Comments
370.0 *1*	165 *6*	995.17	9/2⁻	625.27	11/2⁻	M1+E2	+0.07 *3*	0.0505 *8*	%Iγ=16.3 *9* α(K)=0.0429 *6*; α(L)=0.00597 *9*; α(M)=0.001287 *18*; α(N+..)=0.000346 *5* α(N)=0.000295 *5*; α(O)=4.69×10^{-5} *7*; α(P)=4.69×10^{-6} *7* α(K)exp=0.042 *2* (1966Av02) δ: from (370γ)(396γ)(θ): A_2=−0.17 *2* (1970Kl07) δ<0.20 from α(K)exp (1966Av02). K:L1:L2:L3=100:17:≤2.6:≤0.4 (1966Av02). α(K)exp: other: α(K)exp=0.051 *10* (1958Ad38).
[x]376.0 *5*	1.8 *1*								%Iγ=0.178 *12*
396.00 *10*	330 *15*	625.27	11/2⁻	229.323	7/2⁺	M2		0.1531	%Iγ=32.7 *20* α(K)=0.1264 *18*; α(L)=0.0208 *3*; α(M)=0.00459 *7*; α(N+..)=0.001235 *18* α(N)=0.001053 *15*; α(O)=0.0001660 *24*; α(P)=1.575×10^{-5} *22* α(K)exp=0.119 *7* (1966Av02) K:L1:L2:L3=100:16.4:1.8:≈0.3 (1966Av02). α(K)exp: Other: 0.15 *2* (1958Ad38).
404.0 *10*	0.3 *3*	1399.26	3/2⁺	995.17	9/2⁻	[E3]		0.0778 *13*	%Iγ=0.030 *30* α(K)=0.0538 *9*; α(L)=0.0186 *4*; α(M)=0.00430 *8*; α(N+..)=0.001112 *20* α(N)=0.000967 *18*; α(O)=0.0001395 *25*; α(P)=5.60×10^{-6} *9*
407.0 *10*	0.3 *3*	1807.34	5/2⁺,7/2⁺,9/2⁺	1399.26	3/2⁺			0.024[e] *17*	%Iγ=0.030 *30*
416.0 *10*	0.3 *3*	1816.19	5/2⁺,7/2⁺	1399.26	3/2⁺	[M1,E2]		0.030 *8*	%Iγ=0.030 *30* α(K)=0.025 *7*; α(L)=0.0039 *5*; α(M)=0.00085 *10*; α(N+..)=0.00023 *3* α(N)=0.000193 *24*; α(O)=3.0×10^{-5} *5*; α(P)=2.6×10^{-6} *9*
418.3 *10*	0.3 *3*	1807.34	5/2⁺,7/2⁺,9/2⁺	1389.61	5/2⁻,7/2⁻,9/2⁻	[E1,M2]		0.07 *7*	%Iγ=0.030 *30* α(K)=0.06 *5*; α(L)=0.009 *9*; α(M)=0.0020 *19*; α(N+..)=0.0005 *5* α(N)=0.0005 *5*; α(O)=7.E−5 *7*; α(P)=7.E−6 *7*
431.5 *5*	1.5 *7*	1554.29	9/2⁻	1122.83	7/2⁺	[E1]		0.00633	%Iγ=0.15 *7* α(K)=0.00540 *8*; α(L)=0.000727 *11*; α(M)=0.0001559 *23*; α(N+..)=4.16×10^{-5} *6* α(N)=3.55×10^{-5} *5*; α(O)=5.57×10^{-6} *8*; α(P)=5.25×10^{-7} *8*
433.0[k] *5*	0.8 *6*	1986.88	5/2(⁻),7/2,9/2⁺	1554.29	9/2⁻				%Iγ=0.08 *6*

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	α [g]	Comments
434.3# 6	0.35# 16	1771.88	5/2+,7/2+,9/2+	1337.78	5/2+,7/2+,9/2+	(M1) [d]	0.0334	%Iγ=0.035 16 α(K)=0.0284 5; α(L)=0.00393 6; α(M)=0.000846 13; α(N+..)=0.000228 4 α(N)=0.000194 3; α(O)=3.08×10^{-5} 5; α(P)=3.10×10^{-6} 5 α(K)exp=0.08 4 (1980Vy01).
458.0 5	0.5 5	1212.93	5/2−,7/2−	755.10	3/2+,5/2+	[E1]	0.00551	%Iγ=0.05 5 α(K)=0.00471 7; α(L)=0.000632 9; α(M)=0.0001354 20; α(N+..)=3.62×10^{-5} 6 α(N)=3.09×10^{-5} 5; α(O)=4.84×10^{-6} 7; α(P)=4.59×10^{-7} 7
460.39# 10	1.71# 8	1838.45		1378.14	+		0.017 [e] 11	%Iγ=0.169 10
460.6 [k] 5	1.3 7	1696.21	7/2+	1235.77	7/2−			%Iγ=0.13 7
484.9 1	29.0 14	1554.29	9/2−	1069.39	7/2−	M1	0.0252	%Iγ=2.87 18 α(K)=0.0215 3; α(L)=0.00295 5; α(M)=0.000636 9; α(N+..)=0.0001712 24 α(N)=0.0001457 21; α(O)=2.32×10^{-5} 4; α(P)=2.33×10^{-6} 4 α(K)exp=0.021 2 (1966Av02) K:L1:L2:L3=100:13:0.5:≤0.3 (1966Av02).
[x]490.6 10	0.33 10							%Iγ=0.033 10
496.2 10	0.5 2	1565.15	7/2+,9/2+	1069.39	7/2−	[E1]	0.00459	%Iγ=0.049 20 α(K)=0.00392 6; α(L)=0.000524 8; α(M)=0.0001124 17; α(N+..)=3.00×10^{-5} 5 α(N)=2.56×10^{-5} 4; α(O)=4.02×10^{-6} 6; α(P)=3.84×10^{-7} 6
506.0 10	0.5 3	1905.64	5/2+	1399.26	3/2+	M1+E2 [d]	0.018 5	%Iγ=0.049 30 α(K)=0.015 5; α(L)=0.0022 4; α(M)=0.00049 9; α(N+..)=0.000130 24 α(N)=0.000111 20; α(O)=1.7×10^{-5} 4; α(P)=1.6×10^{-6} 6 α(K)exp=0.012 3 (1980Vy01).
516.6 10	0.3 1	1378.14	+	861.63	5/2+,7/2+			%Iγ=0.030 10
[x]529.95# 18	0.25# 8					M1,E2 [d]	0.016 5	%Iγ=0.025 8 α(K)=0.013 4; α(L)=0.0020 4; α(M)=0.00043 8; α(N+..)=0.000115 22 α(N)=9.8×10^{-5} 18; α(O)=1.5×10^{-5} 4; α(P)=1.4×10^{-6} 5 same as 529.2γ, Iγ=0.4 2 in 1977Gr23.
537.66# 8	0.98# 19	1399.26	3/2+	861.63	5/2+,7/2+			%Iγ=0.097 19
538.0 [k] 10	0.7 2	1773.91	5/2(−) to 9/2(−)	1235.77	7/2−			%Iγ=0.069 20

$^{147}_{63}Eu_{84}$-9

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	δ	α [g]	Comments
547.3 *3*	2.9 *5*	776.39	9/2$^+$	229.323	7/2$^+$	M1(+E2)	≤0.25	0.0183 *4*	%Iγ=0.29 *5* α(K)=0.0156 *3*; α(L)=0.00215 *4*; α(M)=0.000462 *8*; α(N+..)=0.0001244 *22* α(N)=0.0001058 *18*; α(O)=1.68×10^{-5} *3*; α(P)=1.69×10^{-6} *4* α(K)exp=0.018 *3*
549.2 *5*	0.7 *6*	778.01	7/2$^+$	229.323	7/2$^+$				%Iγ=0.07 *6* α(K)exp=0.02 *2*; ce(K)=0.014 *3*
559.07 *10*	62.0 *22*	1554.29	9/2$^-$	995.17	9/2$^-$	M1		0.01761	%Iγ=6.14 *33* α(K)=0.01499 *21*; α(L)=0.00205 *3*; α(M)=0.000442 *7*; α(N+..)=0.0001189 *17* α(N)=0.0001012 *15*; α(O)=1.611×10^{-5} *23*; α(P)=1.624×10^{-6} *23* α(K)exp=0.016 *1*
[x]560.3 *1*	≤3								%Iγ<0.297 α(K)exp≥0.012; ce(K)=0.036 *12*
569.6 *6*	<1.3 [a]	1565.15	7/2$^+$,9/2$^+$	995.17	9/2$^-$	[M2]		0.0509	%Iγ<0.129 α(K)=0.0425 *6*; α(L)=0.00657 *10*; α(M)=0.001437 *21*; α(N+..)=0.000387 *6* α(N)=0.000329 *5*; α(O)=5.21×10^{-5} *8*; α(P)=5.05×10^{-6} *8* ce(K)=0.014 *4*.
[x]570.5 *6*	<1.3 [a]								%Iγ<0.129 ce(K)=0.007 *4*
573.0 *8*	1.5 *5*	1696.21	7/2$^+$	1122.83	7/2$^+$	M1,E2		0.013 *4*	%Iγ=0.15 *5* α(K)=0.011 *4*; α(L)=0.0016 *4*; α(M)=0.00035 *7*; α(N+..)=9.3×10^{-5} *19* α(N)=8.0×10^{-5} *16*; α(O)=1.2×10^{-5} *3*; α(P)=1.2×10^{-6} *4* α(K)exp=0.012 *5*
580.7 *6*	0.5 *2*	1816.19	5/2$^+$,7/2$^+$	1235.77	7/2$^-$				%Iγ=0.049 *20*
584.6 *6*	0.3 *2*	1360.34	9/2$^-$	776.39	9/2$^+$				%Iγ=0.030 *20*
595.97[#] *19*	0.98[#] *12*	1995.42	7/2$^-$,9/2$^-$	1399.26	3/2$^+$	M2,E3 [d]		0.033 *12*	%Iγ=0.097 *13* α(K)=0.027 *10*; α(L)=0.0049 *9*; α(M)=0.00108 *18*; α(N+..)=0.00029 *5* α(N)=0.00025 *5*; α(O)=3.8×10^{-5} *8*; α(P)=3.1×10^{-6} *13* α(K)exp=0.030 *9* (1980Vy01), α(K)exp=0.026 *13* (1977Gr23).
610.43 *10*	15.3 *13*	1235.77	7/2$^-$	625.27	11/2$^-$	E2		0.00803	%Iγ=1.51 *14* α(K)exp=0.0068 *7* α(K)=0.0070 *4*; α(L)=0.00111 *4*; α(M)=0.000243 *8*; α(N+..)=6.46×10^{-5} *22* α(N)=5.53×10^{-5} *19*; α(O)=8.5×10^{-6} *3*; α(P)=7.1×10^{-7} *4*
619.00 *10*	34.7 *15*	1244.31	11/2$^-$	625.27	11/2$^-$	M1+E2	0.79 *17*	0.0114 *7*	%Iγ=3.44 *20*

$^{147}_{63}Eu_{84}$-10

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[g]	Comments
								α(K)=0.0096 *6*; α(L)=0.00138 *7*; α(M)=0.000298 *13*; α(N+..)=8.0×10^{-5} *4* α(N)=6.8×10^{-5} *3*; α(O)=1.07×10^{-5} *5*; α(P)=1.02×10^{-6} *7* α(K)exp=0.0098 *5*
625.18 *10*	45.0 *30*	625.27	11/2$^-$	0.0	5/2$^+$	E3	0.0194	%Iγ=4.45 *35* α(K)=0.01507 *22*; α(L)=0.00337 *5*; α(M)=0.000759 *11*; α(N+..)=0.000199 *3* α(N)=0.0001718 *24*; α(O)=2.57×10^{-5} *4*; α(P)=1.626×10^{-6} *23* α(K)exp=0.0147 *10*; K:L:M=41:10:3 (1966Av02)
632.35 *10*	16.4 *7*	861.63	5/2$^+$,7/2$^+$	229.323	7/2$^+$	M1	0.01294	%Iγ=1.62 *10* α(K)=0.01103 *16*; α(L)=0.001504 *21*; α(M)=0.000323 *5*; α(N+..)=8.71×10^{-5} *13* α(N)=7.41×10^{-5} *11*; α(O)=1.180×10^{-5} *17*; α(P)=1.192×10^{-6} *17* α(K)exp=0.0110 *8* Mult.,δ: ; δ≤0.4 from α(K)exp implying an M1(+E2) mixture.
[x]646.8 *9*	0.74 *8*							%Iγ=0.073 *8*
693.2 *3*	2.5 *2*	1816.19	5/2$^+$,7/2$^+$	1122.83	7/2$^+$	M1	0.01031	%Iγ=0.248 *22* α(K)=0.00879 *13*; α(L)=0.001195 *17*; α(M)=0.000257 *4*; α(N+..)=6.92×10^{-5} *10* α(N)=5.89×10^{-5} *9*; α(O)=9.37×10^{-6} *14*; α(P)=9.49×10^{-7} *14* α(K)exp=0.012 *2*
701.3 *2*	3.5 *4*	1696.21	7/2$^+$	995.17	9/2$^-$	(E1)	0.00217	%Iγ=0.35 *4* α(K)=0.00186 *3*; α(L)=0.000245 *4*; α(M)=5.24×10^{-5} *8*; α(N+..)=1.403×10^{-5} *20* α(N)=1.196×10^{-5} *17*; α(O)=1.89×10^{-6} *3*; α(P)=1.85×10^{-7} *3* α(K)exp=0.0036 *17* (1980Vy01).
[x]703.9 *7*	<6.6[b]							%Iγ<0.653 ce(K)=0.033 *8*
704.5 *2*	7.51[b#] *23*	1773.91	5/2$^{(-)}$ to 9/2$^{(-)}$	1069.39	7/2$^-$	(M1)[d]	0.00991	%Iγ=0.74 *4* α(K)=0.00845 *12*; α(L)=0.001148 *16*; α(M)=0.000247 *4*; α(N+..)=6.64×10^{-5} *10* α(N)=5.65×10^{-5} *8*; α(O)=9.00×10^{-6} *13*; α(P)=9.11×10^{-7} *13* α(K)exp=0.0014 *3* for 703.9γ and 704.5γ.
714.57 *15*	3.1 *2*	1950.59	5/2$^-$,7/2$^-$,9/2$^-$	1235.77	7/2$^-$	M1	0.00957	%Iγ=0.307 *23* α(K)=0.00816 *12*; α(L)=0.001108 *16*; α(M)=0.000238 *4*; α(N+..)=6.41×10^{-5} *9* α(N)=5.46×10^{-5} *8*; α(O)=8.69×10^{-6} *13*; α(P)=8.80×10^{-7} *13* α(K)exp=0.0080 *7*
[x]726.6 *7*	<0.3							%Iγ<0.0297 ce(K)=0.011 *4*
[x]733.2 *7*	<0.8							%Iγ<0.0792 ce(K)=0.018 *3*
734.4 *4*	1.6 *5*	1360.34	9/2$^-$	625.27	11/2$^-$	(M1)	0.00895	%Iγ=0.16 *5*

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[g]	Comments
								α(K)=0.00763 *11*; α(L)=0.001035 *15*; α(M)=0.000223 *4*; α(N+..)=5.99×10^{-5} *9* α(N)=5.10×10^{-5} *8*; α(O)=8.12×10^{-6} *12*; α(P)=8.23×10^{-7} *12* α(K)exp=0.013 *6* Mult.: α(K)exp is consistent with M1 and E3 and barely excludes M2 and E2.
737.0[h] *4*	0.5	1807.34	5/2$^+$,7/2$^+$,9/2$^+$	1069.39	7/2$^-$			%Iγ=0.0495 *20* α(K)exp=0.0043 (1980Vy01). Mult.: E2 based on α(K)exp. This value is not adopted since contradicts Δπ=yes (see Adopted Levels). It seems that 1980Vy01 list α(K) value (the only one in their α(K)exp data with no uncertainty). 1977Gr23 give no α(K)exp for this γ.
737.0[hk] *4*		1950.59	5/2$^-$,7/2$^-$,9/2$^-$	1212.93	5/2$^-$,7/2$^-$			
750.8[k] *8*	1.5 *5*	1995.42	7/2$^-$,9/2$^-$	1244.31	11/2$^-$	(M1)	0.00848	%Iγ=0.15 *5* α(K)=0.00723 *11*; α(L)=0.000980 *14*; α(M)=0.000211 *3*; α(N+..)=5.67×10^{-5} *8* α(N)=4.83×10^{-5} *7*; α(O)=7.69×10^{-6} *11*; α(P)=7.79×10^{-7} *11* α(K)exp=0.012 *6*
751.81[#] *13*	1.81[#] *25*	1874.66	7/2$^-$,9/2$^-$	1122.83	7/2$^+$	M2,E3[d]	0.017 *6*	%Iγ=0.179 *26* α(K)=0.014 *5*; α(L)=0.0023 *6*; α(M)=0.00051 *11*; α(N+..)=0.00014 *3* α(N)=0.00012 *3*; α(O)=1.8×10^{-5} *5*; α(P)=1.6×10^{-6} *7* α(K)exp=0.013 *4* (1980Vy01).
755.01 *10*	19.9 *8*	755.10	3/2$^+$,5/2$^+$	0.0	5/2$^+$	M1[d]	0.00836	%Iγ=1.97 *11* α(K)=0.00713 *10*; α(L)=0.000967 *14*; α(M)=0.000208 *3*; α(N+..)=5.59×10^{-5} *8* α(N)=4.76×10^{-5} *7*; α(O)=7.58×10^{-6} *11*; α(P)=7.68×10^{-7} *11* α(K)exp=0.0068 *4* (1977Gr23); 0.0070 *5* (1980Vy01). Mult.: other: M1+(13±13)%E2 (1977Gr23).
765.81 *10*	109 *6*	995.17	9/2$^-$	229.323	7/2$^+$	E1	0.00182	%Iγ=10.8 *7* α(K)=0.001558 *22*; α(L)=0.000204 *3*; α(M)=4.36×10^{-5} *7*; α(N+..)=1.169×10^{-5} *17* α(N)=9.96×10^{-6} *14*; α(O)=1.574×10^{-6} *22*; α(P)=1.550×10^{-7} *22* α(K)exp=0.00165 *13*
775.9 *3*	10.5 *14*	1554.29	9/2$^-$	778.01	7/2$^+$	[E1]	1.77×10^{-3}	%Iγ=1.04 *14*

$^{147}_{63}Eu_{84}$-12

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[g]	Comments
									α(K)=0.001518 *22*; α(L)=0.000199 *3*; α(M)=4.25×10^{-5} *6*; α(N+..)=1.138×10^{-5} *16* α(N)=9.70×10^{-6} *14*; α(O)=1.533×10^{-6} *22*; α(P)=1.510×10^{-7} *22*
776.33 *10*	42 *3*	776.39	9/2$^+$	0.0	5/2$^+$	E2		0.00455	I$_\gamma$: from ce(K)=0.016 *2*, α(K)=0.00151. %Iγ=4.16 *34* α(K)=0.00381 *6*; α(L)=0.000576 *8*; α(M)=0.0001252 *18*; α(N+..)=3.33×10^{-5} *5* α(N)=2.85×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=3.90×10^{-7} *6* α(K)exp=0.0038 *4*; ce(K)=0.157 *13* Mult.: from α(K)exp.
778.04 *5*	47.6 *21*	778.01	7/2$^+$	0.0	5/2$^+$	M1+E2	0.6 *3*	0.0069 *6*	I$_\gamma$: from Iγ(775.9γ+776.3γ)=52.2 *25* with Iγ(775.9γ)=10.6 *13*. %Iγ=4.71 *28* α(K)=0.0059 *6*; α(L)=0.00081 *6*; α(M)=0.000175 *13*; α(N+..)=4.7×10^{-5} *4* α(N)=4.0×10^{-5} *3*; α(O)=6.3×10^{-6} *5*; α(P)=6.3×10^{-7} *6* α(K)exp=0.0061 *5*
778.04[#k] *5*	45.9[#] *21*	1007.41	5/2$^+$,7/2$^+$,9/2$^+$	229.323	7/2$^+$	M1[d]		0.00777	%Iγ=4.54 *28* α(K)=0.00663 *10*; α(L)=0.000898 *13*; α(M)=0.000193 *3*; α(N+..)=5.19×10^{-5} *8* α(N)=4.42×10^{-5} *7*; α(O)=7.04×10^{-6} *10*; α(P)=7.14×10^{-7} *10* α(K)exp=0.0065 *5* (1980Vy01)
782.6 *2*	11.5 *4*	1905.64	5/2$^+$	1122.83	7/2$^+$	E2+M1	2.1 *+13−5*	0.0051 *4*	%Iγ=1.14 *6* α(K)=0.0043 *3*; α(L)=0.00062 *4*; α(M)=0.000135 *8*; α(N+..)=3.61×10^{-5} *21* α(N)=3.08×10^{-5} *17*; α(O)=4.8×10^{-6} *3*; α(P)=4.4×10^{-7} *4* α(K)exp=0.0043 *3*
788.65 *15*	7.8 *6*	1565.15	7/2$^+$,9/2$^+$	776.39	9/2$^+$	M1,E2		0.0060 *16*	%Iγ=0.77 *7* α(K)=0.0050 *14*; α(L)=0.00071 *16*; α(M)=0.00015 *4*; α(N+..)=4.1×10^{-5} *10* α(N)=3.5×10^{-5} *8*; α(O)=5.5×10^{-6} *13*; α(P)=5.3×10^{-7} *16* α(K)exp=0.0052 *17*
804.54 *20*	2.4 *2*	2165.44	5/2$^-$,7/2$^-$,9/2$^-$	1360.34	9/2$^-$	E2(+M1)	≥0.64	0.0052 *11*	%Iγ=0.238 *22* α(K)=0.0044 *10*; α(L)=0.00063 *11*; α(M)=0.000137 *23*; α(N+..)=3.7×10^{-5} *7* α(N)=3.1×10^{-5} *6*; α(O)=4.9×10^{-6} *9*; α(P)=4.7×10^{-7} *11*

$^{147}_{63}Eu_{84}$-13

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	δ	α [g]	Comments
									α(K)exp=0.0041 *13* δ: from α(K)exp=0.0041 *13*.
810.27 *20*	5.0 *5*	1565.15	7/2$^+$,9/2$^+$	755.10	3/2$^+$,5/2$^+$	E2(+M1)	≥0.79	0.0050 *9*	%Iγ=0.50 *5* α(K)=0.0042 *8*; α(L)=0.00061 *9*; α(M)=0.000132 *20*; α(N+..)=3.5×10^{-5} *6* α(N)=3.0×10^{-5} *5*; α(O)=4.7×10^{-6} *8*; α(P)=4.4×10^{-7} *9*
									α(K)exp=0.0039 *12*
[x]820.53 *20*	1.9 *2*					M1,E2		0.0054 *14*	%Iγ=0.188 *21* α(K)=0.0046 *13*; α(L)=0.00065 *15*; α(M)=0.00014 *3*; α(N+..)=3.7×10^{-5} *9* α(N)=3.2×10^{-5} *7*; α(O)=5.0×10^{-6} *12*; α(P)=4.9×10^{-7} *14*
									α(K)exp=0.0047 *16*
827.8 *1*	5.0 *8*	1950.59	5/2$^-$,7/2$^-$,9/2$^-$	1122.83	7/2$^+$	(M2,E3) [d]		0.013 *5*	%Iγ=0.50 *8* α(K)=0.011 *4*; α(L)=0.0018 *5*; α(M)=0.00039 *9*; α(N+..)=0.000103 *25* α(N)=8.8×10^{-5} *21*; α(O)=1.4×10^{-5} *4*; α(P)=1.2×10^{-6} *5*
									α(K)exp=0.009 *3* (1980Vy01).
834.7 *3*	1.24 *13*	1696.21	7/2$^+$	861.63	5/2$^+$,7/2$^+$				%Iγ=0.123 *14*
839.89 *14*	0.81 *6*	1069.39	7/2$^-$	229.323	7/2$^+$	E1,M2 [d]		0.009 *8*	%Iγ=0.080 *7* α(K)=0.008 *7*; α(L)=0.0011 *10*; α(M)=0.00025 *21*; α(N+..)=7.E−5 *6* α(N)=6.E−5 *5*; α(O)=9.E−6 *8*; α(P)=9.E−7 *8*
									α(K)exp=0.0022 α(K)exp: no uncertainty reported (1980Vy01).
840.8 [k] *3*	0.8 *4*	1910.10	5/2,7/2,9/2$^+$	1069.39	7/2$^-$				%Iγ=0.08 *4*
861.7 *1*	16.8 *6*	861.63	5/2$^+$,7/2$^+$	0.0	5/2$^+$	M1+E2	1.3 *3*	0.0045 *4*	%Iγ=1.66 *9* α(K)=0.0038 *3*; α(L)=0.00054 *4*; α(M)=0.000117 *7*; α(N+..)=3.12×10^{-5} *20* α(N)=2.66×10^{-5} *17*; α(O)=4.2×10^{-6} *3*; α(P)=4.0×10^{-7} *4*
									α(K)exp=0.0039 *3*
[x]867.8 *9*	≤0.3								%Iγ=0.015 *15*
879.57 [#] *26*	2.3 [#] *3*	1874.66	7/2$^-$,9/2$^-$	995.17	9/2$^-$	M1+E2 [d]		0.0046 *12*	%Iγ=0.228 *31* α(K)=0.0039 *11*; α(L)=0.00054 *12*; α(M)=0.00012 *3*; α(N+..)=3.2×10^{-5} *7* α(N)=2.7×10^{-5} *6*; α(O)=4.2×10^{-6} *10*; α(P)=4.1×10^{-7} *12*
									α(K)exp=0.0040 *13* (1980Vy01).

$^{147}_{63}Eu_{84}$-14

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[g]	Comments
882.3 *5*	0.6 *2*	1950.59	5/2$^-$,7/2$^-$,9/2$^-$	1069.39	7/2$^-$	(M1)[d]		0.00573	%Iγ=0.059 *20* α(K)=0.00489 *7*; α(L)=0.000659 *10*; α(M)=0.0001416 *20*; α(N+..)=3.81×10^{-5} *6* α(N)=3.24×10^{-5} *5*; α(O)=5.17×10^{-6} *8*; α(P)=5.25×10^{-7} *8* α(K)exp=0.007 *3* (1980Vy01).
893.5 *1*	78 *4*	1122.83	7/2$^+$	229.323	7/2$^+$	M1,E2		0.0044 *12*	%Iγ=7.7 *5* α(K)=0.0038 *10*; α(L)=0.00052 *12*; α(M)=0.000113 *25*; α(N+..)=3.0×10^{-5} *7* α(N)=2.6×10^{-5} *6*; α(O)=4.1×10^{-6} *10*; α(P)=4.0×10^{-7} *11* α(K)exp=0.00320 *25*
[x]896.5 *9*	≤2								%Iγ<0.198 α(K)exp>0.002; ce(K)=0.006 *3*
910.244[#] *23*	4.89[#] *14*	1771.88	5/2$^+$,7/2$^+$,9/2$^+$	861.63	5/2$^+$,7/2$^+$	M1[d]		0.00532	%Iγ=0.484 *24* α(K)=0.00454 *7*; α(L)=0.000611 *9*; α(M)=0.0001312 *19*; α(N+..)=3.53×10^{-5} *5* α(N)=3.01×10^{-5} *5*; α(O)=4.79×10^{-6} *7*; α(P)=4.87×10^{-7} *7* α(K)exp=0.0051 *8* (1980Vy01).
910.4[k] *2*	5.4 *3*	1905.64	5/2$^+$	995.17	9/2$^-$				%Iγ=0.53 *4* α(K)exp=0.0038 *8* Mult.: M1+E2 assignment inconsistent with change in π.
917.0 *5*	0.5 *2*	1986.88	5/2$^{(-)}$,7/2,9/2$^+$	1069.39	7/2$^-$				%Iγ=0.049 *20*
929.01 *7*	194 *8*	1554.29	9/2$^-$	625.27	11/2$^-$	M1+E2	0.62 *18*	0.00451 *24*	%Iγ=19.2 *11* α(K)=0.00384 *21*; α(L)=0.00052 *3*; α(M)=0.000113 *6*; α(N+..)=3.03×10^{-5} *15* α(N)=2.58×10^{-5} *13*; α(O)=4.10×10^{-6} *20*; α(P)=4.09×10^{-7} *24* α(K)exp=0.0039 *2*; ce(K)=0.76 *4*
[x]936.8 *10*	0.16 *4*								%Iγ=0.016 *4*
[x]954.8 *10*	1.8 *5*					E1		1.18×10^{-3}	%Iγ=0.18 *5* α(K)=0.001014 *15*; α(L)=0.0001316 *19*; α(M)=2.81×10^{-5} *4*; α(N+..)=7.54×10^{-6} *11*

$^{147}_{63}Eu_{84}$-15

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[g]	Comments
								α(N)=6.42×10^{-6} *9*; α(O)=1.017×10^{-6} *15*; α(P)=1.014×10^{-7} *15*
								α(K)exp=0.0010 *4*
[x]966 *1*	<0.3							%Iγ<0.0297
[x]968.4 *3*	1.1 *2*							%Iγ=0.109 *20*
[x]975 *1*	<0.2							%Iγ<0.0198
976.79[#] *26*	0.27[#] *5*	1838.45		861.63	5/2$^+$,7/2$^+$			%Iγ=0.027 *5*
983.4 *4*	1.65 *20*	1212.93	5/2$^-$,7/2$^-$	229.323	7/2$^+$	E1	1.12×10^{-3}	%Iγ=0.163 *21*
								α(K)=0.000959 *14*; α(L)=0.0001244 *18*; α(M)=2.66×10^{-5} *4*; α(N+..)=7.12×10^{-6} *10*
								α(N)=6.07×10^{-6} *9*; α(O)=9.61×10^{-7} *14*; α(P)=9.59×10^{-8} *14*
								α(K)exp=0.0009 *3*
								Mult.: from α(K)exp=0.0009 *2* (1977Gr23).
[x]988.6 *4*	1.24 *15*					M1,E2	0.0035 *9*	%Iγ=0.123 *16*
								α(K)=0.0030 *8*; α(L)=0.00041 *9*; α(M)=8.9×10^{-5} *19*; α(N+..)=2.4×10^{-5} *6*
								α(N)=2.0×10^{-5} *5*; α(O)=3.2×10^{-6} *7*; α(P)=3.2×10^{-7} *9*
								α(K)exp=0.0024 *7*
995.49[#] *3*	7.8[#] *4*	1771.88	5/2$^+$,7/2$^+$,9/2$^+$	776.39	9/2$^+$	M1,E2[d]	0.0035 *9*	%Iγ=0.77 *5*
								α(K)=0.0029 *8*; α(L)=0.00041 *9*; α(M)=8.7×10^{-5} *19*; α(N+..)=2.3×10^{-5} *5*
								α(N)=2.0×10^{-5} *5*; α(O)=3.2×10^{-6} *7*; α(P)=3.1×10^{-7} *9*
								α(K)exp=0.028 *8* (1980Vy01).
995.58[j] *20*	3.7[j] *4*	995.17	9/2$^-$	0.0	5/2$^+$	[M2]	0.01072	%Iγ=0.37 *4*
								α(K)=0.00906 *13*; α(L)=0.001303 *19*; α(M)=0.000282 *4*; α(N+..)=7.60×10^{-5} *11*
								α(N)=6.47×10^{-5} *9*; α(O)=1.028×10^{-5} *15*; α(P)=1.024×10^{-6} *15*
								I_γ: a fraction of 0.31 *3* for the Iγ of this [M2] γ was deduced by 1977Gr23 from α(K)exp(995γ doublet) and used by evaluator to extract the (here) adopted Iγ value from Iγ(996γ doublet)=11.8 *7*.
								α(K)exp=0.00350 *25* for 996γ doublet.
995.58[jk] *20*	8.1[j] *6*	1773.91	5/2$^{(-)}$ to 9/2$^{(-)}$	778.01	7/2$^+$			%Iγ=0.80 *7*
								I_γ: a fraction of 0.31 *3* for the Iγ of the [M2] component of the 995γ doublet was deduced by 1977Gr23 from α(K)exp(995γ doublet) and used by evaluator to extract the (here) adopted Iγ value of

$^{147}_{63}$Eu$_{84}$-16

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	α [g]	Comments
								this γ from Iγ(996γ doublet)=11.8 *7*.
								α(K)exp=0.00350 *25* for 996γ doublet.
1006.4 *1*	13.1 *8*	1235.77	7/2$^-$	229.323	7/2$^+$	E1	1.07×10^{-3}	%Iγ=1.30 *9* α(K)=0.000919 *13*; α(L)=0.0001190 *17*; α(M)=2.54×10^{-5} *4*; α(N+..)=6.82×10^{-6} *10* α(N)=5.81×10^{-6} *9*; α(O)=9.20×10^{-7} *13*; α(P)=9.19×10^{-8} *13* α(K)exp=0.00066 *10*
1017.9 *4*	1.1 *2*	1795.41	5/2$^-$,7/2$^-$	778.01	7/2$^+$			%Iγ=0.109 *20*
1040.4 *4*	3.8 *4*	1795.41	5/2$^-$,7/2$^-$	755.10	3/2$^+$,5/2$^+$	(E1)	1.01×10^{-3}	%Iγ=0.38 *4* α(K)exp=0.0010 *3* (1980Vy01) α(K)=0.000864 *13*; α(L)=0.0001117 *16*; α(M)=2.39×10^{-5} *4*; α(N+..)=6.40×10^{-6} *9* α(N)=5.45×10^{-6} *8*; α(O)=8.64×10^{-7} *13*; α(P)=8.65×10^{-8} *13*
1044.2 *5*	1.3 *2*	1905.64	5/2$^+$	861.63	5/2$^+$,7/2$^+$	(M1) [d]	0.00383	%Iγ=0.129 *20* α(K)=0.00327 *5*; α(L)=0.000439 *7*; α(M)=9.41×10^{-5} *14*; α(N+..)=2.54×10^{-5} *4* α(N)=2.16×10^{-5} *3*; α(O)=3.44×10^{-6} *5*; α(P)=3.50×10^{-7} *5* α(K)exp=0.0059 *18* (1980Vy01). Mult.: M2,E3 based on α(K)exp is not supported by level scheme arguments (no π change); next possible assignment is (M1) (α(K)(M1) slightly out the range of α(K)exp).
1048.6 *6*	0.66 *20*	1910.10	5/2,7/2,9/2$^+$	861.63	5/2$^+$,7/2$^+$			%Iγ=0.065 *20*
1061.2 *4*	1.5 *3*	1816.19	5/2$^+$,7/2$^+$	755.10	3/2$^+$,5/2$^+$			%Iγ=0.148 *30*
1069.35 *10*	69 *5*	1069.39	7/2$^-$	0.0	5/2$^+$	E1	9.56×10^{-4}	%Iγ=6.8 *6* α(K)=0.000821 *12*; α(L)=0.0001061 *15*; α(M)=2.27×10^{-5} *4*; α(N+..)=6.08×10^{-6} *9* α(N)=5.18×10^{-6} *8*; α(O)=8.21×10^{-7} *12*; α(P)=8.22×10^{-8} *12* α(K)exp=0.00084 *8*
[x]1081.0 *6*	0.7 *2*							%Iγ=0.069 *20*
1096.4 *4*	0.3 *3*	2165.44	5/2$^-$,7/2$^-$,9/2$^-$	1069.39	7/2$^-$	(M1) [d]	0.00341	%Iγ=0.030 *30* α(K)=0.00291 *4*; α(L)=0.000390 *6*; α(M)=8.37×10^{-5} *12*; α(N+..)=2.26×10^{-5} *4* α(N)=1.92×10^{-5} *3*; α(O)=3.06×10^{-6} *5*; α(P)=3.12×10^{-7} *5* ce(K)=0.0069 *38* (1980Vy01) Mult.: M2,E3 based on α(K)exp is not supported by level scheme arguments (no π change); next possible assignment is (M1) (α(K)(M1) slightly out of the range of α(K)exp).

$^{147}_{63}Eu_{84}$-17

γ(^{147}Eu) (continued)

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[g]	Comments
1122.9 *1*	8.7 *5*	1122.83	7/2$^+$	0.0	5/2$^+$	E2	0.00206	%Iγ=0.86 *6* α(K)=0.001747 *25*; α(L)=0.000245 *4*; α(M)=5.27×10^{-5} *8*; α(N+..)=1.483×10^{-5} *21* α(N)=1.204×10^{-5} *17*; α(O)=1.89×10^{-6} *3*; α(P)=1.80×10^{-7} *3*; α(IPF)=7.17×10^{-7} *11* α(K)exp=0.00166 *17*
1125.5 *5*	1.1 *6*	1986.88	5/2$^{(-)}$,7/2,9/2$^+$	861.63	5/2$^+$,7/2$^+$			%Iγ=0.11 *6*
1130.9 *1*	62 *5*	1360.34	9/2$^-$	229.323	7/2$^+$	E1	8.68×10^{-4}	%Iγ=6.1 *6* α(K)=0.000742 *11*; α(L)=9.56×10^{-5} *14*; α(M)=2.04×10^{-5} *3*; α(N+..)=1.081×10^{-5} *16* α(N)=4.66×10^{-6} *7*; α(O)=7.40×10^{-7} *11*; α(P)=7.43×10^{-8} *11*; α(IPF)=5.33×10^{-6} *8* α(K)exp=0.00078 *6* Mult.: from α(K)exp in 1977Gr23.
1149.10 *15*	3.7 *3*	1378.14	$^+$	229.323	7/2$^+$	E2	0.00197	%Iγ=0.366 *33* α(K)=0.001668 *24*; α(L)=0.000233 *4*; α(M)=5.01×10^{-5} *7*; α(N+..)=1.508×10^{-5} *22* α(N)=1.145×10^{-5} *16*; α(O)=1.80×10^{-6} *3*; α(P)=1.719×10^{-7} *24*; α(IPF)=1.654×10^{-6} *25* α(K)exp=0.0017 *6*
1151 *1*	0.5 *3*	1905.64	5/2$^+$	755.10	3/2$^+$,5/2$^+$			%Iγ=0.049 *30*
1154.7 *10*	0.3 *3*	1910.10	5/2,7/2,9/2$^+$	755.10	3/2$^+$,5/2$^+$			%Iγ=0.030 *30*
1160.15 *15*	6.4 *4*	1389.61	5/2$^-$,7/2$^-$,9/2$^-$	229.323	7/2$^+$	E1	8.36×10^{-4}	%Iγ=0.63 *5* α(K)=0.000708 *10*; α(L)=9.12×10^{-5} *13*; α(M)=1.95×10^{-5} *3*; α(N+..)=1.672×10^{-5} *24* α(N)=4.45×10^{-6} *7*; α(O)=7.06×10^{-7} *10*; α(P)=7.10×10^{-8} *10*; α(IPF)=1.150×10^{-5} *17* α(K)exp=0.00065 *20*
1170.1 *4*	0.95 *8*	1399.26	3/2$^+$	229.323	7/2$^+$	E2	0.00190	%Iγ=0.094 *9* α(K)=0.001609 *23*; α(L)=0.000224 *4*; α(M)=4.82×10^{-5} *7*; α(N+..)=1.582×10^{-5} *23* α(N)=1.101×10^{-5} *16*; α(O)=1.734×10^{-6} *25*; α(P)=1.658×10^{-7} *24*; α(IPF)=2.91×10^{-6} *5* α(K)exp: 0.0018 *9* (1977Gr23); 0.0.0022 *9* (1980Vy01). Mult.: M1,E2 based on α(K)exp (1977Gr23 and 1980Vy01); the evaluator adopts E2 from J arguments (see Adopted Levels).
1184.7 *3*	0.25 *20*	1961.24	5/2$^+$,7/2,9/2$^+$	776.39	9/2$^+$			%Iγ=0.025 *20*
[x]1196.9 *4*	0.25 *20*							%Iγ=0.025 *20*
1209.4 *5*	0.33 *4*	1986.88	5/2$^{(-)}$,7/2,9/2$^+$	778.01	7/2$^+$			%Iγ=0.033 *4*
1213.0 *2*	1.15 *8*	1212.93	5/2$^-$,7/2$^-$	0.0	5/2$^+$	E1[d]	7.92×10^{-4}	%Iγ=0.114 *9*

$^{147}_{63}Eu_{84}$-18

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[g]	Comments
									α(K)=0.000654 *10*; α(L)=8.41×10^{-5} *12*; α(M)=1.79×10^{-5} *3*; α(N+..)=3.58×10^{-5} *5* α(N)=4.10×10^{-6} *6*; α(O)=6.51×10^{-7} *10*; α(P)=6.56×10^{-8} *10*; α(IPF)=3.10×10^{-5} *5* α(K)exp=0.00087 α(K)exp: no uncertainty reported (1980Vy01).
[x]1216 *1*	0.3								%Iγ=0.0297 *12*
1219.4 *4*	0.45 *5*	1995.42	7/2$^-$,9/2$^-$	776.39	9/2$^+$				%Iγ=0.045 *5*
1232.76[#] *25*	0.56[#] *7*	1858.19	7/2$^-$,9/2$^+$	625.27	11/2$^-$				%Iγ=0.055 *7* I$_\gamma$: ΔIγ not given by 1980Vy01 assumed by evaluator.
1235.7 *1*	11.1 *7*	1235.77	7/2$^-$	0.0	5/2$^+$	E1		7.78×10^{-4}	%Iγ=1.10 *8* α(K)=0.000633 *9*; α(L)=8.13×10^{-5} *12*; α(M)=1.735×10^{-5} *25*; α(N+..)=4.61×10^{-5} *7* α(N)=3.97×10^{-6} *6*; α(O)=6.30×10^{-7} *9*; α(P)=6.35×10^{-8} *9*; α(IPF)=4.14×10^{-5} *6* α(K)exp=0.00048 *5*
1245.3 *3*	0.62 *5*	1474.82	(3/2$^+$)	229.323	7/2$^+$	(E2)		1.68×10^{-3}	%Iγ=0.061 *6* α(K)=0.001422 *20*; α(L)=0.000196 *3*; α(M)=4.22×10^{-5} *6*; α(N+..)=2.27×10^{-5} *4* α(N)=9.64×10^{-6} *14*; α(O)=1.520×10^{-6} *22*; α(P)=1.466×10^{-7} *21*; α(IPF)=1.138×10^{-5} *17* α(K)exp=0.0011 *3* (1977Gr23), α(K)exp=0.0011 *5* (1980Vy01). Mult.: E1,E2 based on α(K)exp (1977Gr23); the evaluator adopted E2 based on J arguments (see Adopted Levels).
[x]1270.2 *4*	0.45 *5*								%Iγ=0.045 *5*
[x]1305.7 *4*	0.45 *5*								%Iγ=0.045 *5*
1325.1 *1*	8.3 *5*	1554.29	9/2$^-$	229.323	7/2$^+$	E1+M2	0.20 *5*	0.00091 *9*	%Iγ=0.82 *6* α(K)=0.00071 *8*; α(L)=9.2×10^{-5} *11*; α(M)=1.98×10^{-5} *24*; α(N+..)=8.96×10^{-5} *16* α(N)=4.5×10^{-6} *6*; α(O)=7.2×10^{-7} *9*; α(P)=7.3×10^{-8} *9*; α(IPF)=8.43×10^{-5} *20* α(K)exp=0.00070 *6*
1336.2 *5*	0.45 *5*	1565.15	7/2$^+$,9/2$^+$	229.323	7/2$^+$				%Iγ=0.045 *5*
1360	<0.08	1360.34	9/2$^-$	0.0	5/2$^+$				%Iγ=0.00792 *32*
1370.5 *3*	0.75 *8*	1995.42	7/2$^-$,9/2$^-$	625.27	11/2$^-$	E2		1.42×10^{-3}	%Iγ=0.074 *8* α(K)=0.001179 *17*; α(L)=0.0001606 *23*; α(M)=3.45×10^{-5} *5*; α(N+..)=4.51×10^{-5} *7* α(N)=7.89×10^{-6} *11*; α(O)=1.247×10^{-6} *18*; α(P)=1.216×10^{-7} *17*; α(IPF)=3.58×10^{-5} *5* α(K)exp=0.0010 *2*

$^{147}_{63}Eu_{84}$-19

γ(^{147}Eu) (continued)

E_γ[†]	I_γ[‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[g]	Comments
1377.7 *3*	0.45 *5*	1378.14	$^+$	0.0	5/2$^+$			%Iγ=0.045 *5*
1389.5[i] *2*	0.54[i] *5*	1389.61	5/2$^-$,7/2$^-$,9/2$^-$	0.0	5/2$^+$			%Iγ=0.053 *5*
1389.5[ik] *2*	0.54[i] *5*	2165.44	5/2$^-$,7/2$^-$,9/2$^-$	776.39	9/2$^+$			%Iγ=0.053 *5*
1399.2 *2*	1.6 *1*	1399.26	3/2$^+$	0.0	5/2$^+$	M1,E2	0.0017 *3*	%Iγ=0.158 *12* α(K)=0.0014 *3*; α(L)=0.00019 *4*; α(M)=4.0×10^{-5} *7*; α(N+..)=5.6×10^{-5} *5* α(N)=9.2×10^{-6} *16*; α(O)=1.5×10^{-6} *3*; α(P)=1.5×10^{-7} *3*; α(IPF)=4.57×10^{-5} *23* α(K)exp=0.0016 *5*
[x]1406.7 *10*	<0.05							%Iγ<0.00495
[x]1409.5 *8*	<0.05							%Iγ<0.00495
1466.0 *4*	0.29 *5*	1696.21	7/2$^+$	229.323	7/2$^+$			%Iγ=0.029 *5*
1474.7 *3*	0.74 *8*	1474.82	(3/2$^+$)	0.0	5/2$^+$			%Iγ=0.073 *8*
[x]1530.7 *5*	0.54 *5*							%Iγ=0.053 *5*
1545.0 *10*	0.12 *4*	1773.91	5/2$^{(-)}$ to 9/2$^{(-)}$	229.323	7/2$^+$			%Iγ=0.012 *4*
1554	<0.1	1554.29	9/2$^-$	0.0	5/2$^+$			%Iγ=0.0099 *4*
1565.2[j] *2*	1.5[j&] *4*	1565.15	7/2$^+$,9/2$^+$	0.0	5/2$^+$			%Iγ=0.15 *4*
1565.9[j] *1*	2.22[j#&] *19*	1795.41	5/2$^-$,7/2$^-$	229.323	7/2$^+$			%Iγ=0.220 *21* α(K)exp=0.0013 *4* (1980Vy01) corresponds to the 1566γ doublet. Mult.: M1,E2 suggested by 1980Vy01 based on α(K)exp(1566γ doublet) is not adopted here.
1586.88 *15*	5.4 *3*	1816.19	5/2$^+$,7/2$^+$	229.323	7/2$^+$	M1,E2	0.00136 *21*	%Iγ=0.53 *4* α(K)=0.00106 *18*; α(L)=0.000142 *23*; α(M)=3.0×10^{-5} *5*; α(N+..)=0.000120 *8* α(N)=7.0×10^{-6} *11*; α(O)=1.11×10^{-6} *18*; α(P)=1.12×10^{-7} *20*; α(IPF)=0.000112 *7* α(K)exp=0.0010 *2*
[x]1601.5 *15*	≈0.1							%Iγ≈0.0099 %Iγ≈0.0099
1628.9 *5*	0.16 *3*	1858.19	7/2$^-$,9/2$^+$	229.323	7/2$^+$			%Iγ=0.0158 *30*
[x]1641 *2*	<0.05							%Iγ<0.00495
1676.5 *2*	2.49 *13*	1905.64	5/2$^+$	229.323	7/2$^+$	M1,E2	0.00126 *18*	%Iγ=0.247 *16* α(K)=0.00095 *15*; α(L)=0.000126 *19*; α(M)=2.7×10^{-5} *4*; α(N+..)=0.000158 *10* α(N)=6.2×10^{-6} *10*; α(O)=9.8×10^{-7} *15*; α(P)=1.00×10^{-7} *17*; α(IPF)=0.000150 *9* α(K)exp=0.0010 *2*
1680.9 *4*	0.62 *4*	1910.10	5/2,7/2,9/2$^+$	229.323	7/2$^+$			%Iγ=0.061 *5*
1721.3 *5*	0.10 *3*	1950.59	5/2$^-$,7/2$^-$,9/2$^-$	229.323	7/2$^+$			%Iγ=0.0099 *30*
≈1731[k]	0.03 *3*	1961.24	5/2$^+$,7/2,9/2$^+$	229.323	7/2$^+$			%Iγ=0.0030 *30*
[x]≈1735	0.03 *3*							%Iγ=0.0030 *30*

$^{147}_{63}$Eu$_{84}$-20

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

γ(^{147}Eu) (continued)

E_γ [†]	I_γ [‡ f]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	α [g]	Comments
1757.6 *3*	0.27 *3*	1986.88	5/2(−),7/2,9/2+	229.323	7/2+			%Iγ=0.0267 *32*
1765.9 *4*	0.41 *4*	1995.42	7/2−,9/2−	229.323	7/2+			%Iγ=0.041 *4*
x1775 *2*	<0.02							%Iγ<0.00198
x1783.3 *5*	≈0.04							%Iγ≈0.00396
								%Iγ≈0.00396
1795.94 *20*	7.7 *4*	1795.41	5/2−,7/2−	0.0	5/2+	E1	8.17×10^{-4}	%Iγ=0.76 *5*
								α(K)=0.000336 *5*; α(L)=4.27×10^{-5} *6*; α(M)=9.09×10^{-6} *13*; α(N+..)=0.000430 *6*
								α(N)=2.08×10^{-6} *3*; α(O)=3.31×10^{-7} *5*; α(P)=3.38×10^{-8} *5*; α(IPF)=0.000427 *6*
								α(K)exp=0.00028 *10*
1806.7 *3*	0.41 *4*	1807.34	5/2+,7/2+,9/2+	0.0	5/2+			%Iγ=0.041 *4*
1816.5 *3*	1.40 *8*	1816.19	5/2+,7/2+	0.0	5/2+	M1,E2	0.00115 *14*	%Iγ=0.139 *10*
								α(K)=0.00080 *11*; α(L)=0.000106 *15*; α(M)=2.3×10^{-5} *3*; α(N+..)=0.000222 *14*
								α(N)=5.2×10^{-6} *7*; α(O)=8.3×10^{-7} *12*; α(P)=8.4×10^{-8} *13*; α(IPF)=0.000216 *14*
								α(K)exp=0.00066 *20* (1977Gr23), α(K)exp=0.0.0009 *3* (1980Vy01).
x1824.0 *5*	0.15 *3*							%Iγ=0.0149 *30*
x1844.3 *3*	0.31 *3*							%Iγ=0.0307 *32*
1858.1 *4*	0.06 *3*	1858.19	7/2−,9/2+	0.0	5/2+			%Iγ=0.0059 *30*
x1901 *2*	<0.02							%Iγ<0.00198
1905.6 *4*	0.12 *4*	1905.64	5/2+	0.0	5/2+			%Iγ=0.012 *4*
1910.0 *3*	0.37 *4*	1910.10	5/2,7/2,9/2+	0.0	5/2+			%Iγ=0.037 *4*
1936.30# *22*	0.037 *13*	2165.44	5/2−,7/2−,9/2−	229.323	7/2+			%Iγ=0.0037 *13*
1950.7 *2*	0.66 *8*	1950.59	5/2−,7/2−,9/2−	0.0	5/2+			%Iγ=0.065 *8*
1961.5 *4*	0.32 *3*	1961.24	5/2+,7/2,9/2+	0.0	5/2+			%Iγ=0.0317 *32*
x1982.6 *5*	0.10 *2*							%Iγ=0.0099 *20*
1986.7 *3*	0.64 *6*	1986.88	5/2(−),7/2,9/2+	0.0	5/2+			%Iγ=0.063 *6*

[†] From 1977Gr23 who measured most of the γ's, and from 1980Vy01 (noted separately). While both used Ge(Li) or Ge detectors, the precision of the 1980Vy01 data goes usually to the rather unrealistic hundredth keV level, reason for which the Eγ data from 1977Gr23 are here adopted preferentially.

[‡] Relative intensities from 1977Gr23 (default) and 1980Vy01 (noted separately). The intensities of 1980Vy01 were converted to 1977Gr23 scale by multiplication with 6.463 (average of intensity ratios of the two refs of the following most intense γ's: 229, 310, 370, 396, 559, 625, 776, 766, 894, 929, 1069, 1131).

[#] From 1980Vy01.

[@] Iγ(286.6γ+287.4γ)=2.1 *4* (1977Gr23), Iγ(286.6γ)=1.80 *10* (1980Vy01), Iγ(287.4γ)=0.3 *4* (by subtraction); doublet α(K)exp=0.071 (1977Gr23), α(K)exp=0.051 *11* (1980Vy01).

[&] Iγ(1565.2γ+1565.9γ)=3.7 *3* (1977Gr23), Iγ(1565.9γ)=2.22 *19* (1980Vy01); Iγ(1565.2γ)=1.5 *4* (by subtraction).

$^{147}_{63}Eu_{84}$-21

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01 (continued)

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

[a] Iγ(569.6γ+570.5γ)=1.3 *5*, doublet α(K)exp=0.016.
[b] Iγ(703.9γ+704.5γ)=6.6 *4*, doublet α(K)exp=0.014 *3* (1977Gr23); Iγ(704.5γ)=7.51 *23*, α(K)exp(704.5γ)=0.0080 *11* (1980Vy01) ce(K)=0.062 *7*.
[c] From 1977Gr23 based on α(K)exp and ce-ratio data.
[d] From 1980Vy01 based on α(K)exp.
[e] α estimated as average of minimum and maximum of the E1, M1, E2 α values calculated for this γ (for intensity balance).
[f] For absolute intensity per 100 decays, multiply by 0.099 *4*.
[g] 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.
[h] Multiply placed.
[i] Multiply placed with undivided intensity.
[j] Multiply placed with intensity suitably divided.
[k] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

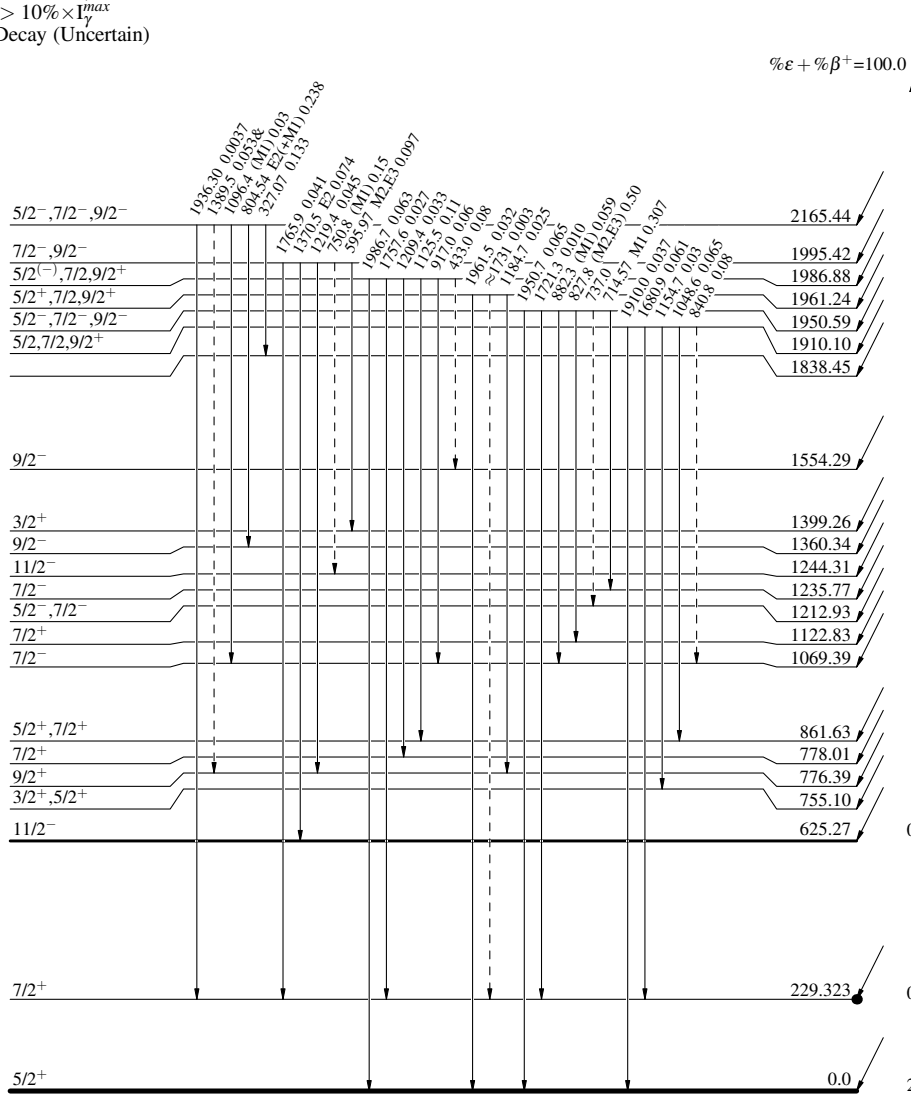
$^{147}_{63}Eu_{84}$-22

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01

Decay Scheme

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



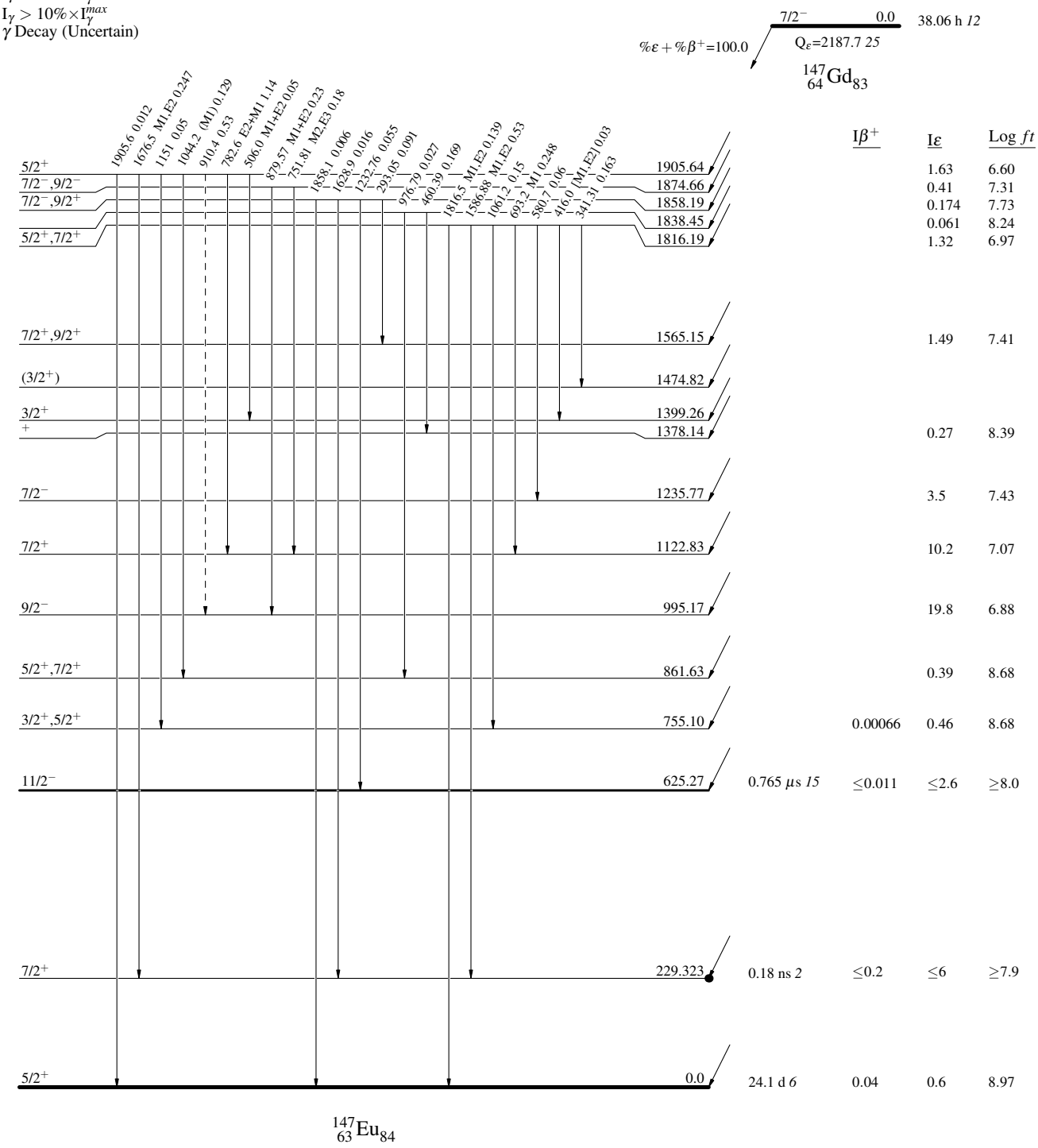
		Iβ+	Iε	Log *ft*
2165.44			0.41	4.03
1995.42			0.260	7.00
1986.88			0.28	7.01
1961.24			0.056	7.84
1950.59			0.95	6.66
1910.10			0.19	7.52
1838.45			0.061	8.24
1554.29			37.1	6.029
1399.26				
1360.34			6.1	7.06
1244.31				
1235.77			3.5	7.43
1212.93			0.28	8.55
1122.83			10.2	7.07
1069.39			2.7	7.69
861.63			0.39	8.68
778.01		0.0033	2.9	7.86
776.39		0.0008	0.7	8.48
755.10		0.00066	0.46	8.68
625.27	0.765 μs 15	≤0.011	≤2.6	≥8.0
229.323	0.18 ns 2	≤0.2	≤6	≥7.9
0.0	24.1 d 6	0.04	0.6	8.97

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given

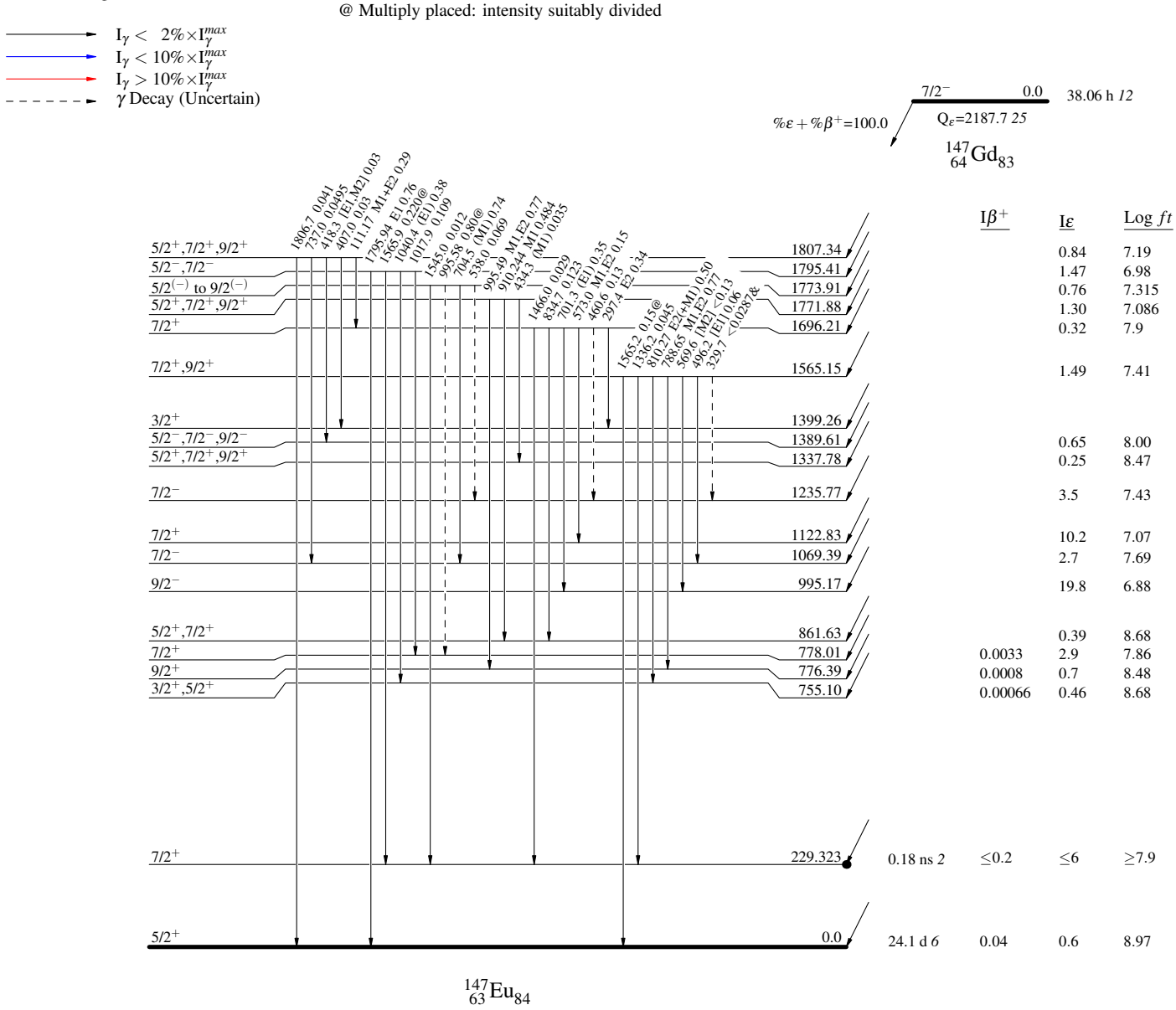
Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

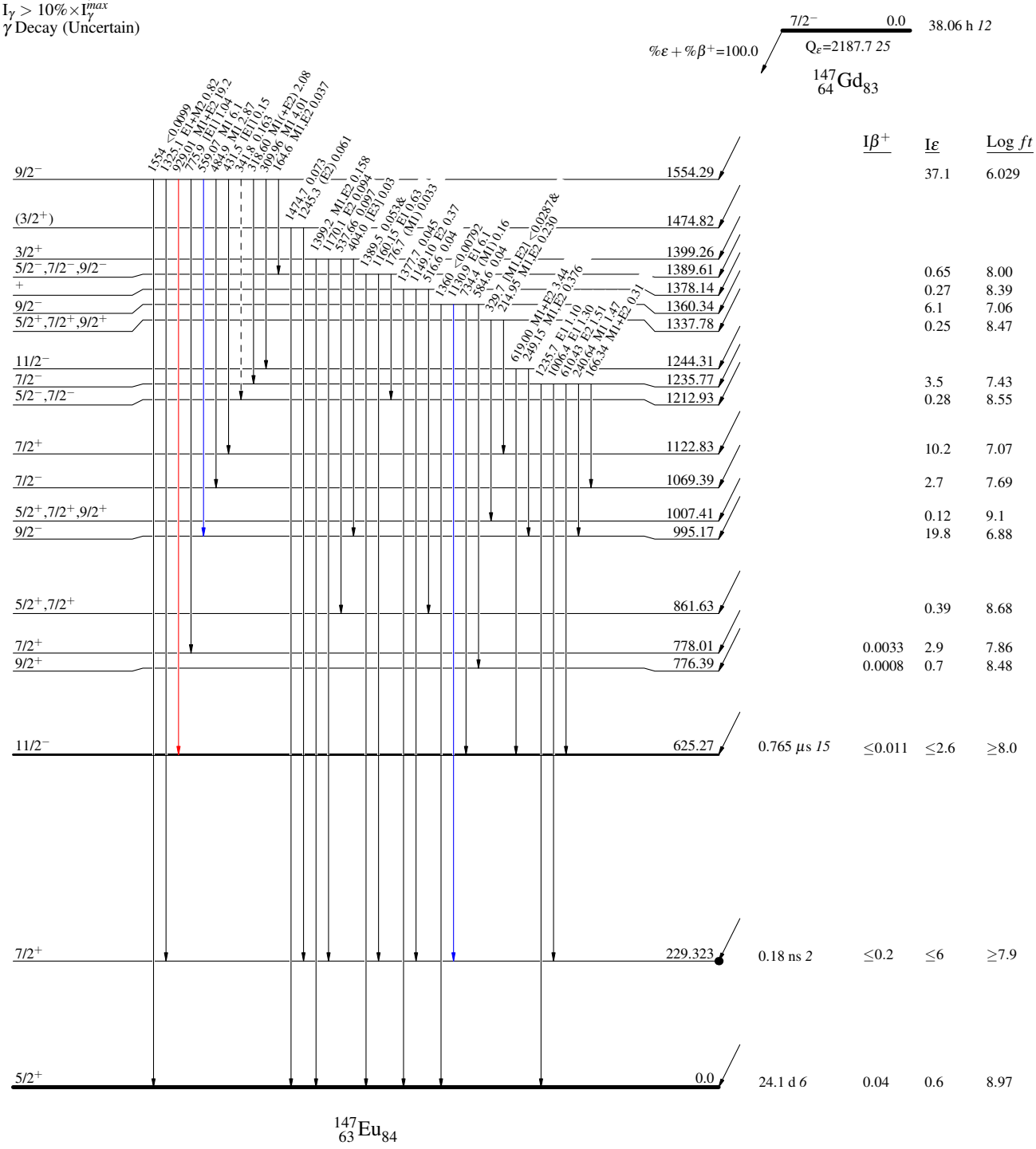


^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{147}_{63}Eu_{84}$

^{147}Gd ε decay (38.06 h) 1977Gr23,1980Vy01

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided