Adopted Levels, Gammas

History

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

Q(β^-)=−2187.7 *25*; S(n)=8498 *6*; S(p)=3837 *4*; Q(α)=2991 *3* 2021Wa16
S(2n)=15696 *4*, S(2p)=10855 *3* (2021Wa16).

^{147}Eu Levels

Cross Reference (XREF) Flags

A	^{147}Gd ε decay (38.06 h)	E	^{139}La(^{13}C,5nγ)
B	^{151}Tb α decay	F	^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ)
C	^{124}Sn(^{28}Si,p4nγ)	G	^{148}Sm(p,2nγ)
D	^{124}Sn(^{29}Si,p5nγ):SD		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0	5/2$^+$	24.1 d *6*	ABC EFG	%α=0.0022 *6*; %ε=99.9978 *6* (1962Si14) μ=+3.715 *8* (2019StZV); Q=+0.55 *3* (2016St14) configuration=$\pi d_{5/2}^{-1}$ (^{124}Sn(^{28}Si,p4nγ)). μ,Q: measured by collinear fast beam laser spectroscopy − accelerated beam (1985Ah02) Others: 1958An36, 1961Vi05, 1962Jh03, 1962Sc09, 1963Ko09, 1964Mc17, 1965Ad05, 1965Dz09, 1966Av02, 1968Bo47, 1970Va38. J$^\pi$: J=5/2 (1972Ek05) atomic beam; π=+ from d5/2 assignment as for ^{145}Eu, ^{149}Eu, ^{151}Eu (1972Ek05). T$_{1/2}$: from 1971Av09; others: 23.6 d *10* (1962Sc09), 25 d *1* (1958An36), 24 d *2* (1951Ho30) whose unweighted av gives T$_{1/2}$=24 d *1*. See also 21.5 d *5* (1963Fr02) (^{147}Eu+^{147}Gd source, considerably smaller than the others). rms charge radius: 4.9938 fm *94* (2013An02).
229.323 *19*	7/2$^+$	0.18 ns *2*	ABC EFG	configuration=$\pi g_{7/2}^{-1}$ (^{124}Sn(^{28}Si,p4nγ)). T$_{1/2}$: from ^{147}Gd ε decay. J$^\pi$: see 625 level.
625.27[&] *5*	11/2$^-$	0.765 μs *15*	A C EFG	μ=+7.04 *3* (2020StZV) μ: measured by time dependent perturbed angular distribution (1980Ba67); also +7.04 *6* (1980Kl07). T$_{1/2}$: from 1970Kl07, ^{147}Gd decay. J$^\pi$: M2 γ to 7/2$^+$, 229, E3 to 5/2$^+$, g.s., M1+E2 from 229 to g.s., uniquely establish J^π(229)=7/2$^+$, J^π(625)=11/2$^-$. This is compatible with h$_{11/2}$ assigned from T$_{1/2}$=0.765 μs *15* by analogy with an isomer in ^{145}Eu which occurs at 716 keV (1975Fi02) (T$_{1/2}\approx$0.3 μs).
755.11 *5*	3/2$^+$,5/2$^+$		A G	J$^\pi$: 3/2$^+$,5/2$^+$,7/2$^+$ from M1 γ to 5/2$^+$, g.s.; 7/2$^+$ less likely because of no γ from 9/2$^-$, 995.
776.39 *5*	9/2$^+$		A G	J$^\pi$: 5/2$^+$,7/2$^+$,9/2$^+$ from E2 γ to 5/2$^+$, g.s., and M1(+E2) γ to 7/2$^+$, 229; 5/2$^+$ excluded by γ from 9/2$^-$, 1360; 9/2$^+$ more likely (π=+ states arising from coupling of d$_{5/2}$ and g$_{7/2}$ proton holes to ^{148}Gd core are lying close to yrast line, 1985JuZY, ^{148}Sm(p,2nγ)).
778.01 *5*	7/2$^+$		A G	J$^\pi$: 7/2$^+$ from M1+E2 γ to 5/2$^+$, g.s. and E1 γ from 9/2$^-$, 995.
827.8 *10*	(3/2$^+$,5/2$^+$,7/2$^+$)		G	J$^\pi$: (3/2$^+$,5/2$^+$,7/2$^+$) from (M1) γ to 5/2$^+$, g.s.
861.64 *5*	5/2$^+$,7/2$^+$		A G	J$^\pi$: 5/2$^+$,7/2$^+$ from M1+E2 γ to 5/2$^+$, g.s., M1 γ to 7/2$^+$, 229 level, and M1+E2 γ to (3/2)$^+$, 755 level.
995.17 *5*	9/2$^-$		A FG	J$^\pi$: E1 γ to 7/2$^+$, 229, and M1+E2 γ to 11/2$^-$, 626.
995.5?	(+)		G	J$^\pi$: π=(+) from (E2) γ to 5/2$^+$, g.s.

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Adopted Levels, Gammas (continued)

^{147}Eu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
1007.41 *10*	5/2$^+$,7/2$^+$,9/2$^+$	A	Jπ: 5/2$^+$,7/2$^+$,9/2$^+$ from M1 778γ to 7/2$^+$, 229, provided 778γ deexcites this level.
1011.6 *8*	5/2$^+$,7/2$^+$,9/2$^+$	G	Jπ: 5/2$^+$,7/2$^+$,9/2$^+$ from M1+E2 γ to 7/2$^+$, 229.
1033.8 *4*	11/2$^+$	G	Jπ: 3/2$^+$ to 11/2$^+$ from E2 γ to 7/2$^+$, 229; 11/2$^+$ more likely (π=+ states arising from coupling of $d_{5/2}$ and $g_{7/2}$ proton holes to ^{148}Gd core are lying close to yrast line, 1985JuZY, ^{148}Sm(p,2nγ)).
1069.39 *6*	7/2$^-$	A G	Jπ: 7/2$^-$ from E1 γ to 5/2$^+$, g.s., and M1 γ from 9/2$^-$, 1554.
1122.83 *6*	7/2$^+$	A G	Jπ: M1+E2 γ to 5/2$^+$, 862 level and M1 γ to 9/2$^+$, 776 level.
1212.93 *11*	5/2$^-$,7/2$^-$	A G	Jπ: from E1 γ to 5/2$^+$, g.s., and E1 γ to 7/2$^+$, 229.
1235.77 *5*	7/2$^-$	A G	Jπ: 7/2$^-$ from E1 γ to 5/2$^+$, g.s., and E2 γ to 11/2$^-$, 625.
1244.31 *7*	11/2$^-$	A G	Jπ: 9/2$^-$,11/2$^-$,13/2$^-$ from M1+E2 γ to 11/2$^-$, 625; 13/2$^-$ excluded by M1 γ from 9/2$^-$, 1554; 9/2$^-$ unlikely because of non-observance of ε feeding from 7/2$^-$ g.s. in ^{147}Gd ε decay.
1289.4 *4*	(11/2$^-$)	G	Jπ: (7/2$^-$,9/2$^-$,11/2$^-$) from (M1) γ to 9/2$^-$, 995; (7/2$^-$,9/2$^-$) excluded from γ from 13/2$^+$, 1421.
1337.78 *8*	5/2$^+$,7/2$^+$,9/2$^+$	A	Jπ: 5/2$^+$,7/2$^+$,9/2$^+$ from M1 γ to 7/2$^+$, 1123.
1339.4 *4*	7/2$^-$,9/2$^-$,11/2$^-$	G	Jπ: 7/2$^-$,9/2$^-$,11/2$^-$ from M1 γ to 995, 9/2$^-$.
1346.27[&] *21*	15/2$^-$	C EFG	Jπ: E2 γ to 11/2$^-$, 625, member of stretched E2 cascade.
1360.34 *9*	9/2$^-$	A G	Jπ: E1 γ to 7/2$^+$, 229, and (M1) γ to 11/2$^-$; (1131γ)(229γ)(θ) in ^{147}Gd ε decay consistent with 9/2, not 7/2.
1378.14 *11*	$^+$	A	Jπ: E2 γ to 7/2$^+$, 229.
1389.61 *8*	5/2$^-$,7/2$^-$,9/2$^-$	A G	Jπ: 5/2$^-$,7/2$^-$,9/2$^-$ from E1 γ to 7/2$^+$, 229.
1399.20 *13*	3/2$^+$	A	Jπ: 3/2$^+$,5/2$^+$,7/2$^+$,9/2$^+$ from E2 γ to 7/2$^+$, 229, and M1,E2 γ to 5/2$^+$, g.s.; 3/2$^+$ from unobserved ε feeding from 7/2$^-$ g.s. in ^{147}Gd ε decay.
1414.6 *5*	13/2$^-$	G	Jπ: 9/2$^-$,11/2$^-$,13/2$^-$ from M1+E2 γ to 11/2$^-$, 625. 1981Lo06 (^{148}Sm(p,2nγ)) interpret this level as an unfavored member of an $h_{11/2}$ decoupled band and use systematics to decide J=13/2$^-$.
1421.3 *3*	13/2$^+$	G	Jπ: M1+E2 γ to 11/2$^+$, 1034 and E2 γ to 9/2$^+$, 776.
1465.4 *10*	(5/2$^-$,7/2$^-$,9/2$^-$)	G	Jπ: (5/2$^-$,7/2$^-$,9/2$^-$) from (E1) γ to 7/2$^+$, 229.
1474.82 *14*	(3/2$^+$)	A	Jπ: (3/2$^+$),(11/2$^+$) from (E2) 1245γ to 7/2$^+$, 229; (11/2$^+$) less likely from γ to 5/2$^+$, g.s.; this level is not populated by ε feeding from 7/2$^-$, g.s. of ^{147}Gd.
1554.29 *5*	9/2$^-$	A G	Jπ: 9/2$^-$,11/2$^-$ from M1 γ to 9/2$^-$, 995, and M1+E2 γ to 11/2$^-$, 625; 11/2$^-$ excluded by log *ft*=6.0 from 7/2$^-$ g.s. in ^{147}Gd ε decay.
1565.16 *10*	7/2$^+$,9/2$^+$	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.4 from 7/2$^-$ in ^{147}Gd ε decay; 7/2$^+$,9/2$^+$ under the assumption that the 789γ to 9/2$^+$, 776 is M1+E2 (M1,E2 is adopted).
1647.0 *5*	15/2$^+$	G	Jπ: 11/2$^+$,13/2$^+$,15/2$^+$ from E2 γ 11/2$^+$, 1034, and (D) γ to 13/2$^+$, 1421; 15/2$^+$ more likely (π=+ states arising from coupling of $d_{5/2}$ and $g_{7/2}$ proton holes to ^{148}Gd core are lying close to yrast line, 1985JuZY, ^{148}Sm(p,2nγ)).
1696.19 *12*	7/2$^+$	A	Jπ: (7/2$^+$,9/2$^+$,11/2$^+$) from (E1) γ to 9/2$^-$, 995; 7/2$^+$ from E2 γ to 3/2$^+$, 1399.
1756.6 *5*	(11/2,15/2)	G	Jπ: (11/2,15/2) from stretched (D) γ to 13/2$^+$, 1421 in (p,2nγ).
1771.88 *5*	5/2$^+$,7/2$^+$,9/2$^+$	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.1 from 7/2$^-$ g.s. in ^{147}Gd ε decay; π=+ from M1,E2 γ to 9/2$^+$, 776.
1773.91 *21*	5/2$^{(-)}$ to 9/2$^{(-)}$	A G	Jπ: 5/2,7/2,9/2 from log *ft*=7.3 from 7/2$^-$ g.s. in ^{147}Gd ε decay; π=(−) from (M1) γ to 7/2$^-$, 1069.
1795.41 *9*	5/2$^-$,7/2$^-$	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.0 from 7/2$^-$ g.s. in ^{147}Gd ε decay; π=− and 9/2 excluded from E1 γ to 5/2$^+$, g.s.
1807.32 *12*	5/2$^+$,7/2$^+$,9/2$^+$	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.2 from 7/2$^-$ g.s. in ^{147}Gd ε decay; π=+ from M1+E2 γ to 7/2$^+$, 1696.
1816.19 *11*	5/2$^+$,7/2$^+$	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.0 from 7/2$^-$ g.s. in ^{147}Gd ε decay; 9/2 excluded from γ to 3/2$^+$, 1399; π=+ from M1,E2 γ to 5/2$^+$, g.s.
1828?		G	
1832.7 *11*	(17/2$^+$)	G	Jπ: (9/2$^+$,17/2$^+$) from (E2) γ 13/2$^+$, 1421; 17/2$^+$ more likely (π=+ states arising from coupling of $d_{5/2}$ and $g_{7/2}$ proton holes to ^{148}Gd core are lying close to yrast line, 1985JuZY, ^{148}Sm(p,2nγ)).
1838.46 *12*		A	
1858.19 *11*	7/2$^-$,9/2$^+$	A	Jπ: γ to 11/2$^-$, 625, and γ to 5/2$^+$, g.s.

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Adopted Levels, Gammas (continued)

^{147}Eu Levels (continued)

E(level)†	Jπ‡	XREF	Comments
1874.66 *13*	7/2⁻,9/2⁻	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.3 from 7/2⁻ g.s. in ^{147}Gd ε decay; 7/2⁻,9/2⁻ from M1+E2 γ to 9/2⁻, 2995.
1905.62 *11*	5/2⁺	A	Jπ: 5/2⁺,7/2⁺,9/2⁺ from M1+E2 γ to 7/2⁺, 1123; 5/2⁺ from M1+E2 γ to 3/2⁺, 1399.
1910.10 *22*	5/2,7/2,9/2⁺	A	Jπ: 3/2⁺,5/2,7/2,9/2⁺ from γ to 5/2⁺, g.s., and γ to 7/2⁺, 229; 3/2⁺ excluded if the tentatively placed 840.8γ, to 7/2⁻, 1069, is confirmed.
1926.5& *3*	19/2⁻	C EFG	Jπ: E2 γ to 15/2⁻, 1347, member of stretched E2 cascade.
1950.59 *9*	5/2⁻,7/2⁻,9/2⁻	A	Jπ: M1 γ to 7/2⁻, 1236.
1961.25 *25*	5/2⁺,7/2,9/2⁺	A	Jπ: γ to 5/2⁺, g.s., and γ to 9/2⁺, 776.
1986.88 *18*	5/2(⁻),7/2,9/2⁺	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.0 from 7/2⁻ g.s. in ^{147}Gd ε decay; 9/2⁺ from γ to 5/2⁺, g.s.; 5/2(⁻) if the tentatively placed 433.0γ, to 9/2⁻, 1554, is confirmed.
1995.38 *16*	7/2⁻,9/2⁻	A	Jπ: 5/2,7/2,9/2 from log *ft*=7.0 from 7/2⁻ g.s. in ^{147}Gd ε decay; 7/2⁻,9/2⁻ from E2 γ to 11/2⁻, 625;
2001.7?		G	
2013.8 *6*	(17/2⁻)	FG	Jπ: (13/2⁻,15/2⁻,17/2⁻) from (M1) γ to 15/2⁻, 1346; 1981Lo06 (^{148}Sm(p,2nγ)) interpret this level as an unfavored member of an $h_{11/2}$ decoupled band and use systematics to decide J=(17/2⁻).
2165.44 *12*	5/2⁻,7/2⁻,9/2⁻	A	Jπ: 5/2⁻,7/2⁻,9/2⁻ from log *ft*=4.0 from 7/2⁻ g.s. in ^{147}Gd ε decay.
2292.9& *4*	23/2⁻	C EFG	Jπ: E2 γ to 19/2⁻, 1927, member of stretched E2 cascade.
2347.5& *4*	21/2⁻	C EFG	Jπ: M1+E2 to 19/2⁻, 1927; 21/2⁻ by comparison with ^{149}Tb.
2504.4b *4*	(19/2⁺)	C	Jπ: by comparison with ^{149}Tb.
2845.0 *5*	19/2⁻,23/2⁻	C F	configuration=$\pi d_{5/2}^{-1}\nu f_{7/2}^{2}$ coupled to 3⁻ state (^{124}Sn(^{28}Si,p4nγ)). Jπ: M1+E2, ΔJ=1 γ to 21/2⁻.
2900.4a *4*	27/2⁻	C EF	Jπ: E2 γ to 23/2⁻, 2293, member of stretched E2 cascade.
2996.2b *4*	23/2(⁺)	C EF	Jπ: D(+Q), ΔJ=0 γ to 23/2⁻ 2293; 23/2⁺ by comparison with ^{149}Tb.
3190.6a *5*	25/2(⁻)	C F	Jπ: D, ΔJ=1 γ to 27/2⁻, 2900; 25/2⁻ by comparison with ^{149}Tb.
3229.8b *4*	27/2(⁺)	C EF	Jπ: D+Q, ΔJ=0 γ to 27/2⁻, 2900; 27/2⁺ by comparison with ^{149}Tb.
3523.3b *4*	29/2(⁺)	C EF	Jπ: D(+Q), ΔJ=1 γ to 27/2⁺, 3230; 29/2⁺ by comparison with ^{149}Tb.
3794.9 *4*	31/2(⁺)	C EF	configuration=$\pi h_{11/2}\nu f_{7/2}i_{13/2}$ (^{124}Sn(^{28}Si,p4nγ)). Jπ: D(+Q) to 29/2⁺, 3523; 31/2⁺ by comparison with ^{149}Tb.
4177.7 *4*	33/2(⁺)	C EF	Jπ: D+Q, ΔJ=1 to 31/2⁺, 3795; 33/2⁺ by comparison with ^{149}Tb. configuration=$\pi h_{11/2}\nu f_{7/2}h_{11/2}$ coupled to 3⁻ octupole state.
4242.3 *4*	31/2(⁻)	C E	Jπ: Q, ΔJ=2 γ to 27/2⁻, 2900; 31/2⁻ by comparison with ^{149}Tb. configuration=$\pi h_{11/2}\nu f_{7/2}^{2}$ coupled to 3⁻ x 3⁻ double-octupole state (^{124}Sn(^{29}Si,p5nγ)).
4283.9 *4*	31/2(⁻)	C E	configuration=$\pi h_{11/2}d_{5/2}^{-1}g_{7/2}^{-1}\nu f_{7/2}^{2}$ ^{124}Sn(^{28}Si,p4nγ). Jπ: Q, ΔJ=2 γ to 27/2⁻, 2900, Δπ=no more likely; D, ΔJ=1 γ from 33/2(⁺), 4612.
4612.0 *4*	33/2(⁺)	C E	Jπ: D, ΔJ=1 γ to 31/2(⁻), 4242; 33/2⁺ by comparison with ^{149}Tb.
4639.3 *5*	(33/2⁻)	C	Possible configuration=$\pi h_{11/2}d_{5/2}^{-1}g_{7/2}^{-1}\nu f_{7/2}^{2}$ (^{124}Sn(^{28}Si,p4nγ)). Jπ: D γ from (35/2) 4881 and γ to 31/2(⁺), 3795; (33/2⁻) from shell-model calculations (^{124}Sn(^{28}Si,p4nγ)).
4677.5 *5*	(35/2)	C	Jπ: (D), ΔJ=1 γ to 33/2(⁺), 4178; 35/2 by comparison with ^{149}Tb.
4801.2 *5*	33/2(⁺)	C	Jπ: Q, ΔJ=2 γ to 29/2(⁺), 3523; 33/2⁺ by comparison with ^{149}Tb.
4862.3 *5*	35/2	C	Jπ: from 39/2(⁺), 5595, to 33/2(⁺), 4612 the three ΔJ=1 γ cascade: (D), 139γ; D, 594γ; and D, 250γ, establishes 37/2 for 5455, and 35/2 for 4862.
4881.1 *5*	(35/2)	C	Jπ: D, ΔJ=1 γ from 37/2(⁺), 5083.
4907.4 *4*	35/2	C E	Jπ: D, ΔJ=1 γ to 33/2(⁺), 4612; D, ΔJ=1 γ from 37/2(⁺), 5333.
5056.5 *5*	35/2(⁺)	C	Jπ: Q, ΔJ=2 γ to 31/2(⁺), 3795; 35/2⁺ by comparison with ^{149}Tb.
5082.6 *5*	37/2(⁺)	C	Jπ: Q, ΔJ=2 γ to 33/2(⁺), 4612, Δπ=no more likely; D+Q γ from 39/2(⁺), 5595.
5176.2 *5*	35/2,39/2	C	Jπ: D, ΔJ=0, or Q, ΔJ=2 to 35/2, 4907.
5333.4 *5*	37/2(⁺)	C E	Jπ: Q, ΔJ=2 γ to 33/2(⁺), 4178; 37/2⁺ by comparison with ^{149}Tb.
5373.0 *5*	35/2,39/2	C	Jπ: D, ΔJ=0, or Q, ΔJ=2 to 35/2, 4907.
5381.0 *5*	37/2(⁺)	C E	Jπ: 29/2(⁺), 37/2(⁺) from Q, ΔJ=2 γ to 33/2(⁺), 4178, Δπ=no more likely; 29/2

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Adopted Levels, Gammas (continued)

^{147}Eu Levels (continued)

E(level)†	Jπ‡	XREF	Comments
			excluded in ^{124}Sn(^{28}Si,p4nγ).
5432.0 *5*		C	
5455.7 *5*	37/2	C	Jπ: see comment on 4862 level.
5594.8[c] *4*	39/2(+)	C E	Jπ: D, ΔJ=1 γ to 37/2(+), 5333; 39/2+ by comparison with ^{149}Tb.
5685.4 *6*		C	
5771.6[c] *5*	41/2(+)	C E	Jπ: Q, ΔJ=2 γ to 37/2(+), 5333; 41/2+ by comparison with ^{149}Tb.
6024.4 *7*		C	
6333.3[c] *5*	43/2(+)	C	Jπ: D+Q, ΔJ=1 γ to 41/2(+), 5772.
6509.9 *5*	43/2	C	Jπ: D, ΔJ=1 γ to 41/2(+), 5772.
6663.9 *5*	43/2	C	Jπ: D, ΔJ=1 γ to 41/2(+), 5772.
6702.6[#] *10*	43/2[@]	E	XREF: E(6698).
6713.0 *5*	43/2	C	Jπ: D, ΔJ=1 γ to 41/2(+), 5772.
6816.6[#] *11*		E	XREF: E(6812).
6847.3 *5*	45/2	C	Jπ: D, ΔJ=1 γ to 43/2(+), 6664.
6856.6[#] *11*		E	XREF: E(6852).
6866.6[#] *10*	45/2[@]	E	XREF: E(6862).
6962.8[e] *6*	45/2(+)	C	Jπ: (Q), ΔJ=2 γ to 41/2(+), 5772.
6966.1[d] *5*	45/2(−)	C	Jπ: D, ΔJ=1 γ to 43/2(+), 6333.
7068.6[#] *14*		E	XREF: E(7064).
7168.4[d] *6*	47/2(−)	C	Jπ: D, ΔJ=1 γ to 45/2(−), 6966.
7419.5[e] *6*		C	
7629.6[#] *17*		E	XREF: E(7625).
7681.7[d] *6*	49/2(−)	C	Jπ: D, ΔJ=1 γ to 47/2(−), 7168.
7959.6[#] *17*		E	XREF: E(7955).
8009.6[#] *17*		E	XREF: E(8005).
8056.6[#] *14*		E	XREF: E(8052).
8141.6[#] *20*		E	XREF: E(8137).
8512.0[e] *7*		C	
8612.9[e] *7*	51/2(−)	C	Jπ: D, ΔJ=1 γ to 49/2(−), 7682.
8727.2[e] *7*		C	
8776.6[e] *7*	53/2(−)	C	Jπ: Q, ΔJ=2 γ to 49/2(−), 7682.
9268.8[e] *7*		C	
9643.1[e] *7*		C	
x[f]	J	D	Additional information 1.
737.3+x[f] *3*	J+2	D	
1527.9+x[f] *4*	J+4	D	
2370.2+x[f] *4*	J+6	D	
3262.5+x[f] *4*	J+8	D	
4209.3+x[f] *4*	J+10	D	
5210.6+x[f] *4*	J+12	D	
6266.9+x[f] *4*	J+14	D	
7379.4+x[f] *4*	J+16	D	
8548.8+x[f] *6*	J+18	D	
9775.4+x[f] *6*	J+20	D	
11059.6+x[f] *6*	J+22	D	
12402.3+x[f] *6*	J+24	D	
13804.0+x[f] *7*	J+26	D	
15264.5+x[f] *7*	J+28	D	

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Adopted Levels, Gammas (continued)

^{147}Eu Levels (continued)

E(level)†	Jπ‡	XREF	Comments
16783.8+x[f] 8	J+30	D	
18362.3+x[f] 9	J+32	D	
19999.8+x[f] 12	J+34	D	
y[g]	J1	D	Additional information 2.
703.2+y[g] 7	J1+2	D	
1466.4+y[g] 8	J1+4	D	
2291.2+y[g] 8	J1+6	D	
3175.3+y[g] 8	J1+8	D	
4119.3+y[g] 8	J1+10	D	
5124.1+y[g] 8	J1+12	D	
6189.2+y[g] 8	J1+14	D	
7315.6+y[g] 8	J1+16	D	
8502.6+y[g] 8	J1+18	D	
9749.9+y[g] 8	J1+20	D	
11057.2+y[g] 8	J1+22	D	
12423.8+y[g] 9	J1+24	D	
13847.7+y[g] 9	J1+26	D	
15321.8+y[g] 9	J1+28	D	
16818.8+y[g] 14	J1+30	D	
18315.8+y[g] 17	J1+32	D	
19847.1+y[g] 18	J1+34	D	
21429.8+y[g] 23	J1+36	D	
z[h]	J2	D	Additional information 3.
708.1+z[h] 3	J2+2	D	
1479.8+z[h] 5	J2+4	D	
2314.7+z[h] 5	J2+6	D	
3213.6+z[h] 5	J2+8	D	
4175.5+z[h] 6	J2+10	D	
5200.5+z[h] 6	J2+12	D	
6288.1+z[h] 7	J2+14	D	
7438.0+z[h] 7	J2+16	D	
8649.8+z[h] 8	J2+18	D	
9921.4+z[h] 8	J2+20	D	
11251.2+z[h] 8	J2+22	D	
12634.6+z[h] 9	J2+24	D	
14055.9+z[h] 10	J2+26	D	
u[i]	J3	D	Additional information 4.
944.0+u[i] 3	J3+2	D	
1938.8+u[i] 4	J3+4	D	
2985.0+u[i] 5	J3+6	D	
4081.3+u[i] 5	J3+8	D	
5232.9+u[i] 5	J3+10	D	
6436.3+u[i] 6	J3+12	D	
7694.3+u[i] 7	J3+14	D	
9007.7+u[i] 7	J3+16	D	
10382.9+u[i] 8	J3+18	D	
11847.7+u[i] 9	J3+20	D	
13419.8+u[i] 11	J3+22	D	

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Adopted Levels, Gammas (continued)

^{147}Eu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
15065.2+u[i] *14*	J3+24	D	
v[j]	J4	D	Additional information 5.
835.9+v[j] *4*	J4+2	D	
1724.9+v[j] *5*	J4+4	D	
2665.4+v[j] *7*	J4+6	D	
3660.1+v[j] *8*	J4+8	D	
4708.7+v[j] *9*	J4+10	D	
5812.4+v[j] *10*	J4+12	D	
6967.8+v[j] *11*	J4+14	D	
8190.6+v[j] *12*	J4+16	D	
9466.6+v[j] *13*	J4+18	D	
10798.4+v[j] *13*	J4+20	D	
12186.8+v[j] *15*	J4+22	D	
13634.4+v[j] *15*	J4+24	D	
15141.3+v[j] *16*	J4+26	D	
16702.4+v[j] *19*	J4+28	D	
18322.6+v[j] *24*	J4+30	D	
w?[k]	J5	D	Additional information 6. The band may extend to lower energies with the following γ rays in the SD band cascade due to their possible coincidence relationship: 1136, 1079, 1018, 957, 891 and 829 keV.
1244.0+w[k] *10*	J5+2	D	
2541.0+w?[k] *15*	J5+4	D	
3884.0+w?[k] *18*	J5+6	D	
5277.0+w?[k] *20*	J5+8	D	
6721.0+w?[k] *23*	J5+10	D	
8216.0+w?[k] *25*	J5+12	D	
9761+w?[k] *3*	J5+14	D	
11362+w?[k] *3*	J5+16	D	

[†] From least-squares fit to Eγ′s.

[‡] J^{π}′s from ^{147}Gd ε decay and ^{148}Sm(p,2nγ) for levels up to 2165 keV, based on mult and similar (but not identical) level schemes. Above 2165 keV J^{π}′s are assigned mostly from ^{124}Sn(^{28}Si,p4nγ), 2001Po18, and ^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ), 1977Fl09 (the values from ^{139}La(^{13}C,5nγ) are noted separately). Even if one can observe the general pattern of increasing J′s with excitation energy characteristic of high-spin decays, the assignments are not straightforward. Firstly, ^{147}Eu is a transitional nucleus in between the N=82 closed-shell region and the deformed N=90 region. Secondly, 2001Po18 measure only DCO′s (while 1977Fl09 measured γ(θ) where some π values can be assumed). However as pointed out by 2001Po18, above $11/2^{-}$, 625 level in ^{147}Eu there is a 5.2-MeV wide region where they find a consistent match with levels (and their decay patterns) in ^{149}Tb isotone (for ^{149}Tb see 2004Si16, Adopted Levels, and 1991La17), which is useful for J^{π}′s in ^{147}Eu. Beyond this region (above 41/2, 5772 level), (weaker) J^{π} assignments are based on the reasonable assumption that J(parent)>J(daughter), and shell-model calculations (2001Po18). More specific arguments are presented in this evaluation (see J^{π} comments in this table).

[#] The levels in ^{139}La(^{13}C,5nγ) have smaller values of their energies as compared to those in ^{124}Sn(^{28}Si,p4nγ) and ^{143}Nd(^{7}Li,3nγ), ^{145}Nd(^{6}Li,4nγ) (coming from systematically smaller Eγ′s reported by 1997Zh15 in ^{139}La(^{13}C,5nγ)). The levels above 5767 keV in ^{139}La(^{13}C,5nγ) – same as 5771.6 keV in ^{124}Sn(^{28}Si,p4nγ), marked here, are recalculated by evaluator starting with 5771.6 keV, instead of 5767 as in ^{139}La(^{13}C,5nγ) (these are the only levels coming exclusively from ^{139}La(^{13}C,5nγ)).

[@] Deduced in (^{139}La(^{13}C,5nγ)) 1997Zh15 based on measured mult′s.

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Adopted Levels, Gammas (continued)

^{147}Eu Levels (continued)

& Seq.(d): Member of configuration=$\pi h_{11/2}\nu f^2_{7/2}$.

[a] Seq.(e): Member of configuration=$\pi h_{11/2}\nu f_{7/2}h_{11/2}$.

[b] Band(a): Member of configuration=$\pi h_{11/2}\nu f^2_{7/2}$ coupled to 3^- octupole state.

[c] Band(b): Member of configuration=$\pi h^2_{11/2}g^{-1}_{7/2}\nu f_{7/2}h_{11/2}$.

[d] Band(c): Member of configuration=$\pi h^2_{11/2}g^{-1}_{7/2}\nu h_{11/2}i_{13/2}$.

[e] Member of 7-quasiparticle structure: $\pi^2\pi^{-3}\nu^2$. Among these 6963 and 7420 are assigned $\pi h^2_{11/2}g^{-1}_{7/2}\ j^{-2}_{2+}\nu f_{7/2}h_{11/2}$; and 8512, 8612, 8727 and 8776 levels are are assigned $\pi h^2_{11/2}g^{-1}_{7/2}j^{-2}_{2+}\nu h_{11/2}i_{13/2}$.

[f] Band(D): SD-1 Band, (π=+,α=−1/2) (1998Ha21). Percent population=0.44 *4* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) $\pi(6_16_21/2[301],\ \alpha$=+1/2) (1998Ha21).

[g] Band(E): SD-2 Band, (π=−,α=−1/2) (1998Ha21). Percent population=0.40 *5* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) $\pi(6_11/2[301],\ \alpha$=+1/2 *1*/2[301],α=−1/2) at low frequencies and ν(1/2[651],α=−1/2) $\pi(6_16_26_3)$ at high frequencies (1998Ha21).

[h] Band(A): SD-3 Band, (π=−,α=+1/2) (1998Ha21). Percent population=0.28 *4* (1998Ha21). Intruder configuration=ν(1/2[651],α=+1/2) $\pi(6_11/2[301],\ \alpha$=+1/2 *1*/2[301],α=−1/2) at low frequencies and ν(1/2[651],α=−1/2) $\pi(6_16_26_3)$ at high frequencies (1998Ha21).

[i] Band(F): SD-4 Band, (π=−,α=−1/2) (1998Ha21). Percent population=0.30 *4* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) $\pi(6_16_26_3)$ at low frequencies and ν(1/2[651],α=−1/2) $\pi(6_11/2[301],\alpha$=+1/2 1/2[301],α=−1/2) at high frequencies (1998Ha21).

[j] Band(B): SD-5 Band, (π=+,α=+1/2) (1998Ha21). Percent population=0.22 *3* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) $\pi(6_16_21/2[301],\ \alpha$=−1/2) (1998Ha21).

[k] Band(C): SD-6 Band (1998Ha21) (?). Very weakly populated. This band may continue with the following γ ray cascade: 1199-1136-1079-1018-957-891-829.

Adopted Levels, Gammas (continued)

$\gamma(^{147}Eu)$

For unplaced γ's see ^{147}Gd ε decay.

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
229.323	7/2$^+$	229.32 *2*	100	0.0	5/2$^+$	M1+E2	+0.13 *2*	0.180	B(M1)(W.u.)=0.0085 *+10−9*; B(E2)(W.u.)=1.5 *+6−4* α(K)=0.1526 *22*; α(L)=0.0217 *3*; α(M)=0.00470 *7* α(N)=0.001075 *16*; α(O)=0.0001704 *24*; α(P)=1.675×10^{-5} *24* 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).
625.27	11/2$^-$	396.00 *10*	100 *5*	229.323	7/2$^+$	M2		0.1531	B(M2)(W.u.)=0.1158 *25* α(K)=0.1264 *18*; α(L)=0.0208 *3*; α(M)=0.00459 *7* α(N)=0.001053 *15*; α(O)=0.0001660 *24*; α(P)=1.576×10^{-5} *22*
		625.18 *10*	13.6 *9*	0.0	5/2$^+$	E3		0.0194	B(E3)(W.u.)=3.49 *28* α(K)=0.01507 *22*; α(L)=0.00337 *5*; α(M)=0.000759 *11* α(N)=0.0001718 *24*; α(O)=2.57×10^{-5} *4*; α(P)=1.626×10^{-6} *23*
755.11	3/2$^+$,5/2$^+$	755.01 *10*	100	0.0	5/2$^+$	M1		0.00836	α(K)=0.00713 *10*; α(L)=0.000967 *14*; α(M)=0.000208 *3* α(N)=4.76×10^{-5} *7*; α(O)=7.58×10^{-6} *11*; α(P)=7.69×10^{-7} *11*
776.39	9/2$^+$	547.3 *3*	7.0 *12*	229.323	7/2$^+$	M1(+E2)	≤0.25	0.0183 *4*	α(K)=0.0156 *3*; α(L)=0.00215 *4*; α(M)=0.000462 *8* α(N)=0.0001059 *18*; α(O)=1.68×10^{-5} *3*; α(P)=1.69×10^{-6} *4*
		776.33 *10*	100 *5*	0.0	5/2$^+$	E2		0.00455	α(K)=0.00381 *6*; α(L)=0.000576 *8*; α(M)=0.0001252 *18* α(N)=2.85×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=3.90×10^{-7} *6*
778.01	7/2$^+$	549.2 *5*	1.5 *12*	229.323	7/2$^+$				
		778.04 *5*	100 *4*	0.0	5/2$^+$	M1+E2	0.6 *3*	0.0069 *6*	α(K)=0.0059 *6*; α(L)=0.00081 *6*; α(M)=0.000175 *13* α(N)=4.0×10^{-5} *3*; α(O)=6.3×10^{-6} *5*; α(P)=6.3×10^{-7} *6*
827.8	(3/2$^+$,5/2$^+$,7/2$^+$)	827.8[&]	100	0.0	5/2$^+$	(M1)[a]		0.00669	α(K)=0.00570 *8*; α(L)=0.000771 *11*; α(M)=0.0001656 *24* α(N)=3.79×10^{-5} *6*; α(O)=6.04×10^{-6} *9*; α(P)=6.14×10^{-7} *9*
861.64	5/2$^+$,7/2$^+$	106.52 *2*	5.4 *18*	755.11	3/2$^+$,5/2$^+$	M1,E2		1.73 *20*	α(K)=1.15 *16*; α(L)=0.46 *27*; α(M)=0.105 *65*

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Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
									α(N)=0.023 *15*; α(O)=0.0033 *19*; α(P)=1.09×10^{-4} *36*
861.64	5/2$^+$,7/2$^+$	632.35 *10*	98 *4*	229.323	7/2$^+$	M1		0.01295	α(K)=0.01103 *16*; α(L)=0.001504 *21*; α(M)=0.000324 *5* α(N)=7.41×10^{-5} *11*; α(O)=1.180×10^{-5} *17*; α(P)=1.192×10^{-6} *17*
		861.7 *1*	100 *4*	0.0	5/2$^+$	M1+E2	1.3 *3*	0.0045 *4*	α(K)=0.0038 *3*; α(L)=0.00054 *4*; α(M)=0.000117 *7* α(N)=2.66×10^{-5} *17*; α(O)=4.2×10^{-6} *3*; α(P)=4.0×10^{-7} *4*
995.17	9/2$^-$	217.2 *1*	3.0 *10*	778.01	7/2$^+$	E1		0.0352	α(K)=0.0299 *5*; α(L)=0.00417 *6*; α(M)=0.000897 *13* α(N)=0.000203 *3*; α(O)=3.14×10^{-5} *5*; α(P)=2.76×10^{-6} *4*
		370.0 *1*	100 *4*	625.27	11/2$^-$	M1+E2	+0.07 *3*	0.0505 *8*	α(K)=0.0429 *6*; α(L)=0.00597 *9*; α(M)=0.001287 *18* α(N)=0.000295 *5*; α(O)=4.69×10^{-5} *7*; α(P)=4.69×10^{-6} *7*
		765.81 *10*	66 *4*	229.323	7/2$^+$	E1		0.00182	α(K)=0.001558 *22*; α(L)=0.000204 *3*; α(M)=4.36×10^{-5} *7* α(N)=9.96×10^{-6} *14*; α(O)=1.574×10^{-6} *22*; α(P)=1.550×10^{-7} *22*
		995.58[if] *20*	2.24[i] *24*	0.0	5/2$^+$				
995.5?	(+)	995.5[&f j]	100	0.0	5/2$^+$	(E2)[a]		0.00264	α(K)=0.00223 *4*; α(L)=0.000319 *5*; α(M)=6.90×10^{-5} *10* α(N)=1.575×10^{-5} *22*; α(O)=2.47×10^{-6} *4*; α(P)=2.30×10^{-7} *4*
1007.41	5/2$^+$,7/2$^+$,9/2$^+$	252.30 *8*	2.6 *13*	755.11	3/2$^+$,5/2$^+$	M1,E2		0.120 *20*	α(K)=0.097 *22*; α(L)=0.0182 *16*; α(M)=0.0040 *5* α(N)=0.00091 *9*; α(O)=0.000138 *8*; α(P)=9.9×10^{-6} *32*
		778.04[j] *5*	100 *5*	229.323	7/2$^+$	M1		0.00777	α(K)=0.00663 *10*; α(L)=0.000898 *13*; α(M)=0.000193 *3* α(N)=4.42×10^{-5} *7*; α(O)=7.04×10^{-6} *10*; α(P)=7.14×10^{-7} *10*
1011.6	5/2$^+$,7/2$^+$,9/2$^+$	782.4[&]	100	229.323	7/2$^+$	M1+E2[a]		0.0061 *16*	α(K)=0.0051 *14*; α(L)=0.00073 *16*; α(M)=0.00016 *4* α(N)=3.6×10^{-5} *8*; α(O)=5.6×10^{-6} *13*; α(P)=5.4×10^{-7} *16*
1033.8	11/2$^+$	257.5[&]		776.39	9/2$^+$				
		804.5[&] *5*	100	229.323	7/2$^+$	E2[a]		0.00420	α(K)=0.00352 *5*; α(L)=0.000527 *8*;

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Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
									α(M)=0.0001145 *17* α(N)=2.61×10^{-5} *4*; α(O)=4.06×10^{-6} *6*; α(P)=3.61×10^{-7} *5*
1069.39	7/2$^-$	291.7 *2*	2.8 *6*	778.01	7/2$^+$				
		839.89 *14*	1.2 *1*	229.323	7/2$^+$	E1,M2		0.00167 *16*	α(K)=0.00143 *13*; α(L)=0.000188 *20*; α(M)=4.0×10^{-5} *5* α(N)=9.2×10^{-6} *10*; α(O)=1.46×10^{-6} *16*; α(P)=1.44×10^{-7} *15*
		1069.35 *10*	100 *7*	0.0	5/2$^+$	E1		9.56×10^{-4}	α(K)=0.000821 *12*; α(L)=0.0001061 *15*; α(M)=2.27×10^{-5} *4* α(N)=5.18×10^{-6} *8*; α(O)=8.21×10^{-7} *12*; α(P)=8.22×10^{-8} *12*
1122.83	7/2$^+$	261.1 *1*	24.4 *12*	861.64	5/2$^+$,7/2$^+$	M1+E2	0.6 *+5−3*	0.118 *11*	α(K)=0.097 *12*; α(L)=0.0157 *7*; α(M)=0.00344 *19* α(N)=0.00078 *4*; α(O)=0.000121 *3*; α(P)=1.04×10^{-5} *17*
		346.3 *3*	26.3 *10*	776.39	9/2$^+$	M1		0.0602	α(K)=0.0511 *8*; α(L)=0.00712 *11*; α(M)=0.001535 *22* α(N)=0.000352 *5*; α(O)=5.59×10^{-5} *8*; α(P)=5.59×10^{-6} *8*
		893.5 *1*	100 *5*	229.323	7/2$^+$	M1		0.00556	α(K)=0.00475 *7*; α(L)=0.000639 *9*; α(M)=0.0001373 *20* α(N)=3.15×10^{-5} *5*; α(O)=5.01×10^{-6} *7*; α(P)=5.10×10^{-7} *8* Mult.: M1,E2 in ^{147}Gd ε decay and (M1) in ^{148}Sm(p,2nγ).
		1122.9 *1*	11.2 *6*	0.0	5/2$^+$	E2		0.00206	α(K)=0.001747 *25*; α(L)=0.000245 *4*; α(M)=5.27×10^{-5} *8* 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*
1212.93	5/2$^-$,7/2$^-$	458.0 *5*	30 *30*	755.11	3/2$^+$,5/2$^+$				
		983.4 *4*	100 *12*	229.323	7/2$^+$	E1		1.12×10^{-3}	α(K)=0.000959 *14*; α(L)=0.0001244 *18*; α(M)=2.66×10^{-5} *4* α(N)=6.07×10^{-6} *9*; α(O)=9.61×10^{-7} *14*; α(P)=9.59×10^{-8} *14*
		1213.0 *2*	70 *5*	0.0	5/2$^+$	E1		7.92×10^{-4}	α(K)=0.000654 *10*; α(L)=8.41×10^{-5} *12*; α(M)=1.79×10^{-5} *3* 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*
1235.77	7/2$^-$	166.34 *10*	20 *5*	1069.39	7/2$^-$	M1+E2	0.58 *5*	0.429 *7*	α(K)=0.345 *6*; α(L)=0.0656 *19*; α(M)=0.0145 *5* α(N)=0.00329 *10*; α(O)=0.000498 *13*; α(P)=3.61×10^{-5} *8*

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Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ [#]	I_γ [#]	E_f	J_f^π	Mult. [@]	δ [‡@]	α [†]	Comments
1235.77	7/2⁻	240.64 *5*	97 *5*	995.17	9/2⁻	M1		0.1588	α(K)=0.1347 *19*; α(L)=0.0190 *3*; α(M)=0.00409 *6* α(N)=0.000937 *14*; α(O)=0.0001488 *21*; α(P)=1.481×10^{-5} *21*
		610.43 *10*	100 *9*	625.27	11/2⁻	E2		0.00803	α(K)=0.00665 *10*; α(L)=0.001080 *16*; α(M)=0.000236 *4* α(N)=5.37×10^{-5} *8*; α(O)=8.26×10^{-6} *12*; α(P)=6.73×10^{-7} *10*
		1006.4 *1*	86 *5*	229.323	7/2⁺	E1		1.07×10^{-3}	α(K)=0.000919 *13*; α(L)=0.0001190 *17*; α(M)=2.54×10^{-5} *4* α(N)=5.81×10^{-6} *9*; α(O)=9.20×10^{-7} *13*; α(P)=9.19×10^{-8} *13*
		1235.7 *1*	73 *5*	0.0	5/2⁺	E1		7.78×10^{-4}	α(K)=0.000633 *9*; α(L)=8.13×10^{-5} *12*; α(M)=1.735×10^{-5} *25* 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*
1244.31	11/2⁻	249.15 *10*	11.0 *6*	995.17	9/2⁻	M1,E2		0.125 *20*	α(K)=0.100 *23*; α(L)=0.0189 *18*; α(M)=0.0042 *5* α(N)=0.00095 *10*; α(O)=0.000143 *9*; α(P)=1.02×10^{-5} *33*
		619.00 *10*	100 *4*	625.27	11/2⁻	M1+E2	0.79 *17*	0.0114 *7*	α(K)=0.0096 *6*; α(L)=0.00138 *7*; α(M)=0.000298 *13* α(N)=6.8×10^{-5} *3*; α(O)=1.07×10^{-5} *5*; α(P)=1.02×10^{-6} *7*
1289.4	(11/2⁻)	294.5[&]		995.17	9/2⁻	(M1)		0.0924	α(K)=0.0784 *11*; α(L)=0.01097 *16*; α(M)=0.00237 *4* α(N)=0.000542 *8*; α(O)=8.61×10^{-5} *12*; α(P)=8.59×10^{-6} *12*
		513[&]		776.39	9/2⁺				
1337.78	5/2⁺,7/2⁺,9/2⁺	214.95 *5*	100 *9*	1122.83	7/2⁺	M1,E2		0.193 *24*	α(K)=0.15 *3*; α(L)=0.031 *6*; α(M)=0.0070 *14* α(N)=0.0016 *3*; α(O)=0.00023 *4*; α(P)=1.54×10^{-5} *48*
		329.7[h] *10*	<12.5[h]	1007.41	5/2⁺,7/2⁺,9/2⁺				
1339.4	7/2⁻,9/2⁻,11/2⁻	327.9[&]		1011.6	5/2⁺,7/2⁺,9/2⁺	(E1)[a]		0.01226	α(K)=0.01045 *15*; α(L)=0.001426 *20*; α(M)=0.000306 *5* α(N)=6.96×10^{-5} *10*; α(O)=1.086×10^{-5} *16*; α(P)=9.98×10^{-7} *14*
		344.2[&] *4*		995.17	9/2⁻	M1[a]		0.0612	α(K)=0.0520 *8*; α(L)=0.00724 *11*; α(M)=0.001560 *23*

$^{147}_{63}Eu_{84}$-11

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	α[†]	Comments
								α(N)=0.000357 *6*; α(O)=5.68×10^{-5} *9*; α(P)=5.68×10^{-6} *9*
1339.4	7/2$^-$,9/2$^-$,11/2$^-$	714[&]		625.27	11/2$^-$			
1346.27	15/2$^-$	721.0[&] *2*	100	625.27	11/2$^-$	E2[a]	0.00539	α(K)=0.00450 *7*; α(L)=0.000694 *10*; α(M)=0.0001511 *22* α(N)=3.44×10^{-5} *5*; α(O)=5.33×10^{-6} *8*; α(P)=4.59×10^{-7} *7*
1360.34	9/2$^-$	584.6 *6*	0.5 *3*	776.39	9/2$^+$			
		734.4 *4*	2.6 *8*	625.27	11/2$^-$	(M1)	0.00895	α(K)=0.00763 *11*; α(L)=0.001035 *15*; α(M)=0.000223 *4* α(N)=5.10×10^{-5} *8*; α(O)=8.12×10^{-6} *12*; α(P)=8.23×10^{-7} *12*
		1130.9 *1*	100 *8*	229.323	7/2$^+$	E1	8.68×10^{-4}	α(K)=0.000742 *11*; α(L)=9.56×10^{-5} *14*; α(M)=2.04×10^{-5} *3* 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*
		1360	<0.13	0.0	5/2$^+$			
1378.14	+	516.6 *10*	8 *3*	861.64	5/2$^+$,7/2$^+$			
		1149.10 *15*	100 *8*	229.323	7/2$^+$	E2	0.00197	α(K)=0.001668 *24*; α(L)=0.000233 *4*; α(M)=5.01×10^{-5} *7* 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*
		1377.7 *3*	12.2 *14*	0.0	5/2$^+$			
1389.61	5/2$^-$,7/2$^-$,9/2$^-$	176.7 *1*	5.2 *13*	1212.93	5/2$^-$,7/2$^-$	(M1)	0.370	α(K)=0.314 *5*; α(L)=0.0445 *7*; α(M)=0.00960 *14* α(N)=0.00220 *3*; α(O)=0.000349 *5*; α(P)=3.46×10^{-5} *5*
		1160.15 *15*	100 *6*	229.323	7/2$^+$	E1	8.36×10^{-4}	α(K)=0.000708 *10*; α(L)=9.12×10^{-5} *13*; α(M)=1.95×10^{-5} *3* 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*
		1389.5[h] *2*	8.4[h] *8*	0.0	5/2$^+$			
1399.20	3/2$^+$	329.7[h] *10*	18[h] *9*	1069.39	7/2$^-$			
		404.0 *10*	19 *19*	995.17	9/2$^-$			
		1170.1 *4*	59 *5*	229.323	7/2$^+$	E2	0.00190	α(K)=0.001609 *23*; α(L)=0.000224 *4*; α(M)=4.82×10^{-5} *7* 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*
		1399.2 *2*	100 *6*	0.0	5/2$^+$	M1,E2	0.0017 *3*	α(K)=0.0014 *3*; α(L)=0.00019 *4*; α(M)=4.0×10^{-5} *7* α(N)=9.2×10^{-6} *17*; α(O)=1.5×10^{-6} *3*; α(P)=1.5×10^{-7} *3*; α(IPF)=4.57×10^{-5} *23*
1414.6	13/2$^-$	789.3[&] *5*	100	625.27	11/2$^-$	M1+E2[a]	0.0059 *16*	α(K)=0.0050 *14*; α(L)=0.00071 *16*; α(M)=0.00015 *4*

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	α[†]	Comments
								α(N)=3.5×10^{-5} *8*; α(O)=5.5×10^{-6} *13*; α(P)=5.3×10^{-7} *16*
1421.3	13/2$^+$	132.1[&] *5*		1289.4	(11/2$^-$)	D		
		177.1[&]		1244.31	11/2$^-$			
		387.5[&] *5*		1033.8	11/2$^+$	M1+E2[a]	0.036 *9*	α(K)=0.0299 *83*; α(L)=0.0048 *6*; α(M)=0.00105 *10* α(N)=0.000238 *24*; α(O)=3.7×10^{-5} *5*; α(P)=3.1×10^{-6} *11*
		644.8[&] *5*		776.39	9/2$^+$	E2[a]	0.00703	α(K)=0.00584 *9*; α(L)=0.000931 *14*; α(M)=0.000203 *3* α(N)=4.62×10^{-5} *7*; α(O)=7.13×10^{-6} *10*; α(P)=5.92×10^{-7} *9*
		796.1[&]		625.27	11/2$^-$			
1465.4	(5/2$^-$,7/2$^-$,9/2$^-$)	1236.1[&]	100	229.323	7/2$^+$	(E1)[a]	7.77×10^{-4}	α(K)=0.000633 *9*; α(L)=8.13×10^{-5} *12*; α(M)=1.734×10^{-5} *25* α(N)=3.96×10^{-6} *6*; α(O)=6.29×10^{-7} *9*; α(P)=6.35×10^{-8} *9*; α(IPF)=4.16×10^{-5} *6*
1474.82	(3/2$^+$)	1245.3 *3*	84 *7*	229.323	7/2$^+$	(E2)	1.68×10^{-3}	α(K)=0.001422 *20*; α(L)=0.000196 *3*; α(M)=4.22×10^{-5} *6* 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*
		1474.7 *3*	100 *11*	0.0	5/2$^+$			
1554.29	9/2$^-$	164.6 *1*	0.19 *4*	1389.61	5/2$^-$,7/2$^-$,9/2$^-$	M1,E2	0.434 *19*	α(K)=0.33 *6*; α(L)=0.081 *28*; α(M)=0.0184 *67* α(N)=0.0041 *15*; α(O)=6.0×10^{-4} *18*; α(P)=3.24×10^{-5} *98*
		309.96 *10*	20.9 *9*	1244.31	11/2$^-$	M1	0.0807	α(K)=0.0685 *10*; α(L)=0.00957 *14*; α(M)=0.00206 *3* α(N)=0.000472 *7*; α(O)=7.51×10^{-5} *11*; α(P)=7.50×10^{-6} *11*
		318.60 *10*	10.8 *4*	1235.77	7/2$^-$	M1(+E2)	0.062 *14*	α(K)=0.051 *13*; α(L)=0.0086 *3*; α(M)=0.00189 *4* α(N)=0.000430 *11*; α(O)=6.6×10^{-5} *4*; α(P)=5.3×10^{-6} *18*
		341.8[j] *5*	0.85 *8*	1212.93	5/2$^-$,7/2$^-$			
		431.5 *5*	0.8 *4*	1122.83	7/2$^+$			
		484.9 *1*	15.0 *7*	1069.39	7/2$^-$	M1	0.0252	α(K)=0.0215 *3*; α(L)=0.00296 *5*; α(M)=0.000636 *9* α(N)=0.0001457 *21*; α(O)=2.32×10^{-5} *4*; α(P)=2.33×10^{-6} *4*
		559.07 *10*	32.0 *11*	995.17	9/2$^-$	M1	0.01761	α(K)=0.01500 *21*; α(L)=0.00205 *3*; α(M)=0.000442 *7*

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
									α(N)=0.0001012 *15*; α(O)=1.611×10^{-5} *23*; α(P)=1.625×10^{-6} *23*
1554.29	9/2$^-$	775.9 *3*	5.5 *7*	778.01	7/2$^+$	[E1]		1.77×10^{-3}	α(K)=0.001518 *22*; α(L)=0.000199 *3*; α(M)=4.25×10^{-5} *6* α(N)=9.70×10^{-6} *14*; α(O)=1.533×10^{-6} *22*; α(P)=1.510×10^{-7} *22*
		929.01 *7*	100 *4*	625.27	11/2$^-$	M1+E2	0.62 *18*	0.00451 *24*	α(K)=0.00384 *21*; α(L)=0.00052 *3*; α(M)=0.000113 *6* α(N)=2.58×10^{-5} *13*; α(O)=4.10×10^{-6} *21*; α(P)=4.09×10^{-7} *24*
		1325.1 *1*	4.3 *3*	229.323	7/2$^+$	E1+M2	0.20 *5*	0.00091 *9*	α(K)=0.00071 *8*; α(L)=9.2×10^{-5} *11*; α(M)=1.98×10^{-5} *24* 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*
		1554	<0.05	0.0	5/2$^+$				
1565.16	7/2$^+$,9/2$^+$	329.7[hj] *10*	<3.7[h]	1235.77	7/2$^-$				
		496.2 *10*	6 *3*	1069.39	7/2$^-$				
		569.6 *6*	<16.7	995.17	9/2$^-$				
		788.65 *15*	100 *8*	776.39	9/2$^+$	M1,E2		0.0060 *16*	α(K)=0.0050 *14*; α(L)=0.00071 *16*; α(M)=0.00015 *4* α(N)=3.5×10^{-5} *8*; α(O)=5.5×10^{-6} *13*; α(P)=5.3×10^{-7} *16*
		810.27 *20*	64 *6*	755.11	3/2$^+$,5/2$^+$	E2(+M1)	≥0.79	0.0050 *9*	α(K)=0.0043 *8*; α(L)=0.00061 *9*; α(M)=0.000132 *20* α(N)=3.0×10^{-5} *5*; α(O)=4.7×10^{-6} *8*; α(P)=4.4×10^{-7} *9*
		1336.2 *5*	5.8 *6*	229.323	7/2$^+$				
		1565.2 *2*	19 *5*	0.0	5/2$^+$				
1647.0	15/2$^+$	225.6[&] *4*		1421.3	13/2$^+$	(D)[a]			
		613.2[&]		1033.8	11/2$^+$	E2[a]		0.00794	α(K)=0.00658 *10*; α(L)=0.001067 *15*; α(M)=0.000233 *4* α(N)=5.30×10^{-5} *8*; α(O)=8.16×10^{-6} *12*; α(P)=6.66×10^{-7} *10*
1696.19	7/2$^+$	297.4 *2*	97 *17*	1399.20	3/2$^+$	E2		0.0598	α(K)=0.0461 *7*; α(L)=0.01069 *16*; α(M)=0.00240 *4* α(N)=0.000540 *8*; α(O)=7.92×10^{-5} *12*; α(P)=4.28×10^{-6} *6*
		460.6[j] *5*	37 *20*	1235.77	7/2$^-$				
		573.0 *8*	43 *14*	1122.83	7/2$^+$	M1,E2		0.0130 *36*	α(K)=0.0109 *32*; α(L)=0.0016 *4*; α(M)=0.00035 *7* α(N)=8.0×10^{-5} *16*; α(O)=1.2×10^{-5} *3*; α(P)=1.15×10^{-6} *38*

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
1696.19	7/2+	701.3 *2*	100 *11*	995.17	9/2−	(E1)		0.00217	α(K)=0.00186 *3*; α(L)=0.000245 *4*; α(M)=5.24×10^{-5} *8* α(N)=1.196×10^{-5} *17*; α(O)=1.89×10^{-6} *3*; α(P)=1.85×10^{-7} *3*
		834.7 *3*	35 *4*	861.64	5/2+,7/2+				
		1466.0 *4*	8.3 *14*	229.323	7/2+				
1756.6	(11/2,15/2)	335.3[&] *4*	100	1421.3	13/2+	(D)[a]			
1771.88	5/2+,7/2+,9/2+	434.3 *6*	4.5 *21*	1337.78	5/2+,7/2+,9/2+	(M1)		0.0334	α(K)=0.0284 *5*; α(L)=0.00393 *6*; α(M)=0.000846 *13* α(N)=0.000194 *3*; α(O)=3.08×10^{-5} *5*; α(P)=3.10×10^{-6} *5*
		910.244 *23*	62.7 *18*	861.64	5/2+,7/2+	M1		0.00532	α(K)=0.00454 *7*; α(L)=0.000611 *9*; α(M)=0.0001313 *19* α(N)=3.01×10^{-5} *5*; α(O)=4.79×10^{-6} *7*; α(P)=4.87×10^{-7} *7*
		995.49 *3*	100 *5*	776.39	9/2+	M1,E2		0.0035 *9*	α(K)=0.0029 *8*; α(L)=0.00041 *9*; α(M)=8.7×10^{-5} *19* α(N)=2.0×10^{-5} *5*; α(O)=3.2×10^{-6} *7*; α(P)=3.11×10^{-7} *82*
1773.91	5/2(−) to 9/2(−)	538.0[j] *10*	8.6 *25*	1235.77	7/2−				
		704.5 *2*	93 *3*	1069.39	7/2−	(M1)		0.00991	α(K)=0.00845 *12*; α(L)=0.001148 *16*; α(M)=0.000247 *4* α(N)=5.65×10^{-5} *8*; α(O)=9.00×10^{-6} *13*; α(P)=9.12×10^{-7} *13*
		995.58[i f j] *20*	100[i] *7*	778.01	7/2+				
		1545.0 *10*	1.5 *5*	229.323	7/2+				
1795.41	5/2−,7/2−	1017.9 *4*	14 *3*	778.01	7/2+				
		1040.4 *4*	49 *5*	755.11	3/2+,5/2+	(E1)		1.01×10^{-3}	α(K)=0.000864 *13*; α(L)=0.0001117 *16*; α(M)=2.39×10^{-5} *4* α(N)=5.45×10^{-6} *8*; α(O)=8.64×10^{-7} *13*; α(P)=8.65×10^{-8} *13*
		1565.9 *1*	28.3 *25*	229.323	7/2+				
		1795.94 *20*	100 *5*	0.0	5/2+	E1		8.17×10^{-4}	α(K)=0.000336 *5*; α(L)=4.27×10^{-5} *6*; α(M)=9.09×10^{-6} *13* 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*

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
1807.32	5/2$^+$,7/2$^+$,9/2$^+$	111.17 *5*	100 *28*	1696.19	7/2$^+$	M1+E2	0.41 *+14−6*	1.41 *4*	α(K)=1.11 *3*; α(L)=0.23 *4*; α(M)=0.051 *10* α(N)=0.0114 *21*; α(O)=0.0017 *3*; α(P)=0.000119 *6*
		407.0 *10*	10 *10*	1399.20	3/2$^+$				
		418.3 *10*	10 *10*	1389.61	5/2$^-$,7/2$^-$,9/2$^-$				
		737.0[g] *4*	17	1069.39	7/2$^-$				
		1806.7 *3*	14.1 *14*	0.0	5/2$^+$				
1816.19	5/2$^+$,7/2$^+$	341.31 *13*	31 *4*	1474.82	(3/2$^+$)				
		416.0 *10*	6 *6*	1399.20	3/2$^+$				
		580.7 *6*	9 *4*	1235.77	7/2$^-$				
		693.2 *3*	46 *4*	1122.83	7/2$^+$	M1		0.01031	α(K)=0.00879 *13*; α(L)=0.001195 *17*; α(M)=0.000257 *4* α(N)=5.89×10^{-5} *9*; α(O)=9.37×10^{-6} *14*; α(P)=9.49×10^{-7} *14*
		1061.2 *4*	28 *6*	755.11	3/2$^+$,5/2$^+$				
		1586.88 *15*	100 *6*	229.323	7/2$^+$	M1,E2		0.00136 *21*	α(K)=0.00106 *18*; α(L)=0.000142 *23*; α(M)=3.0×10^{-5} *5* 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*
		1816.5 *3*	25.9 *15*	0.0	5/2$^+$	M1,E2		0.00115 *14*	α(K)=0.00080 *11*; α(L)=0.000106 *15*; α(M)=2.3×10^{-5} *3* 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*
1828?		833[&j]	100	995.17	9/2$^-$				
1832.7	(17/2$^+$)	411.4[&]	100	1421.3	13/2$^+$	(E2)[a]		0.0228	α(K)=0.0183 *3*; α(L)=0.00351 *5*; α(M)=0.000779 *11* α(N)=0.0001761 *25*; α(O)=2.64×10^{-5} *4*; α(P)=1.79×10^{-6} *3*
1838.46		460.39 *10*	100 *5*	1378.14	$^+$				
		976.79 *26*	16 *3*	861.64	5/2$^+$,7/2$^+$				
1858.19	7/2$^-$,9/2$^+$	293.05 *7*	100 *7*	1565.16	7/2$^+$,9/2$^+$				
		1232.76 *25*	61 *8*	625.27	11/2$^-$				
		1628.9 *5*	17 *3*	229.323	7/2$^+$				
		1858.1 *4*	7 *3*	0.0	5/2$^+$				
1874.66	7/2$^-$,9/2$^-$	751.81 *13*	79 *15*	1122.83	7/2$^+$	M2,E3		0.0173 *58*	α(K)=0.0143 *51*; α(L)=0.0023 *6*; α(M)=0.00051 *11* α(N)=0.00012 *3*; α(O)=1.8×10^{-5} *5*; α(P)=1.62×10^{-6} *62*
		879.57 *26*	100 *13*	995.17	9/2$^-$	M1+E2		0.0046 *12*	α(K)=0.0039 *11*; α(L)=0.00054 *12*; α(M)=0.00012 *3* α(N)=2.7×10^{-5} *6*; α(O)=4.2×10^{-6} *10*; α(P)=4.1×10^{-7} *12*

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
1905.62	5/2$^+$	506.0 *10*	4 *3*	1399.20	3/2$^+$	M1+E2		0.0178 *49*	α(K)=0.0149 *44*; α(L)=0.0022 *4*; α(M)=0.00049 *9* α(N)=0.000111 *20*; α(O)=1.7×10^{-5} *4*; α(P)=1.57×10^{-6} *52*
		782.6 *2*	100 *3*	1122.83	7/2$^+$	E2+M1	2.1 *+13−5*	0.0051 *4*	α(K)=0.0043 *3*; α(L)=0.00062 *4*; α(M)=0.000135 *8* α(N)=3.08×10^{-5} *17*; α(O)=4.8×10^{-6} *3*; α(P)=4.4×10^{-7} *4*
		910.4 *2*	47 *3*	995.17	9/2$^-$				
		1044.2 *5*	11 *2*	861.64	5/2$^+$,7/2$^+$	(M1)		0.00383	α(K)=0.00327 *5*; α(L)=0.000439 *7*; α(M)=9.41×10^{-5} *14* α(N)=2.16×10^{-5} *3*; α(O)=3.44×10^{-6} *5*; α(P)=3.51×10^{-7} *5*
		1151 *1*	4 *3*	755.11	3/2$^+$,5/2$^+$				
		1676.5 *2*	21.7 *11*	229.323	7/2$^+$	M1,E2		0.00126 *18*	α(K)=0.00095 *15*; α(L)=0.000126 *19*; α(M)=2.7×10^{-5} *4* 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*
		1905.6 *4*	1.0 *4*	0.0	5/2$^+$				
1910.10	5/2,7/2,9/2$^+$	840.8[j] *3*	100 *50*	1069.39	7/2$^-$				
		1048.6 *6*	83 *25*	861.64	5/2$^+$,7/2$^+$				
		1154.7 *10*	38 *38*	755.11	3/2$^+$,5/2$^+$				
		1680.9 *4*	78 *5*	229.323	7/2$^+$				
		1910.0 *3*	46 *5*	0.0	5/2$^+$				
1926.5	19/2$^-$	580.2 *2*	100	1346.27	15/2$^-$	E2[a]		0.00912	α(K)=0.00753 *11*; α(L)=0.001244 *18*; α(M)=0.000273 *4* α(N)=6.19×10^{-5} *9*; α(O)=9.49×10^{-6} *14*; α(P)=7.59×10^{-7} *11*
1950.59	5/2$^-$,7/2$^-$,9/2$^-$	714.57 *15*	62 *4*	1235.77	7/2$^-$	M1		0.00957	α(K)=0.00816 *12*; α(L)=0.001108 *16*; α(M)=0.000238 *4* α(N)=5.46×10^{-5} *8*; α(O)=8.69×10^{-6} *13*; α(P)=8.80×10^{-7} *13*
		737.0[gj] *4*		1212.93	5/2$^-$,7/2$^-$				
		827.8 *1*	100 *16*	1122.83	7/2$^+$	(M2,E3)		0.0133 *44*	α(K)=0.0111 *38*; α(L)=0.0018 *5*; α(M)=0.00039 *9* α(N)=8.8×10^{-5} *21*; α(O)=1.4×10^{-5} *4*; α(P)=1.25×10^{-6} *46*
		882.3 *5*	12 *4*	1069.39	7/2$^-$	(M1)		0.00573	α(K)=0.00489 *7*; α(L)=0.000659 *10*; α(M)=0.0001416 *20* α(N)=3.24×10^{-5} *5*; α(O)=5.17×10^{-6} *8*; α(P)=5.26×10^{-7} *8*
		1721.3 *5*	2.0 *6*	229.323	7/2$^+$				

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
1950.59	5/2⁻,7/2⁻,9/2⁻	1950.7 *2*	13.2 *16*	0.0	5/2⁺				
1961.25	5/2⁺,7/2,9/2⁺	1184.7 *3*	80 *60*	776.39	9/2⁺				
		≈1731[j]	9 *9*	229.323	7/2⁺				
		1961.5 *4*	100 *9*	0.0	5/2⁺				
1986.88	5/2(⁻),7/2,9/2⁺	433.0[j] *5*	73 *55*	1554.29	9/2⁻				
		917.0 *5*	45 *18*	1069.39	7/2⁻				
		1125.5 *5*	100 *55*	861.64	5/2⁺,7/2⁺				
		1209.4 *5*	30 *4*	778.01	7/2⁺				
		1757.6 *3*	25 *3*	229.323	7/2⁺				
		1986.7 *3*	58 *5*	0.0	5/2⁺				
1995.38	7/2⁻,9/2⁻	595.97 *19*	65 *8*	1399.20	3/2⁺	M2,E3		0.033 *12*	α(K)=0.027 *10*; α(L)=0.0049 *9*; α(M)=0.00108 *18* α(N)=0.00025 *5*; α(O)=3.8×10⁻⁵ *8*; α(P)=3.1×10⁻⁶ *13*
		750.8[j] *8*	100 *33*	1244.31	11/2⁻	(M1)		0.00848	α(K)=0.00723 *11*; α(L)=0.000980 *14*; α(M)=0.000211 *3* α(N)=4.83×10⁻⁵ *7*; α(O)=7.69×10⁻⁶ *11*; α(P)=7.79×10⁻⁷ *12*
		1219.4 *4*	30 *3*	776.39	9/2⁺				
		1370.5 *3*	50 *5*	625.27	11/2⁻	E2		1.42×10⁻³	α(K)=0.001180 *17*; α(L)=0.0001606 *23*; α(M)=3.45×10⁻⁵ *5* 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*
		1765.9 *4*	27 *3*	229.323	7/2⁺				
2001.7?		354.8[&j] *4*	100	1647.0	15/2⁺				
2013.8	(17/2⁻)	667.6[&] *5*	100	1346.27	15/2⁻	(M1)[a]		0.01132	α(K)=0.00965 *14*; α(L)=0.001314 *19*; α(M)=0.000282 *4* α(N)=6.47×10⁻⁵ *10*; α(O)=1.030×10⁻⁵ *15*; α(P)=1.042×10⁻⁶ *15*
2165.44	5/2⁻,7/2⁻,9/2⁻	327.07 *11*	56 *5*	1838.46					
		804.54 *20*	100 *8*	1360.34	9/2⁻	E2(+M1)	≥0.64	0.0052 *11*	α(K)=0.0044 *10*; α(L)=0.00063 *11*; α(M)=0.000137 *23* α(N)=3.1×10⁻⁵ *6*; α(O)=4.9×10⁻⁶ *9*; α(P)=4.7×10⁻⁷ *11*
		1096.4 *4*	13 *13*	1069.39	7/2⁻	(M1)		0.00341	α(K)=0.00292 *4*; α(L)=0.000390 *6*; α(M)=8.37×10⁻⁵ *12* α(N)=1.92×10⁻⁵ *3*; α(O)=3.06×10⁻⁶ *5*; α(P)=3.12×10⁻⁷ *5*
		1389.5[hj] *2*	23[h] *3*	776.39	9/2⁺				
		1936.30 *22*	1.5 *5*	229.323	7/2⁺				

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
2292.9	23/2$^-$	366.4 *2*	100	1926.5	19/2$^-$	E2[c]		0.0319	α(K)=0.0253 *4*; α(L)=0.00515 *8*; α(M)=0.001148 *17* α(N)=0.000259 *4*; α(O)=3.86×10^{-5} *6*; α(P)=2.43×10^{-6} *4*
2347.5	21/2$^-$	(55[b])	41	2292.9	23/2$^-$	[M1]		10.37	α(K)=8.75 *13*; α(L)=1.271 *18*; α(M)=0.275 *4* α(N)=0.0629 *9*; α(O)=0.00995 *14*; α(P)=0.000978 *14* E$_\gamma$: deduced from observed (649γ)(366γ)-coin ^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ).
		420.9 *3*	100 *3*	1926.5	19/2$^-$	M1+E2[c]	+0.22 *+6−11*	0.0356 *8*	α(K)=0.0302 *7*; α(L)=0.00422 *7*; α(M)=0.000909 *15* α(N)=0.000208 *4*; α(O)=3.30×10^{-5} *6*; α(P)=3.28×10^{-6} *8*
2504.4	(19/2$^+$)	578.0 *3*	100	1926.5	19/2$^-$				
2845.0	19/2$^-$,23/2$^-$	497.5 *3*	100	2347.5	21/2$^-$	M1+E2[c]		0.0186 *51*	α(K)=0.0156 *46*; α(L)=0.0024 *5*; α(M)=0.00051 *9* α(N)=0.000117 *20*; α(O)=1.8×10^{-5} *4*; α(P)=1.64×10^{-6} *55*
2900.4	27/2$^-$	607.5 *2*	100	2292.9	23/2$^-$	E2[c]		0.00813	α(K)=0.00673 *10*; α(L)=0.001094 *16*; α(M)=0.000239 *4* α(N)=5.44×10^{-5} *8*; α(O)=8.37×10^{-6} *12*; α(P)=6.81×10^{-7} *10*
2996.2	23/2$^{(+)}$	491.8 *3*	15 *5*	2504.4	(19/2$^+$)				
		648.7 *2*	100 *9*	2347.5	21/2$^-$	D+Q[c]	+2.5 *+10−6*		
		703.3 *2*	94 *6*	2292.9	23/2$^-$	D(+Q)[c]	+0.38 *4*		
3190.6	25/2$^{(-)}$	290.3 *3*	100 *28*	2900.4	27/2$^-$	D[c]			
		345.6 *3*	56 *28*	2845.0	19/2$^-$,23/2$^-$				
3229.8	27/2$^{(+)}$	(40)	13	3190.6	25/2$^{(-)}$	[E1]		0.597	α(L)=0.469 *7*; α(M)=0.1017 *15* α(N)=0.0225 *4*; α(O)=0.00316 *5*; α(P)=0.000189 *3* unobserved transition firmly established from coincidence results in ^{124}Sn(^{28}Si,p4nγ).
		233.7 *2*	90 *9*	2996.2	23/2$^{(+)}$	Q			
		329.6 *2*	100 *12*	2900.4	27/2$^-$	D+Q[c]	−0.52 *13*		
3523.3	29/2$^{(+)}$	293.7 *2*	100 *12*	3229.8	27/2$^{(+)}$	(M1(+E2))[c]	+0.01 *2*	0.0931 *14*	α(K)=0.0790 *12*; α(L)=0.01105 *16*; α(M)=0.00238 *4* α(N)=0.000546 *8*; α(O)=8.67×10^{-5} *13*; α(P)=8.66×10^{-6} *13* Mult.: D(+Q) in ^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ); π=no from level scheme.
		622.8 *2*	83 *7*	2900.4	27/2$^-$	E1(+M2)[c]	+0.03 *6*	0.0028 *3*	α(K)=0.00241 *22*; α(L)=0.00032 *4*; α(M)=6.8×10^{-5} *8* α(N)=1.56×10^{-5} *17*; α(O)=2.5×10^{-6} *3*; α(P)=2.4×10^{-7} *3*

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]	δ[‡@]	α[†]	Comments
3794.9	31/2$^{(+)}$	271.7 *2*	100 *7*	3523.3	29/2$^{(+)}$	(M1(+E2))[c]	−0.02 *3*	0.1145 *17*	α(K)=0.0972 *14*; α(L)=0.01363 *20*; α(M)=0.00294 *5* α(N)=0.000674 *10*; α(O)=0.0001070 *16*; α(P)=1.066×10^{-5} *16* Mult.: D(+Q) in ^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ); π=no from level scheme.
		565.1 *2*	26 *3*	3229.8	27/2$^{(+)}$	Q			
4177.7	33/2$^{(+)}$	382.9 *2*	100 *9*	3794.9	31/2$^{(+)}$	D+Q[c]	+0.06 *5*		
		654.4 *3*	13.6 *18*	3523.3	29/2$^{(+)}$	Q			
4242.3	31/2$^{(-)}$	447.7 *3*	19 *5*	3794.9	31/2$^{(+)}$	D			
		1341.8 *2*	100 *8*	2900.4	27/2^{-}	Q			
4283.9	31/2$^{(-)}$	1383.5 *2*	100	2900.4	27/2^{-}	Q			
4612.0	33/2$^{(+)}$	328.1 *2*	100 *17*	4283.9	31/2$^{(-)}$	D			
		369.7 *2*	54 *8*	4242.3	31/2$^{(-)}$	D			
4639.3	(33/2^{-})	844.6 *3*	100	3794.9	31/2$^{(+)}$				
4677.5	(35/2)	499.4 *3*	100	4177.7	33/2$^{(+)}$	(D)			
4801.2	33/2$^{(+)}$	1277.9 *3*	100	3523.3	29/2$^{(+)}$	Q			
4862.3	35/2	250.3 *2*	100	4612.0	33/2$^{(+)}$	D			
4881.1	(35/2)	241.9 *3*	100	4639.3	(33/2^{-})	D			
4907.4	35/2	295.4 *2*	100 *9*	4612.0	33/2$^{(+)}$	D			
		730.2 *3*	15 *7*	4177.7	33/2$^{(+)}$	D			
5056.5	35/2$^{(+)}$	1261.4 *3*	100	3794.9	31/2$^{(+)}$	Q			
5082.6	37/2$^{(+)}$	201.7 *3*	77 *40*	4881.1	(35/2)	D			
		281.4 *3*	47 *14*	4801.2	33/2$^{(+)}$				
		470.5 *3*	100 *12*	4612.0	33/2$^{(+)}$	Q			
5176.2	35/2,39/2	268.8 *3*	100	4907.4	35/2	D,Q			
5333.4	37/2$^{(+)}$	426.6 *3*	18 *3*	4907.4	35/2	D			
		657	9 *4*	4677.5	(35/2)				
		1155.6 *2*	100 *8*	4177.7	33/2$^{(+)}$	Q			
5373.0	35/2,39/2	465.5 *3*	100	4907.4	35/2	D,Q			
5381.0	37/2$^{(+)}$	324.3 *3*	32 *13*	5056.5	35/2$^{(+)}$	D			
		1203.2 *2*	100 *8*	4177.7	33/2$^{(+)}$	Q			
5432.0		754.0 *3*	100	4677.5	(35/2)				
5455.7	37/2	548.4 *3*	100 *15*	4907.4	35/2	D			
		593.5 *3*	65 *38*	4862.3	35/2	D			
5594.8	39/2$^{(+)}$	139.3 *3*	27 *15*	5455.7	37/2	(D)			
		162.4 *3*	12 *6*	5432.0					
		213.7 *2*	66 *6*	5381.0	37/2$^{(+)}$	D			
		221.7 *3*	12 *7*	5373.0	35/2,39/2				
		261.7 *2*	100 *7*	5333.4	37/2$^{(+)}$	D			
		512.3 *2*	79 *24*	5082.6	37/2$^{(+)}$	D+Q			
5685.4		312.4 *3*	100	5373.0	35/2,39/2				

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	Mult.[@]
5771.6	41/2$^{(+)}$	176.8 *2*	100 *14*	5594.8	39/2$^{(+)}$	D
		438.1 *2*	42 *4*	5333.4	37/2$^{(+)}$	Q
6024.4		339.0 *3*	100	5685.4		
6333.3	43/2$^{(+)}$	561.8 *2*	100	5771.6	41/2$^{(+)}$	D+Q
6509.9	43/2	738.3 *2*	100	5771.6	41/2$^{(+)}$	D
6663.9	43/2	892.3 *3*	100	5771.6	41/2$^{(+)}$	D
6702.6	43/2	931[d]	100	5771.6	41/2$^{(+)}$	D[e]
6713.0	43/2	941.5 *3*	100	5771.6	41/2$^{(+)}$	D
6816.6		1045[d]	100	5771.6	41/2$^{(+)}$	
6847.3	45/2	134.3 *3*	55 *31*	6713.0	43/2	D
		183.4 *3*	100 *38*	6663.9	43/2	D
		337.4 *3*	97 *28*	6509.9	43/2	D
6856.6		1085[d]		5771.6	41/2$^{(+)}$	
6866.6	45/2	164[d]		6702.6	43/2	D[e]
		1095[d]		5771.6	41/2$^{(+)}$	Q[e]
6962.8	45/2$^{(+)}$	1191.2 *3*	100	5771.6	41/2$^{(+)}$	(Q)
6966.1	45/2$^{(-)}$	119	≈30	6847.3	45/2	
		456.1 *3*	67 *27*	6509.9	43/2	D
		632.8 *3*	100 *18*	6333.3	43/2$^{(+)}$	D
7068.6		202[d]		6866.6	45/2	
7168.4	47/2$^{(-)}$	202.3 *2*	100	6966.1	45/2$^{(-)}$	D
7419.5		1086.2 *3*	100	6333.3	43/2$^{(+)}$	
7629.6		561[d]		7068.6		
7681.7	49/2$^{(-)}$	513.3 *2*	100	7168.4	47/2$^{(-)}$	D
7959.6		891[d]		7068.6		
8009.6		941[d]		7068.6		
8056.6		1190[d]		6866.6	45/2	
8141.6		182[d]		7959.6		
8512.0		830.3 *3*	100	7681.7	49/2$^{(-)}$	
8612.9	51/2$^{(-)}$	931.4 *3*	100	7681.7	49/2$^{(-)}$	D
8727.2		1045.5 *3*	100	7681.7	49/2$^{(-)}$	
8776.6	53/2$^{(-)}$	164.0 *3*	26 *20*	8612.9	51/2$^{(-)}$	
		1094.7 *3*	100 *46*	7681.7	49/2$^{(-)}$	Q
9268.8		492.2 *3*	100 *45*	8776.6	53/2$^{(-)}$	
		757	35 *25*	8512.0		
9643.1		866.5 *3*	100	8776.6	53/2$^{(-)}$	
737.3+x	J+2	737.3 *3*	0.18 *2*	x	J	
1527.9+x	J+4	790.6 *1*	0.61 *6*	737.3+x	J+2	
2370.2+x	J+6	842.3 *1*	1.16 *12*	1527.9+x	J+4	

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	E_i(level)	J_i^π	E_γ[#]	E_f	J_f^π
3262.5+x	J+8	892.3 *1*	1.05 *10*	2370.2+x	J+6	8649.8+z	J2+18	1211.8 *3*	7438.0+z	J2+16
4209.3+x	J+10	946.8 *1*	1.12 *11*	3262.5+x	J+8	9921.4+z	J2+20	1271.6 *2*	8649.8+z	J2+18
5210.6+x	J+12	1001.3 *1*	0.87 *9*	4209.3+x	J+10	11251.2+z	J2+22	1329.8 *3*	9921.4+z	J2+20
6266.9+x	J+14	1056.3 *1*	0.86 *9*	5210.6+x	J+12	12634.6+z	J2+24	1383.3 *3*	11251.2+z	J2+22
7379.4+x	J+16	1112.5 *1*	1.09 *11*	6266.9+x	J+14	14055.9+z	J2+26	1421.3 *5*	12634.6+z	J2+24
8548.8+x	J+18	1169.4 *4*	0.76 *8*	7379.4+x	J+16	944.0+u	J3+2	944.0 *3*	u	J3
9775.4+x	J+20	1226.6 *1*	0.84 *8*	8548.8+x	J+18	1938.8+u	J3+4	994.8 *2*	944.0+u	J3+2
11059.6+x	J+22	1284.2 *1*	0.82 *8*	9775.4+x	J+20	2985.0+u	J3+6	1046.2 *2*	1938.8+u	J3+4
12402.3+x	J+24	1342.7 *1*	0.67 *7*	11059.6+x	J+22	4081.3+u	J3+8	1096.3 *2*	2985.0+u	J3+6
13804.0+x	J+26	1401.6 *2*	0.43 *4*	12402.3+x	J+24	5232.9+u	J3+10	1151.6 *2*	4081.3+u	J3+8
15264.5+x	J+28	1460.5 *2*	0.36 *4*	13804.0+x	J+26	6436.3+u	J3+12	1203.4 *2*	5232.9+u	J3+10
16783.8+x	J+30	1519.3 *3*	0.22 *2*	15264.5+x	J+28	7694.3+u	J3+14	1258.0 *3*	6436.3+u	J3+12
18362.3+x	J+32	1578.5 *4*	0.09 *1*	16783.8+x	J+30	9007.7+u	J3+16	1313.4 *3*	7694.3+u	J3+14
19999.8+x	J+34	1637.5 *8*	0.05 *1*	18362.3+x	J+32	10382.9+u	J3+18	1375.2 *3*	9007.7+u	J3+16
703.2+y	J1+2	703.2 *7*	0.07 *1*	y	J1	11847.7+u	J3+20	1464.7 *4*	10382.9+u	J3+18
1466.4+y	J1+4	763.2 *2*	0.22 *2*	703.2+y	J1+2	13419.8+u	J3+22	1572.1 *7*	11847.7+u	J3+20
2291.2+y	J1+6	824.8 *1*	1.02 *10*	1466.4+y	J1+4	15065.2+u	J3+24	1645.4 *8*	13419.8+u	J3+22
3175.3+y	J1+8	884.1 *1*	0.91 *9*	2291.2+y	J1+6	835.9+v	J4+2	835.9 *4*	v	J4
4119.3+y	J1+10	944.0 *1*	1.03 *10*	3175.3+y	J1+8	1724.9+v	J4+4	889.0 *3*	835.9+v	J4+2
5124.1+y	J1+12	1004.8 *1*	1.09 *11*	4119.3+y	J1+10	2665.4+v	J4+6	940.5 *4*	1724.9+v	J4+4
6189.2+y	J1+14	1065.1 *1*	1.06 *11*	5124.1+y	J1+12	3660.1+v	J4+8	994.7 *4*	2665.4+v	J4+6
7315.6+y	J1+16	1126.4 *1*	0.93 *9*	6189.2+y	J1+14	4708.7+v	J4+10	1048.6 *4*	3660.1+v	J4+8
8502.6+y	J1+18	1187.0 *2*	0.96 *10*	7315.6+y	J1+16	5812.4+v	J4+12	1103.7 *5*	4708.7+v	J4+10
9749.9+y	J1+20	1247.3 *1*	0.71 *7*	8502.6+y	J1+18	6967.8+v	J4+14	1155.4 *4*	5812.4+v	J4+12
11057.2+y	J1+22	1307.3 *1*	0.74 *7*	9749.9+y	J1+20	8190.6+v	J4+16	1222.8 *4*	6967.8+v	J4+14
12423.8+y	J1+24	1366.6 *2*	0.62 *6*	11057.2+y	J1+22	9466.6+v	J4+18	1276.0 *5*	8190.6+v	J4+16
13847.7+y	J1+26	1423.8 *2*	0.57 *6*	12423.8+y	J1+24	10798.4+v	J4+20	1331.8 *4*	9466.6+v	J4+18
15321.8+y	J1+28	1474.1 *2*	0.48 *5*	13847.7+y	J1+26	12186.8+v	J4+22	1388.3 *6*	10798.4+v	J4+20
16818.8+y	J1+30	1497[h] *1*	0.41[h] *4*	15321.8+y	J1+28	13634.4+v	J4+24	1447.6 *4*	12186.8+v	J4+22
18315.8+y	J1+32	1497[h] *1*	0.41[h] *4*	16818.8+y	J1+30	15141.3+v	J4+26	1506.9 *6*	13634.4+v	J4+24
19847.1+y	J1+34	1531.3 *4*	0.12 *1*	18315.8+y	J1+32	16702.4+v	J4+28	1561.1 *9*	15141.3+v	J4+26
21429.8+y	J1+36	1582.7 *14*	0.03 *1*	19847.1+y	J1+34	18322.6+v	J4+30	1620.2 *15*	16702.4+v	J4+28
708.1+z	J2+2	708.1 *3*		z	J2	1244.0+w	J5+2	1244[j]	w?	J5
1479.8+z	J2+4	771.7 *3*		708.1+z	J2+2	2541.0+w?	J5+4	1297[j]	1244.0+w	J5+2
2314.7+z	J2+6	834.9 *2*		1479.8+z	J2+4	3884.0+w?	J5+6	1343[j]	2541.0+w?	J5+4
3213.6+z	J2+8	898.9 *2*		2314.7+z	J2+6	5277.0+w?	J5+8	1393[j]	3884.0+w?	J5+6
4175.5+z	J2+10	961.9 *2*		3213.6+z	J2+8	6721.0+w?	J5+10	1444[j]	5277.0+w?	J5+8
5200.5+z	J2+12	1025.0 *2*		4175.5+z	J2+10	8216.0+w?	J5+12	1495[j]	6721.0+w?	J5+10
6288.1+z	J2+14	1087.6 *2*		5200.5+z	J2+12	9761+w?	J5+14	1545[j]	8216.0+w?	J5+12
7438.0+z	J2+16	1149.9 *2*		6288.1+z	J2+14	11362+w?	J5+16	1601[j]	9761+w?	J5+14

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

Adopted Levels, Gammas (continued)

γ(^{147}Eu) (continued)

† Additional information 7.
‡ Additional information 8.
# From ^{147}Gd ε decay up to 2165-keV level and from ^{124}Sn(^{28}Si,p4nγ) above it, except where noted. Superdeformed data are from ^{124}Sn(^{29}Si,p5nγ):SD (relative intensities normalized to 1.0 in the plateau region).
@ For γ′s from ^{147}Gd ε decay based on α(K)exp and ce-ratio data and for γ′s from ^{124}Sn(^{28}Si,p4nγ) based on DCO ratios (2001Po18); the exceptions are noted separately.
& From ^{148}Sm(p,2nγ).
a From ^{148}Sm(p,2nγ) based on angular distribution and α(K)exp measurements.
b From ^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ).
c From ^{143}Nd(^{7}Li,3nγ),^{145}Nd(^{6}Li,4nγ) based on angular distribution measurements and the assumptions that for ΔJ=1, E1 is assigned if δ≈0, otherwise M1+E2 is assigned; for ΔJ=2 E2 is assumed.
d From ^{139}La(^{13}C,5nγ).
e From ^{139}La(^{13}C,5nγ) based on angular distributions.
f A 995γ quadruplet was observed by 1985JuZY (995.5γ from 995.5, $(1/2)^+$ level in ^{148}Sm(p,2nγ)), by 1977Gr23 (weaker 995.58γ from 995.2, $9/2^-$ level, and stronger 995.58γ from 1774 level, in ^{147}Gd ε decay), and by 1980Vy01 (995.49γ from 1772 level, in ^{147}Gd ε decay), respectively. 1980Vy01 reassign the stronger component of 1977Gr23 from 1774 level to 1772 level (same Iγ′s in both refs.), reason for which the placement at 1772 was adopted, while the previous 1772 placement was marked as uncertain. Unlike 1992De38, we adopt the 995.2, $9/2^-$ placement of the weaker component, and consider the 995.5, $(1/2)^+$ placement as uncertain (995.2, $9/2^-$ is firmly established while 995.5, $(1/2)^+$ is exclusively based on this γ).
g Multiply placed.
h Multiply placed with undivided intensity.
i Multiply placed with intensity suitably divided.
j Placement of transition in the level scheme is uncertain.

$^{147}_{63}Eu_{84}$-23

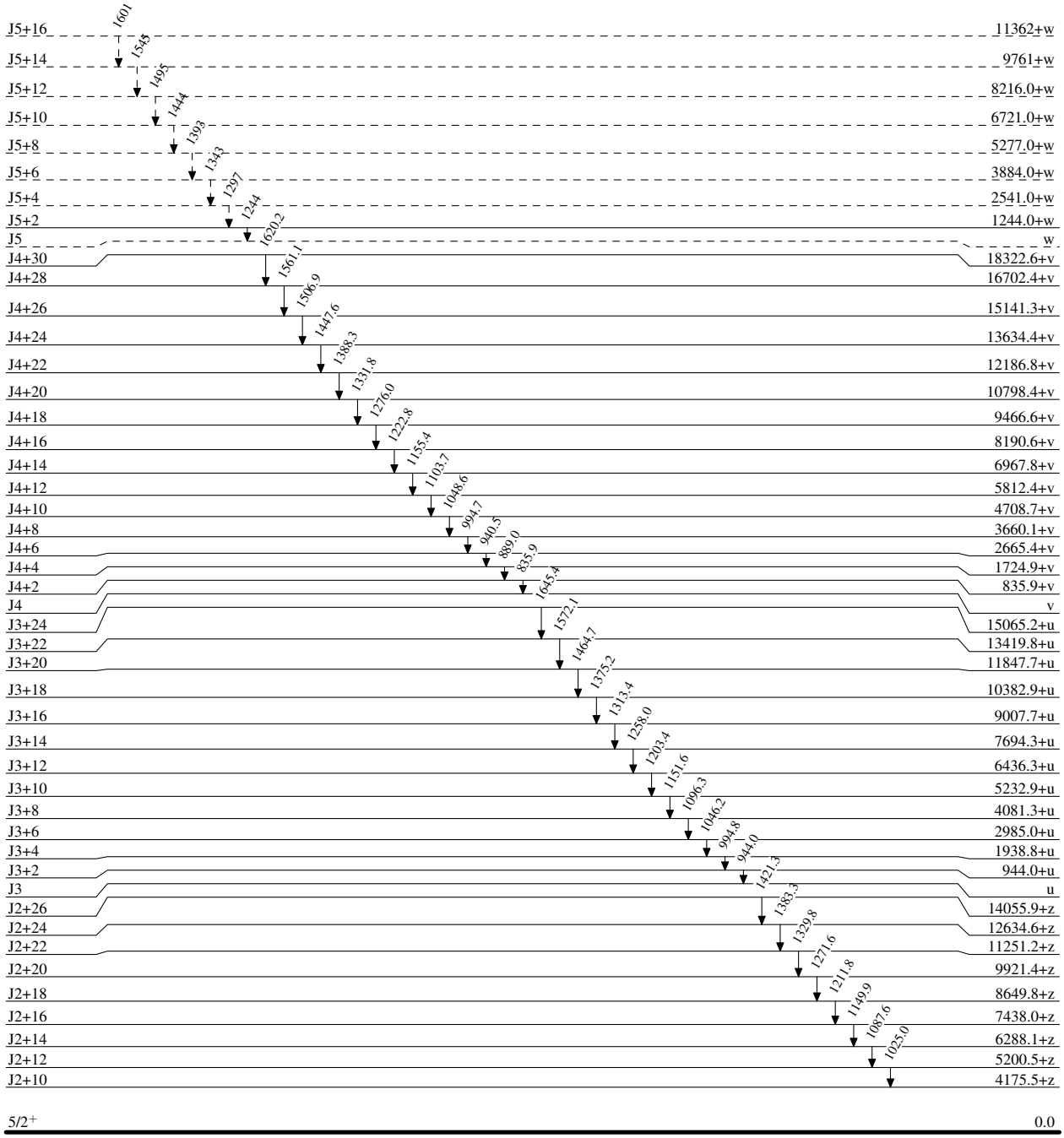
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

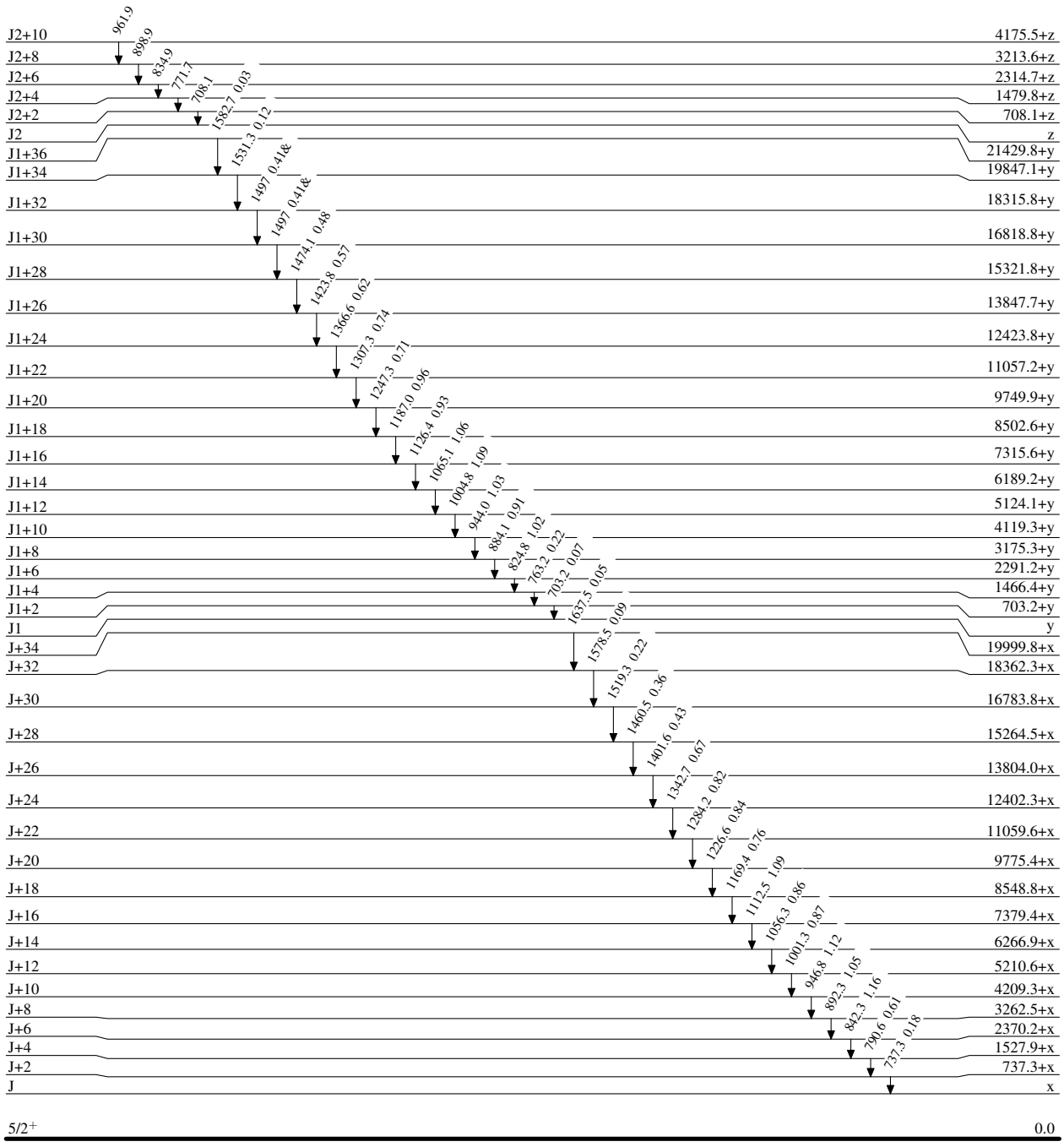


$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

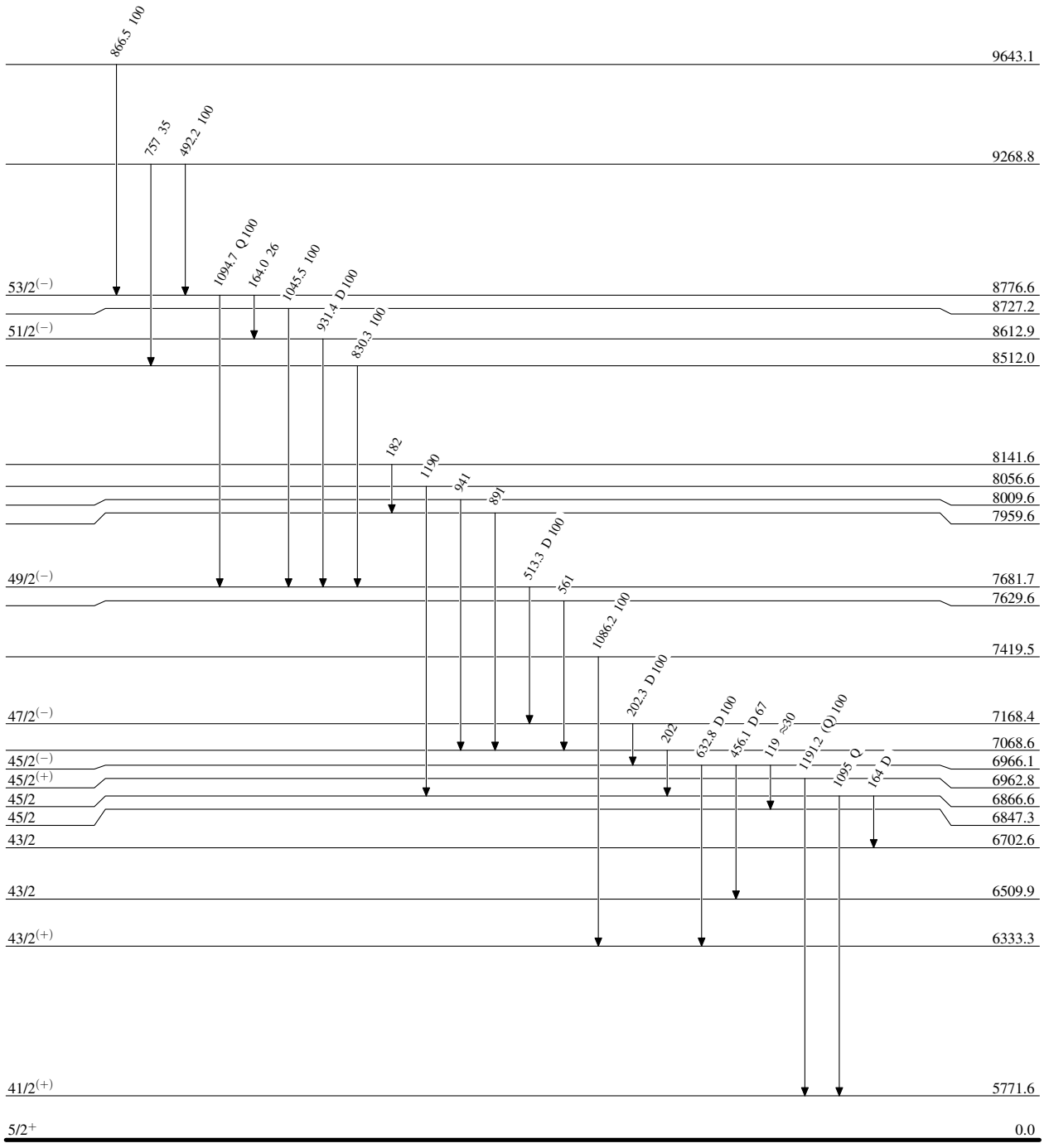


$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

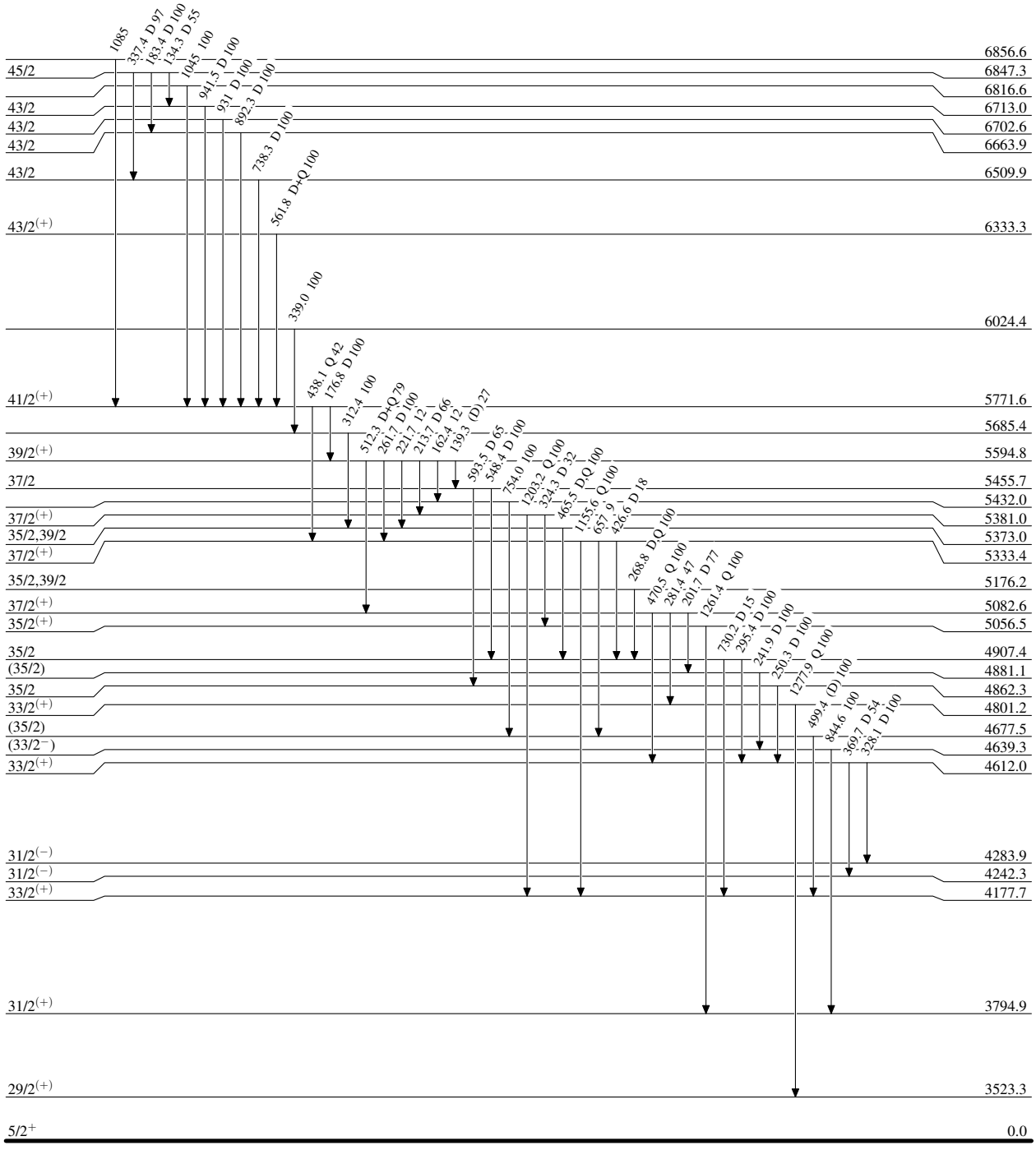


$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



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

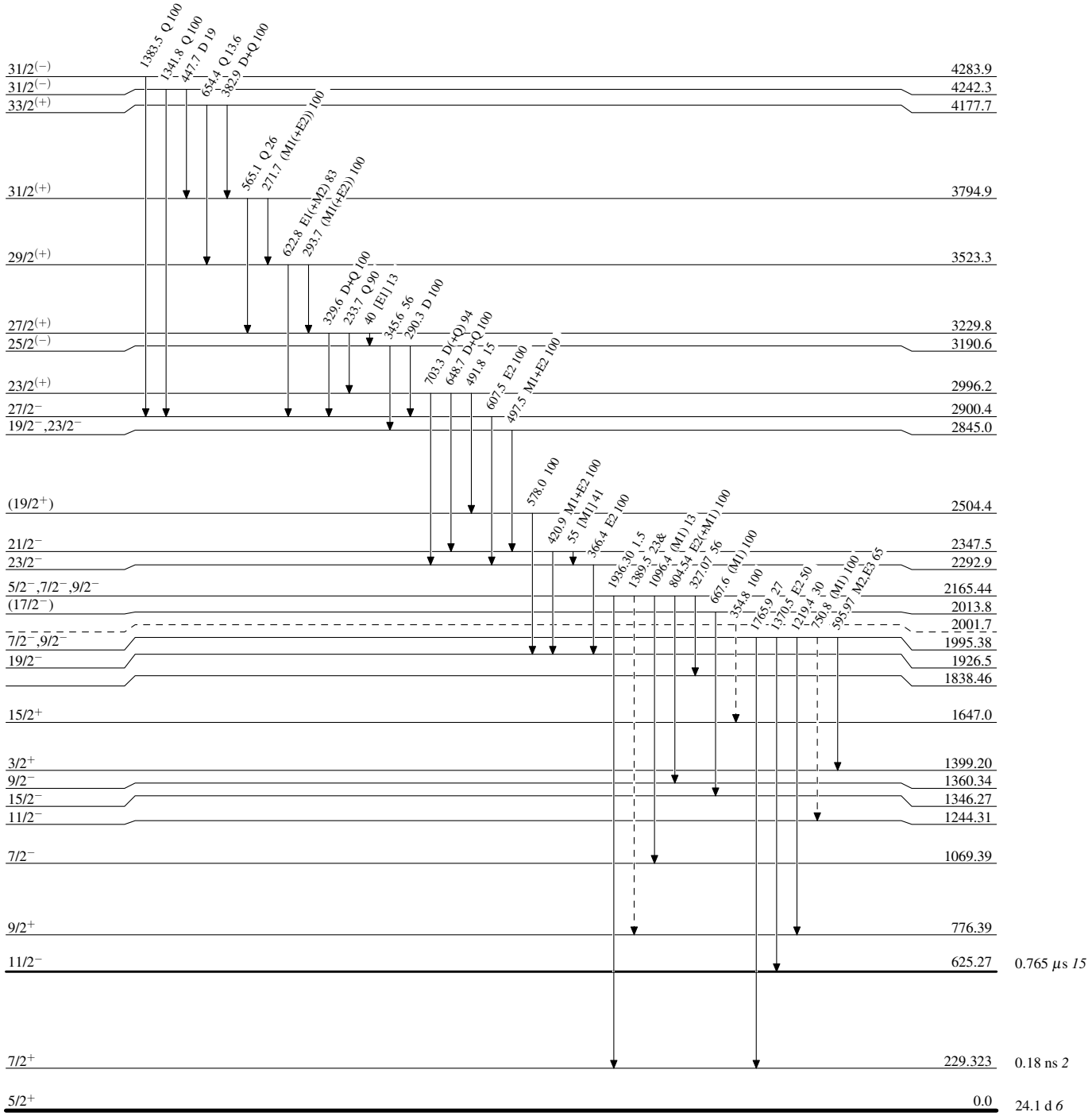
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



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

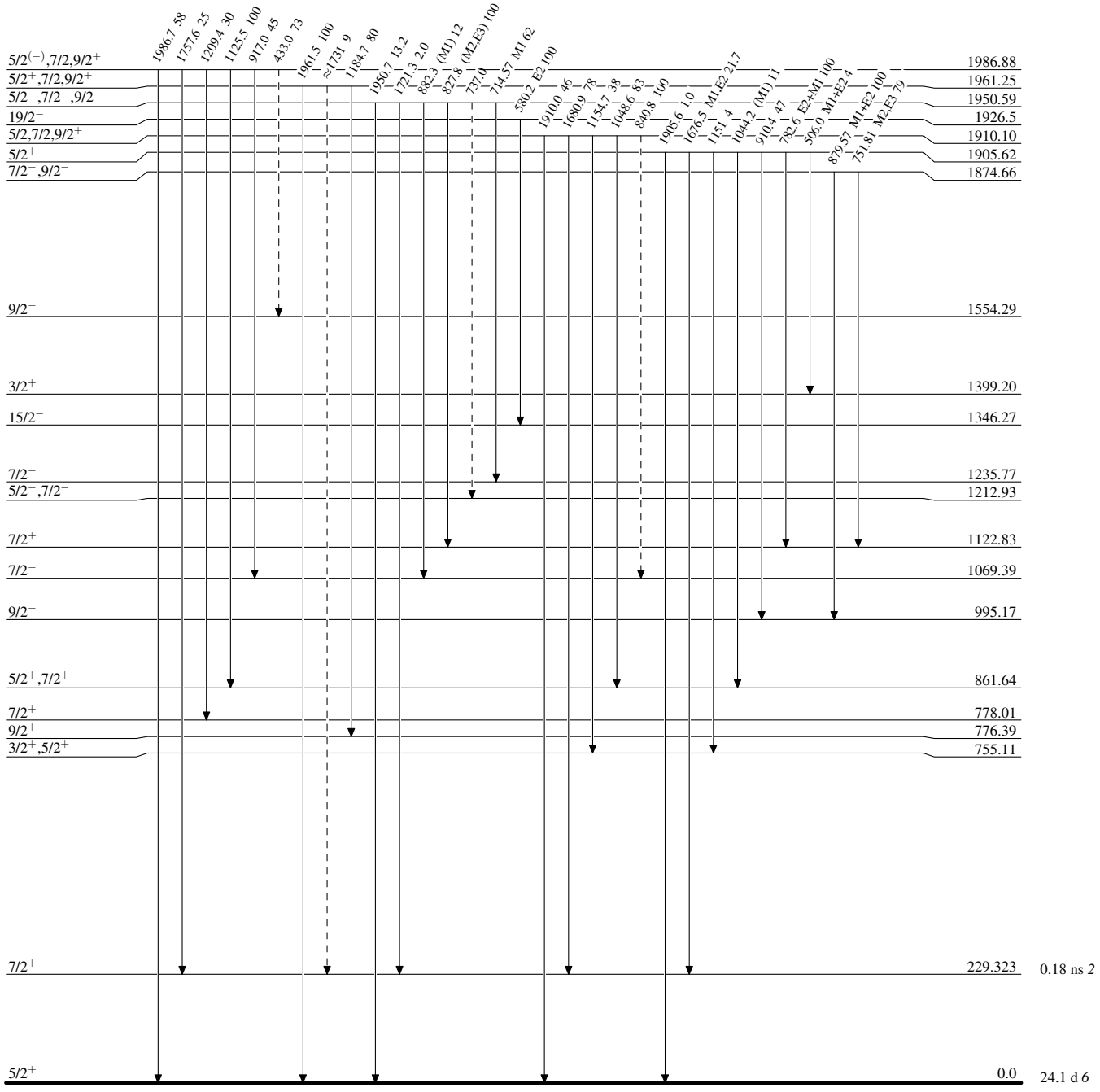
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

- - - - - - ► γ Decay (Uncertain)



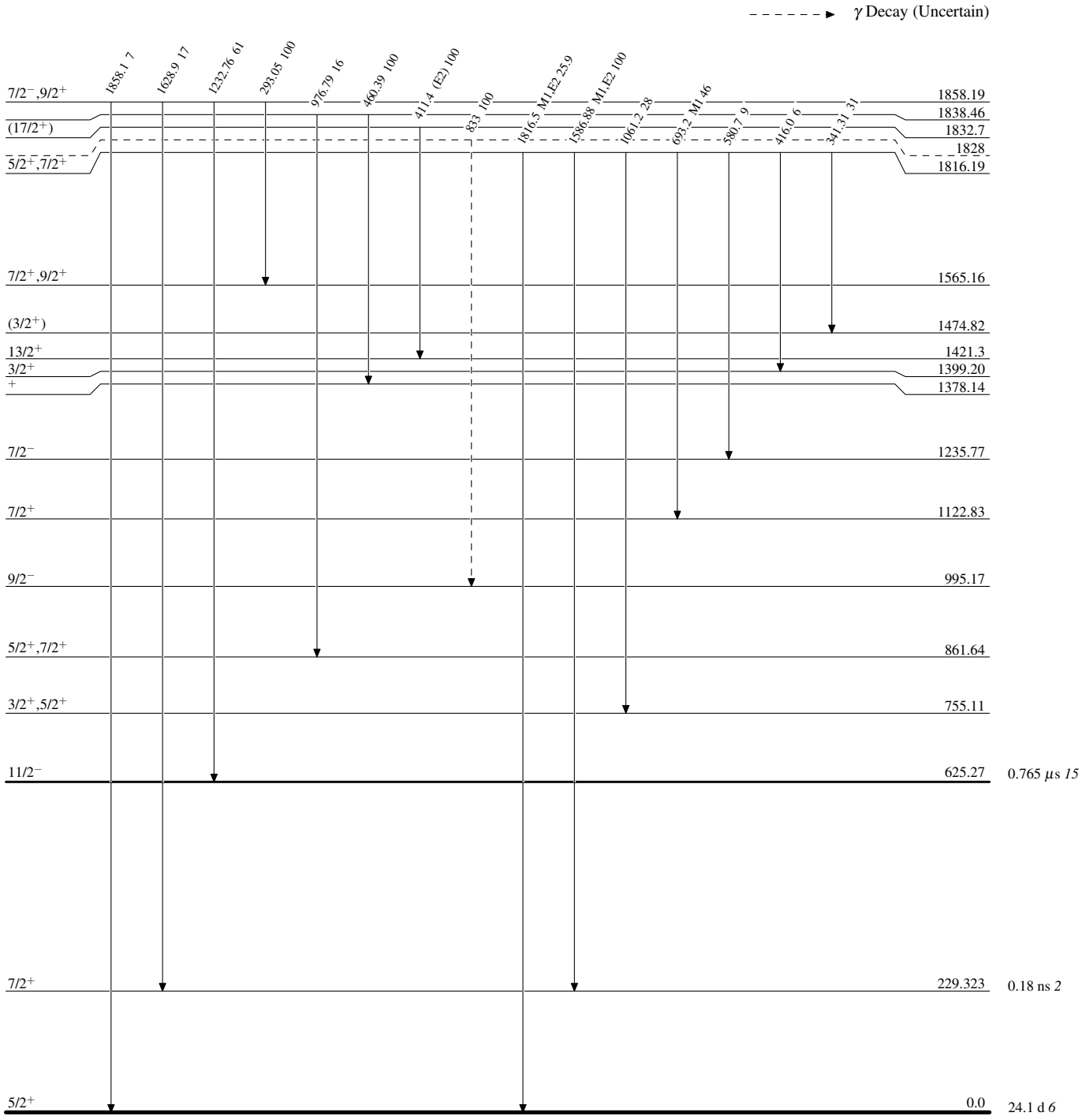
$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Legend

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



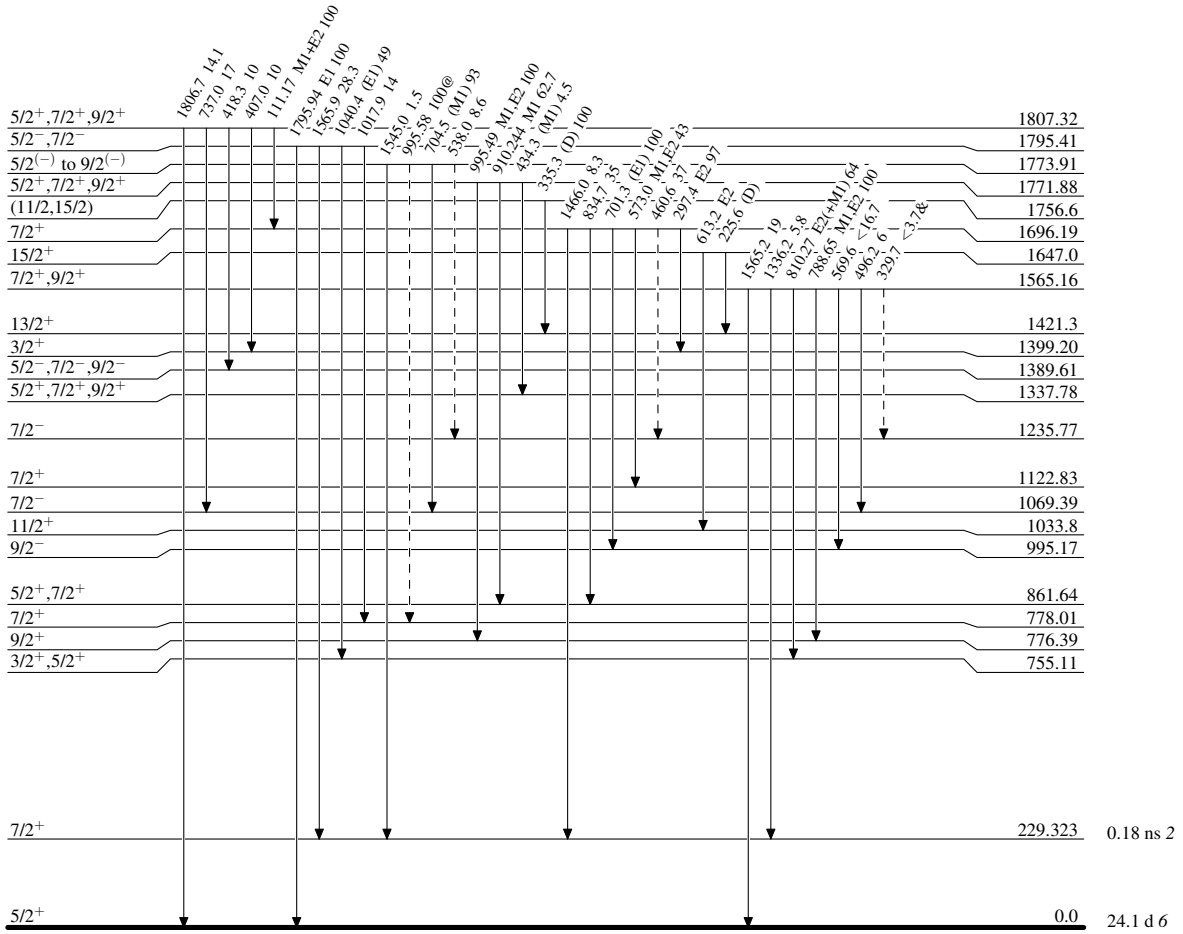
$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend
- - - - - - ► γ Decay (Uncertain)



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

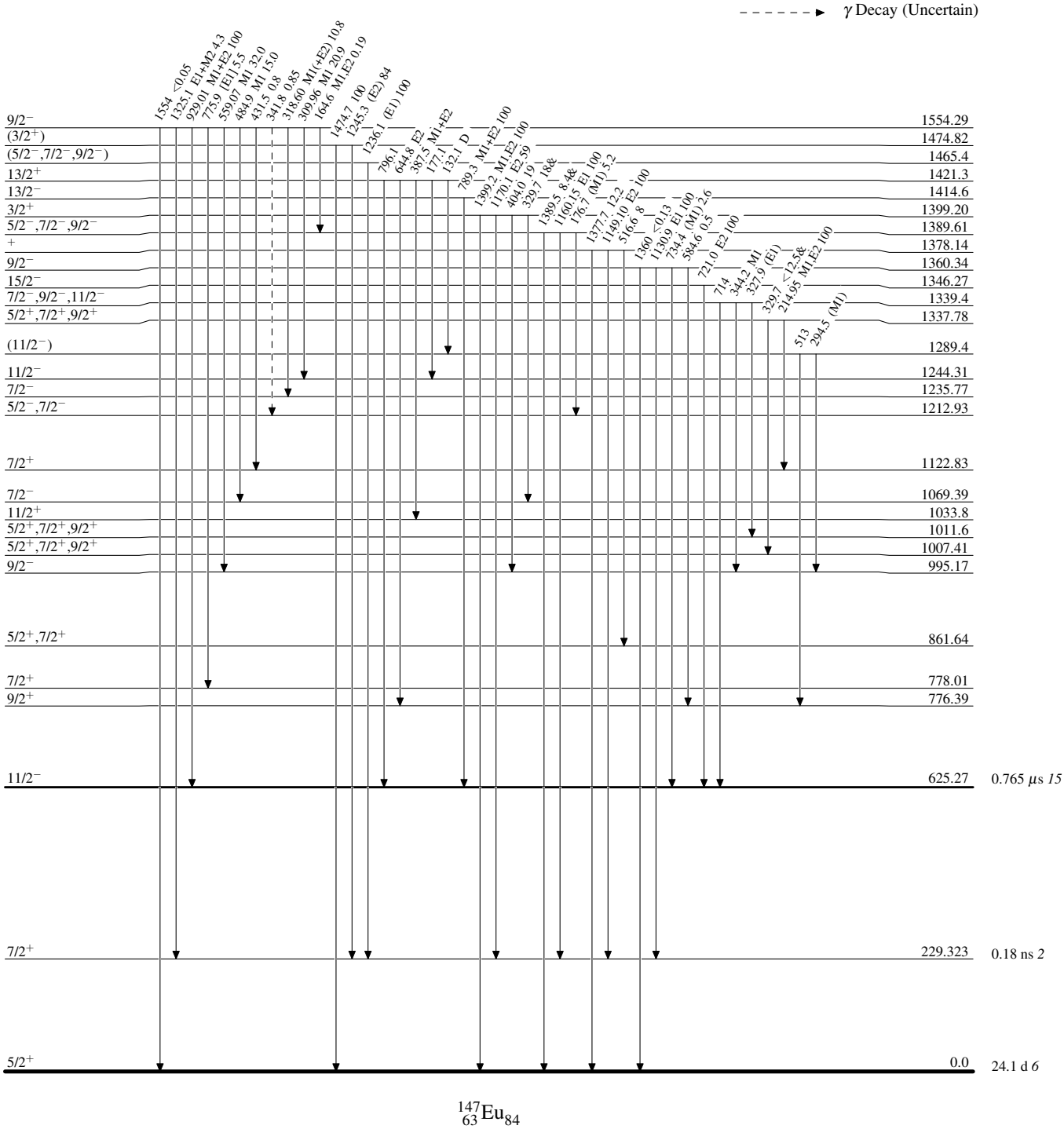
Adopted Levels, Gammas

Level Scheme (continued)

Legend

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



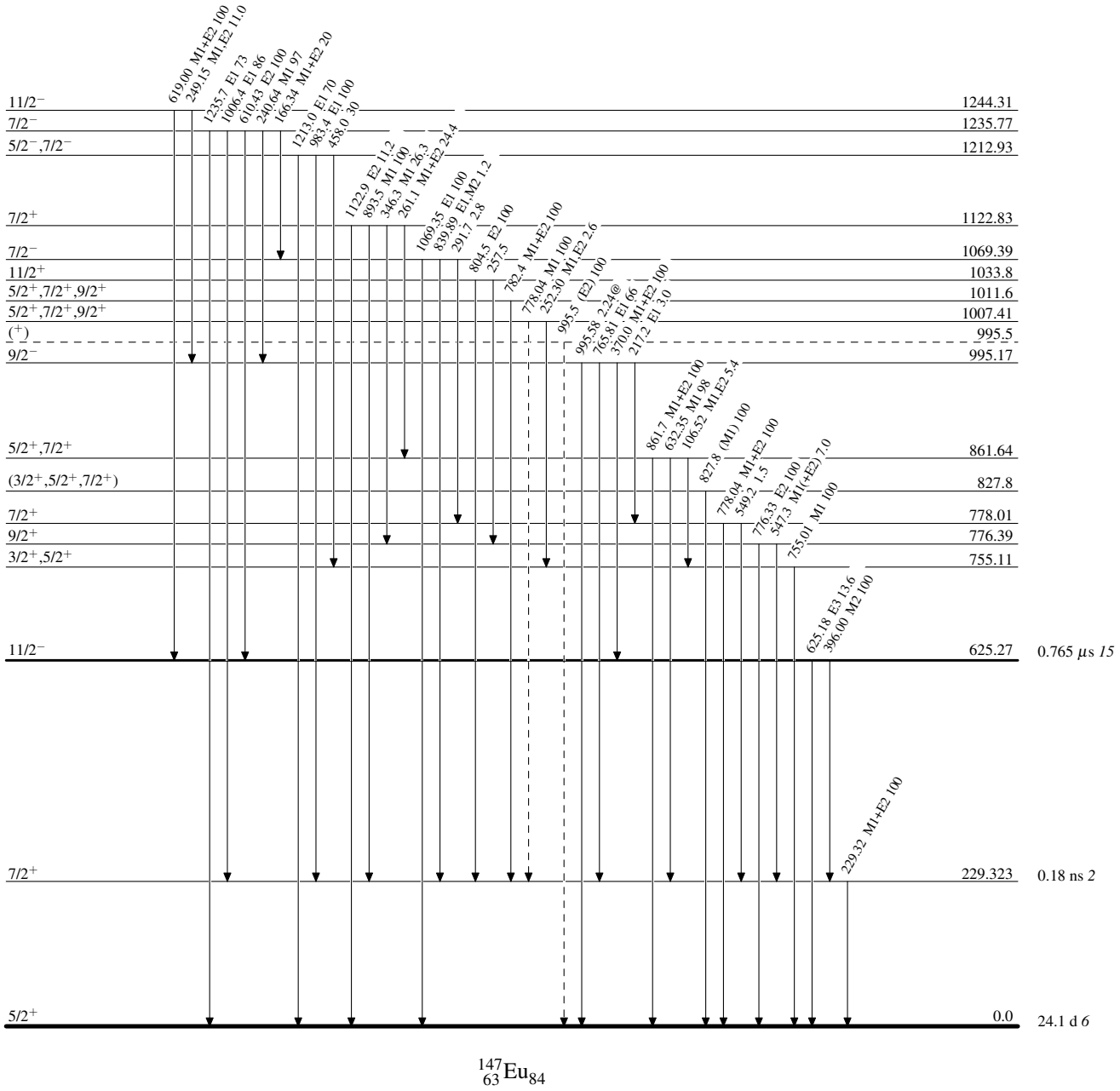
$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

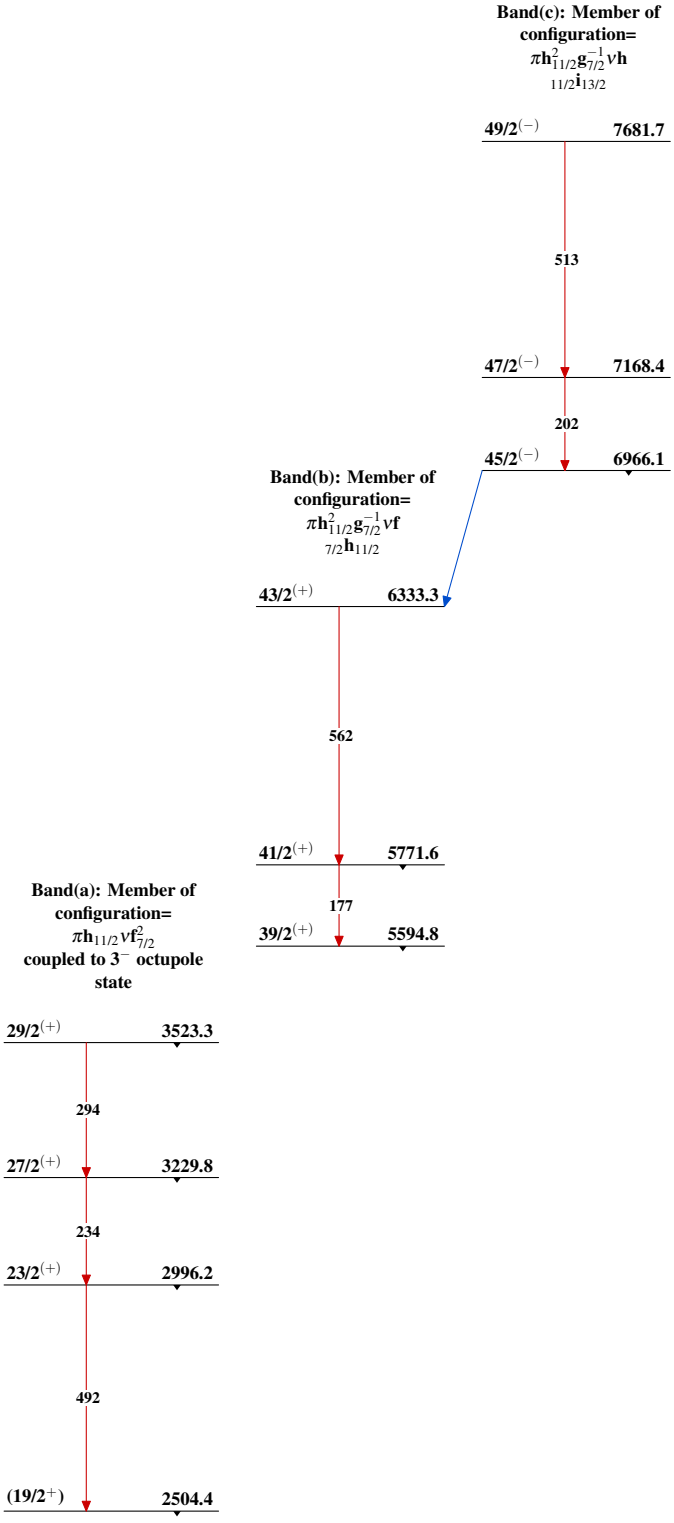
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend: ------► γ Decay (Uncertain)



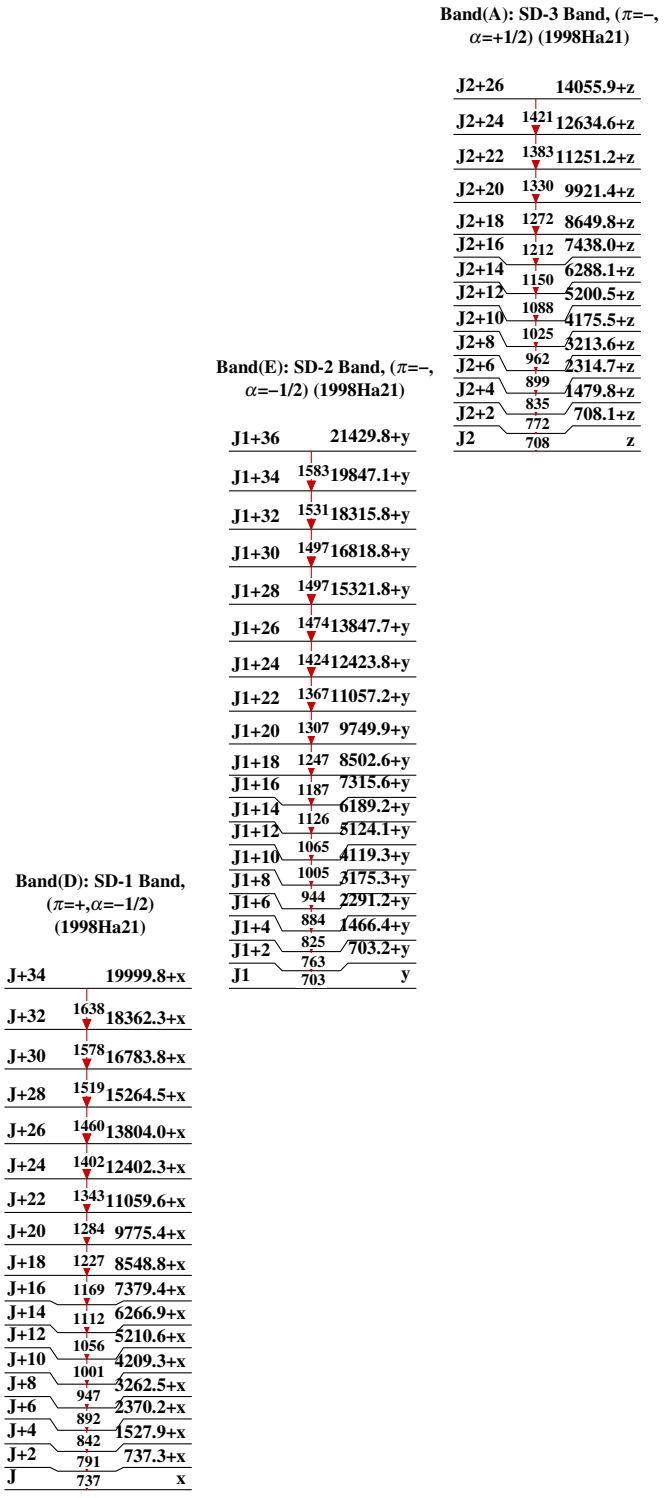
$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas

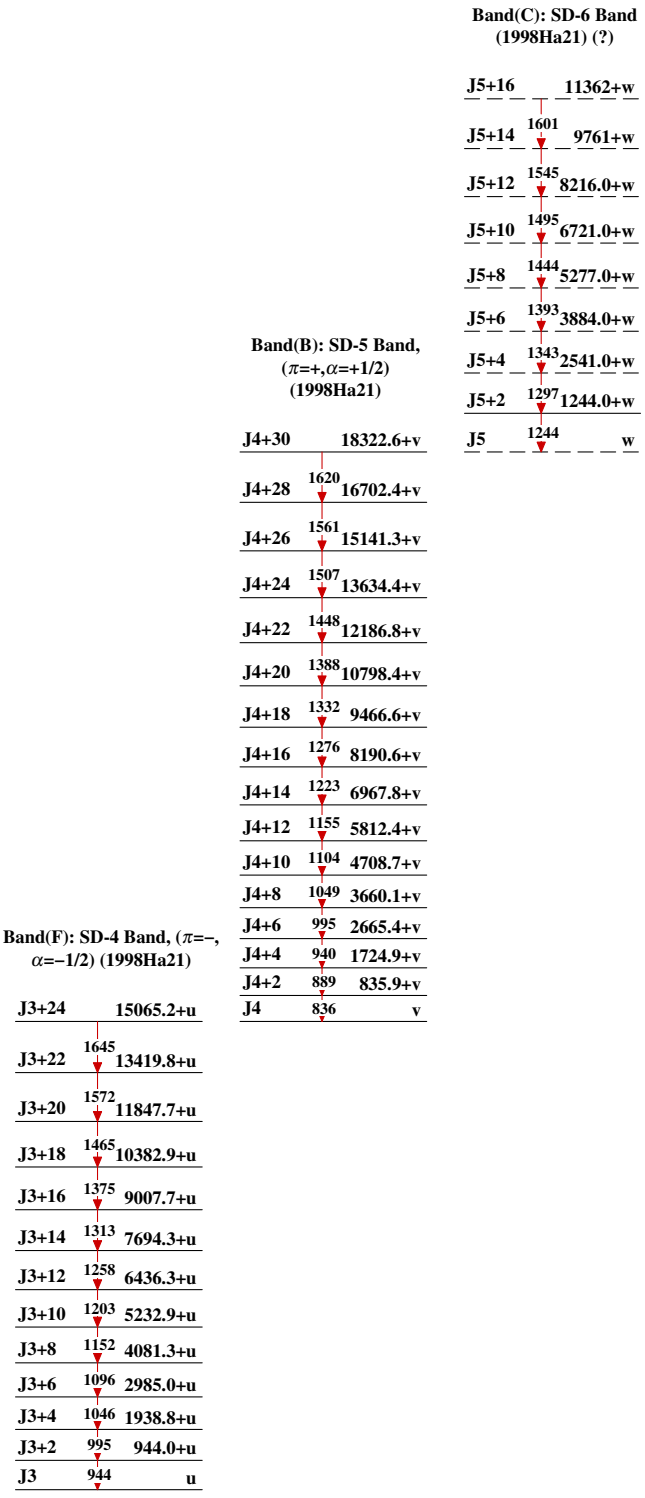


$^{147}_{63}Eu_{84}$

Adopted Levels, Gammas (continued)

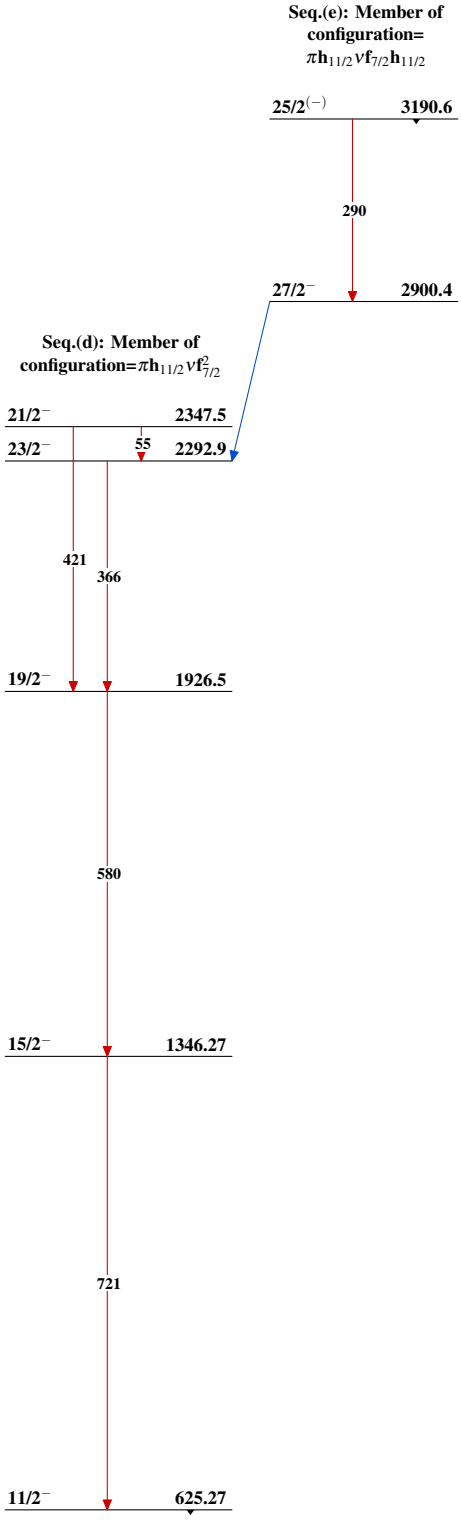


Adopted Levels, Gammas (continued)



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

Adopted Levels, Gammas (continued)



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