

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

Q(β^-)=-30 10; S(n)=6826 10; S(p)=4322 10; Q(α)=2692 10 2012Wa38

Additional information 1.

Astrophysical S factor for ¹⁴⁷Sm(p, γ): 2010Iv02.

Penning trap atomic mass measurements: 2000Be42, 2001Bo59.

Hyperfine structure (coupling constants and g-factor): 2000Tr07.

¹⁴⁸Eu Levels

Cross Reference (XREF) Flags

A	¹⁴⁸ Eu IT decay	D	¹³⁹ La(¹³ C,4n γ)
B	¹²⁴ Sn(²⁹ Si,p4n γ):SD	E	¹⁵⁰ Sm(p,3n γ) E=26 MeV
C	¹³⁰ Te(²⁷ Al, α 5n γ)		

E(level)	J π^{\dagger}	T _{1/2}	XREF	Comments
0.0	5 ⁻	54.5 d 5	A CDE	$\% \alpha = 9.4 \times 10^{-7}$ 28 (1964To04); $\% \epsilon + \% \beta^+ = 100$ $\mu = +2.340$ 10 (2005St24,1985Ah02) $Q = +0.35$ 6 (2005St24,1985Ah02) T _{1/2} : from 1969GuZW. Other: 54 d 1 (1959Ei31,1953Ma17,1950Wi64). J π : atomic beam (1972Ek05); HF=11.5 for α to 5 ⁻ ¹⁴⁴ Pm. μ, Q : by collinear fast beam LASER spectroscopy – accelerated beam method. rms charge radius $\langle r^2 \rangle^{1/2} = 5.0059$ fm 176 (2004An14).
232.80 9	6 ⁻		A CDE	J π : 232.8 γ to 5 ⁻ is M1, M1 from higher spin level.
312.20 9	6 ⁻		A DE	
518.49 12	7 ⁻		A DE	
708.41 [#] 10	7 ⁺		A CDE	
720.4 [#] 3	9 ⁺	162 ns 8	A CD	$\mu = +6.120$ 45 (2005St24,1980Ba67) μ : measured by time dependent perturbed angular distribution method. T _{1/2} : weighted average of 163 ns 10 (1981Pi10, $\gamma(t)$ with pulsed beam), 170 ns 20 (1980Ba67, $\gamma(\theta, H, t)$, and 152 ns 21 (1995Jo04, $\gamma\gamma(t)$).
728.7	8 ⁺		D	
811.4	8 ⁺		D	
1172.9	9 ⁺		D	
1265.8	10 ⁺		D	
1413.1 [#]	11 ⁺		CD	
1478.3	10 ⁺		D	
1609.4	10 ⁻		D	
1669.9 ^c	11 ⁻		CD	
1841.1 [@]	12 ⁻		CD	
1955?	(10)		D	
1991.8	12 ⁺		D	
2140.6 [#]	13 ⁺		CD	
2203?	(11)		D	
2351.1 ^c	13 ⁻		CD	
2539.9	14 ⁺		D	
2545.8 [@]	14 ⁻		CD	
2599.0	13 ⁺		D	
2877.7	14 ⁺		D	
2898.0	16 ⁺		D	
2974.9 [#]	15 ⁺		CD	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{148}Eu Levels (continued)

E(level)	J^π †	XREF	E(level)	J^π †	XREF	E(level)	J^π †	XREF
3047.3 ^c	15 ⁻	CD	5943.3	23 ⁻	D	6305.7+x ^d 5	J+14	B
3205.5 [@]	16 ⁻	CD	6073.1	23 ⁻	D	7416.4+x ^d 5	J+16	B
3306?	(15)	D	6100.4&	24 ⁻	CD	8581.7+x ^d 5	J+18	B
3653.2 [@]	18 ⁻	CD	6306.1	24 ⁺	D	9801.8+x ^d 6	J+20	B
3712?	(16)	D	6330.7?		D	11077.5+x ^d 6	J+22	B
3819.5	(17)	D	6384.8	24 ⁺	D	12408.4+x ^d 7	J+24	B
3845.8	17 ⁺	D	6435.6&	25 ⁻	CD	13795.9+x ^d 7	J+26	B
4008.3	19 ⁻	CD	6703.4&	26 ⁻	CD	15239.2+x ^d 7	J+28	B
4066.5	(18)	D	7028.3 ^a 9	27 ⁽⁻⁾ ‡	C	16738.1+x ^d 8	J+30	B
4086.5 [@]	20 ⁻	CD	7497.4 ^a 9	(27)	C	18293.2+x ^d 9	J+32	B
4200.7	18 ⁺	D	7526.8 ^b 10	28 ⁽⁻⁾ ‡	C	y ^e	J1	B
4283.9	(18)	D	7590.8 ^a 10	28 ⁽⁻⁾ ‡	C	844.2+y ^e 6	J1+2	B
4335.6	21 ⁻	D	7852.9 10	(29)	C	1739.0+y ^e 8	J1+4	B
4393.7	(18)	D	8170.9 ^a 10		C	2685.1+y ^e 10	J1+6	B
4424.8	18 ⁺	D	8517.9 ^b 10		C	3683.2+y ^e 11	J1+8	B
4651.0	19 ⁺	D	8632.5 ^a 10	(29)	C	4734.1+y ^e 13	J1+10	B
4750.3	20 ⁺	D	9245.6 ^a 10	(31)	C	5838.3+y ^e 14	J1+12	B
5017.1	20 ⁺	D	9623.6 ^b 11		C	6996.2+y ^e 17	J1+14	B
5125.1	(21)	D	10480.0 ^b 11		C	8208.6+y ^e 19	J1+16	B
5179.6?	21 ⁺	D	11088.1 ^b 12		C	9477.3+y ^e 20	J1+18	B
5207.2	21 ⁻	D	x ^d	J	B	10799.3+y ^e 20	J1+20	B
5215.6	22 ⁺	D	747.7+x ^d 1	J+2	B	12177.1+y ^e 22	J1+22	B
5301.9&	21 ⁻	CD	1545.6+x ^d 2	J+4	B	13611.1+y ^e 22	J1+24	B
5366.2	21 ⁻	D	2393.9+x ^d 3	J+6	B	15100.3+y ^e 25	J1+26	B
5389.6 [@]	22 ⁻	CD	3293.4+x ^d 3	J+8	B	16644.4+y ^e 30	J1+28	B
5519.0&	22 ⁻	CD	4244.8+x ^d 4	J+10	B			
5794.0&	23 ⁻	CD	5248.6+x ^d 4	J+12	B			

† Based on $\gamma(\theta)$, γ excitation functions, Ice from ^{148}Eu IT decay and (p,3n γ); $\gamma(\theta)$, DCO, linear polarization, Ice, and γ excitation functions from ($^{13}\text{C},4n\gamma$); and DCO from ($^{27}\text{Al},\alpha 5n\gamma$) for normal deformed states. Some of these assignments especially for higher energy levels may be tentative.

‡ From DCO analysis in $^{130}\text{Te}(^{27}\text{Al},\alpha 5n\gamma)$ dataset (2001K103).

Band(a): Sequence based on 7⁺.

@ Band(b): Sequence based on 12⁻.

& Band(C): Sequence based on 21⁻.

^a Band(D): Sequence based on 26⁻.

^b Band(E): Sequence based on 28⁽⁻⁾.

^c Band(F): Sequence based on 11⁻.

^d Band(A): SD-1 band (1998Ha21). conf= $\pi(6^2(1/2[301],\alpha=+1/2)) \nu 7^1$ (1998Ha21). This band shows evidence of $\Delta J=2$ staggering (average staggering of 0.30 keV 13) for several transition in the middle energy region (1997Ha19). Percent population intensity=0.79 8 of ^{148}Eu channel (1998Ha21).

^e Band(B): SD-2 band (1998Ha21). configuration= $\pi(6^2(1/2[301],\alpha=-1/2)) \nu 7^1$ (1998Ha21). Percent population=0.24 3 or 30% 3 of SD-1 band (1998Ha21).

Adopted Levels, Gammas (continued)

E _i (level)	J _i ^π	E _γ	I _γ	E _f	J _f ^π	Mult. [‡]	δ	γ(¹⁴⁸ Eu)		Comments
								α [†]	I _(γ+ce)	
232.80	6 ⁻	232.8 1	100	0.0	5 ⁻	M1		0.1738		α(K)=0.1473 21; α(L)=0.0208 3; α(M)=0.00448 7; α(N+..)=0.001205 17 α(N)=0.001026 15; α(O)=0.0001629 23; α(P)=1.620×10 ⁻⁵ 23
312.20	6 ⁻	79.4 ^a 312.2 1	4 100	232.80 0.0	6 ⁻ 5 ⁻	M1		0.0791		α(K)=0.0672 10; α(L)=0.00938 14; α(M)=0.00202 3; α(N+..)=0.000544 8 α(N)=0.000463 7; α(O)=7.36×10 ⁻⁵ 11; α(P)=7.36×10 ⁻⁶ 11 α(K)=0.205 3; α(L)=0.0289 5; α(M)=0.00624 9; α(N+..)=0.001680 24 α(N)=0.001430 21; α(O)=0.000227 4; α(P)=2.25×10 ⁻⁵ 4 α(K)=0.0850 12; α(L)=0.01190 17; α(M)=0.00257 4; α(N+..)=0.000691 10 α(N)=0.000588 9; α(O)=9.34×10 ⁻⁵ 14; α(P)=9.32×10 ⁻⁶ 13
518.49	7 ⁻	206.3 2	24 10	312.20	6 ⁻	M1		0.242		α(N)=0.001430 21; α(O)=0.000227 4; α(P)=2.25×10 ⁻⁵ 4 α(K)=0.0850 12; α(L)=0.01190 17; α(M)=0.00257 4; α(N+..)=0.000691 10 α(N)=0.000588 9; α(O)=9.34×10 ⁻⁵ 14; α(P)=9.32×10 ⁻⁶ 13
		285.7 1	100 21	232.80	6 ⁻	M1		0.1002		α(N)=0.001430 21; α(O)=0.000227 4; α(P)=2.25×10 ⁻⁵ 4 α(K)=0.0850 12; α(L)=0.01190 17; α(M)=0.00257 4; α(N+..)=0.000691 10 α(N)=0.000588 9; α(O)=9.34×10 ⁻⁵ 14; α(P)=9.32×10 ⁻⁶ 13
708.41	7 ⁺	190.0 3 396.2 1	1.0 3 43 3	518.49 312.20	7 ⁻ 6 ⁻	E1		0.00774 11		α=0.00774 11; α(K)=0.00660 10; α(L)=0.000893 13; α(M)=0.000191 3; α(N+..)=5.11×10 ⁻⁵ 8 α(N)=4.36×10 ⁻⁵ 7; α(O)=6.82×10 ⁻⁶ 10; α(P)=6.39×10 ⁻⁷ 9 α=0.00505 7; α(K)=0.00432 6; α(L)=0.000579 9; α(M)=0.0001240 18; α(N+..)=3.31×10 ⁻⁵ 5 α(N)=2.83×10 ⁻⁵ 4; α(O)=4.44×10 ⁻⁶ 7; α(P)=4.22×10 ⁻⁷ 6 ce(L)/(γ+ce)=0.78 10; ce(M)/(γ+ce)=0.18 5; ce(N+)/(γ+ce)=0.044 12 ce(N)/(γ+ce)=0.039 10; ce(O)/(γ+ce)=0.0051 14; ce(P)/(γ+ce)=2.9×10 ⁻⁶ 8 B(E2)(W.u.)=7.4 20 α(K)=1.133 17; α(L)=0.220 4; α(M)=0.0494 8; α(N+..)=0.01326 20 α(N)=0.01133 17; α(O)=0.00177 3; α(P)=0.0001599 24 B(M2)(W.u.)=0.14 5
		475.6 1	100	232.80	6 ⁻	E1		0.00505 7		α(N)=2.83×10 ⁻⁵ 4; α(O)=4.44×10 ⁻⁶ 7; α(P)=4.22×10 ⁻⁷ 6 ce(L)/(γ+ce)=0.78 10; ce(M)/(γ+ce)=0.18 5; ce(N+)/(γ+ce)=0.044 12 ce(N)/(γ+ce)=0.039 10; ce(O)/(γ+ce)=0.0051 14; ce(P)/(γ+ce)=2.9×10 ⁻⁶ 8 B(E2)(W.u.)=7.4 20 α(K)=1.133 17; α(L)=0.220 4; α(M)=0.0494 8; α(N+..)=0.01326 20 α(N)=0.01133 17; α(O)=0.00177 3; α(P)=0.0001599 24 B(M2)(W.u.)=0.14 5
720.4	9 ⁺	(12.0 4)		708.41	7 ⁺	[E2]		4.0×10 ⁴ 8	1.44×10 ⁴ 3	α(N)=2.83×10 ⁻⁵ 4; α(O)=4.44×10 ⁻⁶ 7; α(P)=4.22×10 ⁻⁷ 6 ce(L)/(γ+ce)=0.78 10; ce(M)/(γ+ce)=0.18 5; ce(N+)/(γ+ce)=0.044 12 ce(N)/(γ+ce)=0.039 10; ce(O)/(γ+ce)=0.0051 14; ce(P)/(γ+ce)=2.9×10 ⁻⁶ 8 B(E2)(W.u.)=7.4 20 α(K)=1.133 17; α(L)=0.220 4; α(M)=0.0494 8; α(N+..)=0.01326 20 α(N)=0.01133 17; α(O)=0.00177 3; α(P)=0.0001599 24 B(M2)(W.u.)=0.14 5
		201.9 3	100 30	518.49	7 ⁻	M2		1.415		α(K)=1.133 17; α(L)=0.220 4; α(M)=0.0494 8; α(N+..)=0.01326 20 α(N)=0.01133 17; α(O)=0.00177 3; α(P)=0.0001599 24 B(M2)(W.u.)=0.14 5
811.4	8 ⁺	90.7	69	720.4	9 ⁺	M1		2.44		α(K)=2.07 3; α(L)=0.296 5; α(M)=0.0640 9; α(N+..)=0.01719 24 α(N)=0.01464 21; α(O)=0.00232 4; α(P)=0.000229 4
1172.9	9 ⁺	292.5 361.7	100 100	518.49 811.4	7 ⁻ 8 ⁺	M1+E2	≈0.7	≈0.0469		α(K)≈0.0393; α(L)≈0.00603; α(M)≈0.001312; α(N+..)≈0.000350 α(N)≈0.000299; α(O)≈4.67×10 ⁻⁵ ; α(P)≈4.17×10 ⁻⁶
		452.2	24	720.4	9 ⁺	M1+E2	@	0.024 7		α(K)=0.020 6; α(L)=0.0031 5; α(M)=0.00067 10 α(N)=0.000152 23; α(O)=2.4×10 ⁻⁵ 4; α(P)=2.1×10 ⁻⁶ 7 α(K)=0.00912 13; α(L)=0.001550 22; α(M)=0.000341 5; α(N+..)=9.00×10 ⁻⁵ 13 α(N)=7.73×10 ⁻⁵ 11; α(O)=1.180×10 ⁻⁵ 17; α(P)=9.14×10 ⁻⁷ 13
1265.8	10 ⁺	537.1	33	728.7	8 ⁺	E2		0.01110		α(N)=7.73×10 ⁻⁵ 11; α(O)=1.180×10 ⁻⁵ 17; α(P)=9.14×10 ⁻⁷ 13

Adopted Levels, Gammas (continued)

$\gamma(^{148}\text{Eu})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
1265.8	10 ⁺	545.1	100	720.4	9 ⁺	M1+E2	0.015 4	$\alpha(\text{K})=0.012$ 4; $\alpha(\text{L})=0.0018$ 4; $\alpha(\text{M})=0.00040$ 8; $\alpha(\text{N+..})=0.000107$ 21
1413.1	11 ⁺	147.3	5.1	1265.8	10 ⁺	M1	0.615	$\alpha(\text{N})=9.1\times 10^{-5}$ 17; $\alpha(\text{O})=1.4\times 10^{-5}$ 3; $\alpha(\text{P})=1.3\times 10^{-6}$ 5
		692.4	100	720.4	9 ⁺	E2	0.00593 9	$\alpha(\text{K})=0.521$ 8; $\alpha(\text{L})=0.0741$ 11; $\alpha(\text{M})=0.01600$ 23; $\alpha(\text{N+..})=0.00430$ 6 $\alpha(\text{N})=0.00366$ 6; $\alpha(\text{O})=0.000581$ 9; $\alpha(\text{P})=5.75\times 10^{-5}$ 8 $\alpha=0.00593$ 9; $\alpha(\text{K})=0.00494$ 7; $\alpha(\text{L})=0.000771$ 11; $\alpha(\text{M})=0.0001680$ 24; $\alpha(\text{N+..})=4.46\times 10^{-5}$ 7
1478.3	10 ⁺	305.4	47	1172.9	9 ⁺	M1	0.0839	$\alpha(\text{N})=3.82\times 10^{-5}$ 6; $\alpha(\text{O})=5.91\times 10^{-6}$ 9; $\alpha(\text{P})=5.03\times 10^{-7}$ 7
		666.9	24	811.4	8 ⁺	E2	0.00648 9	$\alpha(\text{K})=0.0712$ 10; $\alpha(\text{L})=0.00995$ 14; $\alpha(\text{M})=0.00215$ 3; $\alpha(\text{N+..})=0.000577$ 8 $\alpha(\text{N})=0.000492$ 7; $\alpha(\text{O})=7.81\times 10^{-5}$ 11; $\alpha(\text{P})=7.80\times 10^{-6}$ 11 $\alpha=0.00648$ 9; $\alpha(\text{K})=0.00539$ 8; $\alpha(\text{L})=0.000851$ 12; $\alpha(\text{M})=0.000186$ 3; $\alpha(\text{N+..})=4.93\times 10^{-5}$ 7
		749.7	100	728.7	8 ⁺	E2	0.00492 7	$\alpha(\text{N})=4.22\times 10^{-5}$ 6; $\alpha(\text{O})=6.52\times 10^{-6}$ 10; $\alpha(\text{P})=5.48\times 10^{-7}$ 8 $\alpha=0.00492$ 7; $\alpha(\text{K})=0.00412$ 6; $\alpha(\text{L})=0.000629$ 9; $\alpha(\text{M})=0.0001367$ 20; $\alpha(\text{N+..})=3.64\times 10^{-5}$ 5
		757.5	56	720.4	9 ⁺	E2	0.00481 7	$\alpha(\text{N})=3.11\times 10^{-5}$ 5; $\alpha(\text{O})=4.83\times 10^{-6}$ 7; $\alpha(\text{P})=4.21\times 10^{-7}$ 6 $\alpha=0.00481$ 7; $\alpha(\text{K})=0.00403$ 6; $\alpha(\text{L})=0.000612$ 9; $\alpha(\text{M})=0.0001332$ 19; $\alpha(\text{N+..})=3.54\times 10^{-5}$ 5
1609.4	10 ⁻	343.5	39	1265.8	10 ⁺	E1	0.01093	$\alpha(\text{N})=3.03\times 10^{-5}$ 5; $\alpha(\text{O})=4.71\times 10^{-6}$ 7; $\alpha(\text{P})=4.12\times 10^{-7}$ 6
		436.4	9	1172.9	9 ⁺	E1	0.00616 9	$\alpha(\text{K})=0.00932$ 13; $\alpha(\text{L})=0.001269$ 18; $\alpha(\text{M})=0.000272$ 4; $\alpha(\text{N+..})=7.25\times 10^{-5}$ 11 $\alpha(\text{N})=6.20\times 10^{-5}$ 9; $\alpha(\text{O})=9.67\times 10^{-6}$ 14; $\alpha(\text{P})=8.93\times 10^{-7}$ 13 $\alpha=0.00616$ 9; $\alpha(\text{K})=0.00526$ 8; $\alpha(\text{L})=0.000708$ 10; $\alpha(\text{M})=0.0001518$ 22; $\alpha(\text{N+..})=4.05\times 10^{-5}$ 6
		888.7	100	720.4	9 ⁺	E1	0.001355 19	$\alpha(\text{N})=3.46\times 10^{-5}$ 5; $\alpha(\text{O})=5.42\times 10^{-6}$ 8; $\alpha(\text{P})=5.12\times 10^{-7}$ 8 $\alpha=0.001355$ 19; $\alpha(\text{K})=0.001163$ 17; $\alpha(\text{L})=0.0001514$ 22; $\alpha(\text{M})=3.23\times 10^{-5}$ 5; $\alpha(\text{N+..})=8.67\times 10^{-6}$ 6
1669.9	11 ⁻	60.5	1.3	1609.4	10 ⁻	M1	7.87	$\alpha(\text{N})=7.39\times 10^{-6}$ 11; $\alpha(\text{O})=1.169\times 10^{-6}$ 17; $\alpha(\text{P})=1.161\times 10^{-7}$ 17
		191.6	18.7	1478.3	10 ⁺	E1	0.0491	$\alpha(\text{K})=6.65$ 10; $\alpha(\text{L})=0.961$ 14; $\alpha(\text{M})=0.208$ 3; $\alpha(\text{N+..})=0.0558$ 8 $\alpha(\text{N})=0.0475$ 7; $\alpha(\text{O})=0.00753$ 11; $\alpha(\text{P})=0.000740$ 11
		256.8	100	1413.1	11 ⁺	E1	0.0228	$\alpha(\text{K})=0.0417$ 6; $\alpha(\text{L})=0.00586$ 9; $\alpha(\text{M})=0.001258$ 18; $\alpha(\text{N+..})=0.000333$ 5 $\alpha(\text{N})=0.000285$ 4; $\alpha(\text{O})=4.39\times 10^{-5}$ 7; $\alpha(\text{P})=3.78\times 10^{-6}$ 6
		404.1	12.6	1265.8	10 ⁺	E1	0.00738 11	$\alpha(\text{K})=0.0194$ 3; $\alpha(\text{L})=0.00268$ 4; $\alpha(\text{M})=0.000575$ 8; $\alpha(\text{N+..})=0.0001526$ 22 $\alpha(\text{N})=0.0001305$ 19; $\alpha(\text{O})=2.02\times 10^{-5}$ 3; $\alpha(\text{P})=1.81\times 10^{-6}$ 3 $\alpha=0.00738$ 11; $\alpha(\text{K})=0.00630$ 9; $\alpha(\text{L})=0.000851$ 12; $\alpha(\text{M})=0.000183$ 3; $\alpha(\text{N+..})=4.87\times 10^{-5}$ 7
1841.1	12 ⁻	171.2	76	1669.9	11 ⁻	M1	0.404	$\alpha(\text{N})=4.16\times 10^{-5}$ 6; $\alpha(\text{O})=6.51\times 10^{-6}$ 10; $\alpha(\text{P})=6.11\times 10^{-7}$ 9
		428.0	100	1413.1	11 ⁺	E1	0.00645 9	$\alpha(\text{K})=0.342$ 5; $\alpha(\text{L})=0.0486$ 7; $\alpha(\text{M})=0.01049$ 15; $\alpha(\text{N+..})=0.00282$ 4 $\alpha(\text{N})=0.00240$ 4; $\alpha(\text{O})=0.000381$ 6; $\alpha(\text{P})=3.78\times 10^{-5}$ 6 $\alpha=0.00645$ 9; $\alpha(\text{K})=0.00551$ 8; $\alpha(\text{L})=0.000742$ 11; $\alpha(\text{M})=0.0001590$ 23; $\alpha(\text{N+..})=4.24\times 10^{-5}$ 6
1955?	(10)	783.0	100	1172.9	9 ⁺			$\alpha(\text{N})=3.62\times 10^{-5}$ 5; $\alpha(\text{O})=5.68\times 10^{-6}$ 8; $\alpha(\text{P})=5.35\times 10^{-7}$ 8

Adopted Levels, Gammas (continued)

$\gamma(^{148}\text{Eu})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [‡]	δ	α^\dagger	Comments
1991.8	12 ⁺	578.4	56	1413.1	11 ⁺	M1+E2	@	0.013 4	$\alpha(\text{K})=0.011$ 3; $\alpha(\text{L})=0.0016$ 4; $\alpha(\text{M})=0.00034$ 7; $\alpha(\text{N}+..)=9.1\times 10^{-5}$ 19 $\alpha(\text{N})=7.8\times 10^{-5}$ 16; $\alpha(\text{O})=1.2\times 10^{-5}$ 3; $\alpha(\text{P})=1.1\times 10^{-6}$ 4
		726.0	100	1265.8	10 ⁺	E2		0.00530 8	$\alpha=0.00530$ 8; $\alpha(\text{K})=0.00443$ 7; $\alpha(\text{L})=0.000682$ 10; $\alpha(\text{M})=0.0001485$ 21; $\alpha(\text{N}+..)=3.95\times 10^{-5}$ 6 $\alpha(\text{N})=3.38\times 10^{-5}$ 5; $\alpha(\text{O})=5.24\times 10^{-6}$ 8; $\alpha(\text{P})=4.52\times 10^{-7}$ 7
2140.6	13 ⁺	148.7	0.6	1991.8	12 ⁺				
		299.5	7.5	1841.1	12 ⁻	E1		0.01538	$\alpha(\text{K})=0.01310$ 19; $\alpha(\text{L})=0.00180$ 3; $\alpha(\text{M})=0.000385$ 6; $\alpha(\text{N}+..)=0.0001025$ 15 $\alpha(\text{N})=8.76\times 10^{-5}$ 13; $\alpha(\text{O})=1.364\times 10^{-5}$ 19; $\alpha(\text{P})=1.242\times 10^{-6}$ 18
		727.5	100	1413.1	11 ⁺	E2		0.00528 8	$\alpha=0.00528$ 8; $\alpha(\text{K})=0.00441$ 7; $\alpha(\text{L})=0.000678$ 10; $\alpha(\text{M})=0.0001477$ 21; $\alpha(\text{N}+..)=3.93\times 10^{-5}$ 6 $\alpha(\text{N})=3.36\times 10^{-5}$ 5; $\alpha(\text{O})=5.21\times 10^{-6}$ 8; $\alpha(\text{P})=4.50\times 10^{-7}$ 7
2203?	(11)	248.0	100	1955?	(10)				
2351.1	13 ⁻	210.5	3.6	2140.6	13 ⁺	E1		0.0383	$\alpha(\text{K})=0.0325$ 5; $\alpha(\text{L})=0.00454$ 7; $\alpha(\text{M})=0.000976$ 14; $\alpha(\text{N}+..)=0.000258$ 4 $\alpha(\text{N})=0.000221$ 3; $\alpha(\text{O})=3.41\times 10^{-5}$ 5; $\alpha(\text{P})=2.98\times 10^{-6}$ 5
		681.2	100	1669.9	11 ⁻	E2		0.00616 9	$\alpha=0.00616$ 9; $\alpha(\text{K})=0.00513$ 8; $\alpha(\text{L})=0.000804$ 12; $\alpha(\text{M})=0.0001754$ 25; $\alpha(\text{N}+..)=4.66\times 10^{-5}$ 7 $\alpha(\text{N})=3.99\times 10^{-5}$ 6; $\alpha(\text{O})=6.17\times 10^{-6}$ 9; $\alpha(\text{P})=5.22\times 10^{-7}$ 8
2539.9	14 ⁺	399.7	100	2140.6	13 ⁺	M1		0.0414	$\alpha(\text{K})=0.0352$ 5; $\alpha(\text{L})=0.00488$ 7; $\alpha(\text{M})=0.001051$ 15; $\alpha(\text{N}+..)=0.000283$ 4 $\alpha(\text{N})=0.000241$ 4; $\alpha(\text{O})=3.83\times 10^{-5}$ 6; $\alpha(\text{P})=3.84\times 10^{-6}$ 6
		548.7	58	1991.8	12 ⁺	E2		0.01050	$\alpha(\text{K})=0.00864$ 12; $\alpha(\text{L})=0.001458$ 21; $\alpha(\text{M})=0.000320$ 5; $\alpha(\text{N}+..)=8.46\times 10^{-5}$ 12 $\alpha(\text{N})=7.26\times 10^{-5}$ 11; $\alpha(\text{O})=1.110\times 10^{-5}$ 16; $\alpha(\text{P})=8.67\times 10^{-7}$ 13
2545.8	14 ⁻	194.8	37	2351.1	13 ⁻	M1		0.283	$\alpha(\text{K})=0.240$ 4; $\alpha(\text{L})=0.0339$ 5; $\alpha(\text{M})=0.00732$ 11; $\alpha(\text{N}+..)=0.00197$ 3 $\alpha(\text{N})=0.001676$ 24; $\alpha(\text{O})=0.000266$ 4; $\alpha(\text{P})=2.64\times 10^{-5}$ 4
		405.1	34	2140.6	13 ⁺	E1		0.00734 11	$\alpha=0.00734$ 11; $\alpha(\text{K})=0.00626$ 9; $\alpha(\text{L})=0.000846$ 12; $\alpha(\text{M})=0.000181$ 3; $\alpha(\text{N}+..)=4.84\times 10^{-5}$ 7 $\alpha(\text{N})=4.13\times 10^{-5}$ 6; $\alpha(\text{O})=6.47\times 10^{-6}$ 9; $\alpha(\text{P})=6.07\times 10^{-7}$ 9
		704.7	100	1841.1	12 ⁻	E2		0.00569 8	$\alpha=0.00569$ 8; $\alpha(\text{K})=0.00475$ 7; $\alpha(\text{L})=0.000736$ 11; $\alpha(\text{M})=0.0001604$ 23; $\alpha(\text{N}+..)=4.26\times 10^{-5}$ 6 $\alpha(\text{N})=3.65\times 10^{-5}$ 6; $\alpha(\text{O})=5.65\times 10^{-6}$ 8; $\alpha(\text{P})=4.84\times 10^{-7}$ 7
2599.0	13 ⁺	458.6	100	2140.6	13 ⁺	E2		0.01688	$\alpha(\text{K})=0.01370$ 20; $\alpha(\text{L})=0.00249$ 4; $\alpha(\text{M})=0.000550$ 8; $\alpha(\text{N}+..)=0.0001448$ 21 $\alpha(\text{N})=0.0001246$ 18; $\alpha(\text{O})=1.88\times 10^{-5}$ 3; $\alpha(\text{P})=1.353\times 10^{-6}$ 19
		1185.9	26	1413.1	11 ⁺				
2877.7	14 ⁺	278.7	100	2599.0	13 ⁺	M1+E2	1.3 [#] 10	0.086 19	$\alpha(\text{K})=0.069$ 19; $\alpha(\text{L})=0.0132$ 5; $\alpha(\text{M})=0.00294$ 18; $\alpha(\text{N}+..)=0.00077$ 3 $\alpha(\text{N})=0.00066$ 4; $\alpha(\text{O})=0.0001000$ 14; $\alpha(\text{P})=7.E-6$ 3
2898.0	16 ⁺	358.1	100	2539.9	14 ⁺	E2		0.0341	$\alpha(\text{K})=0.0270$ 4; $\alpha(\text{L})=0.00557$ 8; $\alpha(\text{M})=0.001242$ 18; $\alpha(\text{N}+..)=0.000324$ 5 $\alpha(\text{N})=0.000280$ 4; $\alpha(\text{O})=4.16\times 10^{-5}$ 6; $\alpha(\text{P})=2.58\times 10^{-6}$ 4
2974.9	15 ⁺	429.1	78	2545.8	14 ⁻				
		834.3	100	2140.6	13 ⁺	E2		0.00387 6	$\alpha=0.00387$ 6; $\alpha(\text{K})=0.00325$ 5; $\alpha(\text{L})=0.000483$ 7; $\alpha(\text{M})=0.0001047$ 15; $\alpha(\text{N}+..)=2.79\times 10^{-5}$ 4 $\alpha(\text{N})=2.39\times 10^{-5}$ 4; $\alpha(\text{O})=3.72\times 10^{-6}$ 6; $\alpha(\text{P})=3.33\times 10^{-7}$ 5

Adopted Levels, Gammas (continued)

$\gamma(^{148}\text{Eu})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [‡]	δ	α^\dagger	Comments
3047.3	15 ⁻	696.2	100	2351.1	13 ⁻	E2		0.00585 9	$\alpha=0.00585$ 9; $\alpha(\text{K})=0.00488$ 7; $\alpha(\text{L})=0.000760$ 11; $\alpha(\text{M})=0.0001656$ 24; $\alpha(\text{N}+..)=4.40\times 10^{-5}$ 7 $\alpha(\text{N})=3.77\times 10^{-5}$ 6; $\alpha(\text{O})=5.83\times 10^{-6}$ 9; $\alpha(\text{P})=4.97\times 10^{-7}$ 7
3205.5	16 ⁻	158.2	26	3047.3	15 ⁻	M1+E2	@	0.490 15	$\alpha(\text{K})=0.37$ 6; $\alpha(\text{L})=0.09$ 4; $\alpha(\text{M})=0.021$ 9; $\alpha(\text{N}+..)=0.0055$ 21 $\alpha(\text{N})=0.0048$ 18; $\alpha(\text{O})=0.00070$ 23; $\alpha(\text{P})=3.6\times 10^{-5}$ 11
		230.5	15	2974.9	15 ⁺	E1		0.0301	$\alpha(\text{K})=0.0256$ 4; $\alpha(\text{L})=0.00356$ 5; $\alpha(\text{M})=0.000765$ 11; $\alpha(\text{N}+..)=0.000203$ 3 $\alpha(\text{N})=0.0001736$ 25; $\alpha(\text{O})=2.69\times 10^{-5}$ 4; $\alpha(\text{P})=2.37\times 10^{-6}$ 4
		659.6	100	2545.8	14 ⁻	E2		0.00665 10	$\alpha=0.00665$ 10; $\alpha(\text{K})=0.00553$ 8; $\alpha(\text{L})=0.000876$ 13; $\alpha(\text{M})=0.000191$ 3; $\alpha(\text{N}+..)=5.07\times 10^{-5}$ 8 $\alpha(\text{N})=4.35\times 10^{-5}$ 6; $\alpha(\text{O})=6.71\times 10^{-6}$ 10; $\alpha(\text{P})=5.62\times 10^{-7}$ 8
3306?	(15)	429.0	100	2877.7	14 ⁺				
3653.2	18 ⁻	447.7	100	3205.5	16 ⁻	E2		0.0180	$\alpha(\text{K})=0.01460$ 21; $\alpha(\text{L})=0.00268$ 4; $\alpha(\text{M})=0.000594$ 9; $\alpha(\text{N}+..)=0.0001561$ 22 $\alpha(\text{N})=0.0001343$ 19; $\alpha(\text{O})=2.03\times 10^{-5}$ 3; $\alpha(\text{P})=1.438\times 10^{-6}$ 21
3712?	(16)	405.9	100	3306?	(15)				
3819.5	(17)	921.5	100	2898.0	16 ⁺				
3845.8	17 ⁺	947.8	100	2898.0	16 ⁺	M1+E2	@	0.0039 10	$\alpha=0.0039$ 10; $\alpha(\text{K})=0.0033$ 9; $\alpha(\text{L})=0.00046$ 10; $\alpha(\text{M})=9.8\times 10^{-5}$ 21; $\alpha(\text{N}+..)=2.6\times 10^{-5}$ 6 $\alpha(\text{N})=2.2\times 10^{-5}$ 5; $\alpha(\text{O})=3.6\times 10^{-6}$ 8; $\alpha(\text{P})=3.5\times 10^{-7}$ 10
4008.3	19 ⁻	355.1	100	3653.2	18 ⁻	M1		0.0564	$\alpha(\text{K})=0.0479$ 7; $\alpha(\text{L})=0.00666$ 10; $\alpha(\text{M})=0.001436$ 21; $\alpha(\text{N}+..)=0.000386$ 6 $\alpha(\text{N})=0.000329$ 5; $\alpha(\text{O})=5.23\times 10^{-5}$ 8; $\alpha(\text{P})=5.23\times 10^{-6}$ 8
4066.5	(18)	220.7	100	3845.8	17 ⁺				
4086.5	20 ⁻	79.0	2.2	4008.3	19 ⁻	M1+E2	1.1# +6-4	4.8 5	$\alpha(\text{K})=2.55$ 22; $\alpha(\text{L})=1.8$ 6; $\alpha(\text{M})=0.41$ 13; $\alpha(\text{N}+..)=0.10$ 4 $\alpha(\text{N})=0.09$ 3; $\alpha(\text{O})=0.013$ 4; $\alpha(\text{P})=0.00024$ 5
		433.7	100	3653.2	18 ⁻	E2		0.0197	$\alpha(\text{K})=0.01589$ 23; $\alpha(\text{L})=0.00297$ 5; $\alpha(\text{M})=0.000657$ 10; $\alpha(\text{N}+..)=0.0001725$ 25 $\alpha(\text{N})=0.0001486$ 21; $\alpha(\text{O})=2.24\times 10^{-5}$ 4; $\alpha(\text{P})=1.560\times 10^{-6}$ 22
4200.7	18 ⁺	1302.7	100	2898.0	16 ⁺	E2		0.001549 22	$\alpha=0.001549$ 22; $\alpha(\text{K})=0.001302$ 19; $\alpha(\text{L})=0.0001784$ 25; $\alpha(\text{M})=3.84\times 10^{-5}$ 6; $\alpha(\text{N}+..)=3.10\times 10^{-5}$ $\alpha(\text{N})=8.76\times 10^{-6}$ 13; $\alpha(\text{O})=1.384\times 10^{-6}$ 20; $\alpha(\text{P})=1.342\times 10^{-7}$ 19; $\alpha(\text{IPF})=2.07\times 10^{-5}$ 3
4283.9	(18)	464.4	100	3819.5	(17)				
4335.6	21 ⁻	248.7	100	4086.5	20 ⁻	M1		0.1453	$\alpha(\text{K})=0.1232$ 18; $\alpha(\text{L})=0.01733$ 25; $\alpha(\text{M})=0.00374$ 6; $\alpha(\text{N}+..)=0.001006$ 14 $\alpha(\text{N})=0.000856$ 12; $\alpha(\text{O})=0.0001360$ 19; $\alpha(\text{P})=1.354\times 10^{-5}$ 19
4393.7	(18)	574.3	80	3819.5	(17)				
		1495.7	100	2898.0	16 ⁺				
4424.8	18 ⁺	1526.8	100	2898.0	16 ⁺				
4651.0	19 ⁺	226.6	100	4424.8	18 ⁺	M1		0.187	$\alpha(\text{K})=0.1585$ 23; $\alpha(\text{L})=0.0223$ 4; $\alpha(\text{M})=0.00482$ 7; $\alpha(\text{N}+..)=0.001297$ 19 $\alpha(\text{N})=0.001105$ 16; $\alpha(\text{O})=0.0001754$ 25; $\alpha(\text{P})=1.744\times 10^{-5}$ 25
4750.3	20 ⁺	257.3	100	4393.7	(18)				
		414.7	100	4335.6	21 ⁻	E1		0.00694 10	$\alpha=0.00694$ 10; $\alpha(\text{K})=0.00593$ 9; $\alpha(\text{L})=0.000800$ 12; $\alpha(\text{M})=0.0001715$ 24;

Adopted Levels, Gammas (continued)

$\gamma(^{148}\text{Eu})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}</u>	<u>I_{γ}</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.[‡]</u>	<u>δ</u>	<u>α^{\dagger}</u>	<u>Comments</u>
									$\alpha(\text{N+..})=4.58\times 10^{-5}$ 7 $\alpha(\text{N})=3.91\times 10^{-5}$ 6; $\alpha(\text{O})=6.12\times 10^{-6}$ 9; $\alpha(\text{P})=5.75\times 10^{-7}$ 8
4750.3	20 ⁺	549.0 742.0	14 21	4200.7 4008.3	18 ⁺ 19 ⁻				
5017.1	20 ⁺	366.1	100	4651.0	19 ⁺	M1+E2	0.8 [#] +10-6	0.044 8	$\alpha(\text{K})=0.037$ 7; $\alpha(\text{L})=0.0058$ 4; $\alpha(\text{M})=0.00126$ 7; $\alpha(\text{N+..})=0.000335$ 22 $\alpha(\text{N})=0.000286$ 17; $\alpha(\text{O})=4.5\times 10^{-5}$ 4; $\alpha(\text{P})=3.9\times 10^{-6}$ 9
5125.1	(21)	1117.0	100	4008.3	19 ⁻				
5179.6?	21 ⁺	1092.7	100	4086.5	20 ⁻	E1		0.000919 13	$\alpha=0.000919$ 13; $\alpha(\text{K})=0.000789$ 11; $\alpha(\text{L})=0.0001019$ 15; $\alpha(\text{M})=2.18\times 10^{-5}$ 3; $\alpha(\text{N+..})=5.84\times 10^{-6}$ $\alpha(\text{N})=4.97\times 10^{-6}$ 7; $\alpha(\text{O})=7.88\times 10^{-7}$ 11; $\alpha(\text{P})=7.91\times 10^{-8}$ 11
5207.2	21 ⁻	1198.9	100	4008.3	19 ⁻				
5215.6	22 ⁺	465.3	100	4750.3	20 ⁺	E2		0.01623	$\alpha(\text{K})=0.01318$ 19; $\alpha(\text{L})=0.00238$ 4; $\alpha(\text{M})=0.000526$ 8; $\alpha(\text{N+..})=0.0001384$ 20 $\alpha(\text{N})=0.0001191$ 17; $\alpha(\text{O})=1.80\times 10^{-5}$ 3; $\alpha(\text{P})=1.304\times 10^{-6}$ 19
5301.9	21 ⁻	1293.6	100	4008.3	19 ⁻	E2		0.001569 22	$\alpha=0.001569$ 22; $\alpha(\text{K})=0.001320$ 19; $\alpha(\text{L})=0.000181$ 3; $\alpha(\text{M})=3.89\times 10^{-5}$ 6; $\alpha(\text{N+..})=2.95\times 10^{-5}$ 5 $\alpha(\text{N})=8.89\times 10^{-6}$ 13; $\alpha(\text{O})=1.404\times 10^{-6}$ 20; $\alpha(\text{P})=1.360\times 10^{-7}$ 19; $\alpha(\text{IPF})=1.91\times 10^{-5}$ 3
5366.2	21 ⁻	1279.3	100	4086.5	20 ⁻				
5389.6	22 ⁻	1302.7	100	4086.5	20 ⁻	E2		0.001549 22	$\alpha=0.001549$ 22; $\alpha(\text{K})=0.001302$ 19; $\alpha(\text{L})=0.0001784$ 25; $\alpha(\text{M})=3.84\times 10^{-5}$ 6; $\alpha(\text{N+..})=3.10\times 10^{-5}$ $\alpha(\text{N})=8.76\times 10^{-6}$ 13; $\alpha(\text{O})=1.384\times 10^{-6}$ 20; $\alpha(\text{P})=1.342\times 10^{-7}$ 19; $\alpha(\text{IPF})=2.07\times 10^{-5}$ 3
5519.0	22 ⁻	152.8	12.5	5366.2	21 ⁻	M1+E2	@	0.547 12	$\alpha(\text{K})=0.41$ 7; $\alpha(\text{L})=0.11$ 5; $\alpha(\text{M})=0.024$ 10; $\alpha(\text{N+..})=0.0063$ 25 $\alpha(\text{N})=0.0055$ 22; $\alpha(\text{O})=0.0008$ 3; $\alpha(\text{P})=4.0\times 10^{-5}$ 12
		217.1	100	5301.9	21 ⁻	M1		0.210	$\alpha(\text{K})=0.1781$ 25; $\alpha(\text{L})=0.0251$ 4; $\alpha(\text{M})=0.00543$ 8; $\alpha(\text{N+..})=0.001459$ 21 $\alpha(\text{N})=0.001243$ 18; $\alpha(\text{O})=0.000197$ 3; $\alpha(\text{P})=1.96\times 10^{-5}$ 3
		1432.1	75	4086.5	20 ⁻	(E2)		0.001324 19	$\alpha=0.001324$ 19; $\alpha(\text{K})=0.001084$ 16; $\alpha(\text{L})=0.0001468$ 21; $\alpha(\text{M})=3.15\times 10^{-5}$ 5; $\alpha(\text{N+..})=6.15\times 10^{-5}$ $\alpha(\text{N})=7.21\times 10^{-6}$ 10; $\alpha(\text{O})=1.140\times 10^{-6}$ 16; $\alpha(\text{P})=1.118\times 10^{-7}$ 16; $\alpha(\text{IPF})=5.31\times 10^{-5}$ 8
5794.0	23 ⁻	275.0	100	5519.0	22 ⁻	M1		0.1109	$\alpha(\text{K})=0.0941$ 14; $\alpha(\text{L})=0.01319$ 19; $\alpha(\text{M})=0.00285$ 4; $\alpha(\text{N+..})=0.000766$ 11 $\alpha(\text{N})=0.000652$ 10; $\alpha(\text{O})=0.0001036$ 15; $\alpha(\text{P})=1.032\times 10^{-5}$ 15
5943.3	23 ⁻	586.7 553.7	21 100	5207.2 5389.6	21 ⁻ 22 ⁻				
6073.1	23 ⁻	683.5	100	5389.6	22 ⁻				
6100.4	24 ⁻	157.1	43	5943.3	23 ⁻				
		306.4	100	5794.0	23 ⁻	M1+E2	$\approx 1.7^{\#}$	≈ 0.0619	$\alpha(\text{K})\approx 0.0495$; $\alpha(\text{L})\approx 0.00967$; $\alpha(\text{M})\approx 0.00215$; $\alpha(\text{N+..})\approx 0.000563$ $\alpha(\text{N})\approx 0.000486$; $\alpha(\text{O})\approx 7.28\times 10^{-5}$; $\alpha(\text{P})\approx 4.92\times 10^{-6}$
		710.0	93	5389.6	22 ⁻				

Adopted Levels, Gammas (continued)

$\gamma(^{148}\text{Eu})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [‡]	δ	α^\dagger	Comments
6306.1	24 ⁺	1090.5	100	5215.6	22 ⁺				
6330.7?		536.8	100	5794.0	23 ⁻				
6384.8	24 ⁺	1169.2	100	5215.6	22 ⁺	E2		0.00190 3	$\alpha=0.00190$ 3; $\alpha(\text{K})=0.001611$ 23; $\alpha(\text{L})=0.000224$ 4; $\alpha(\text{M})=4.83 \times 10^{-5}$ 7; $\alpha(\text{N}+..)=1.578 \times 10^{-5}$ 22 $\alpha(\text{N})=1.103 \times 10^{-5}$ 16; $\alpha(\text{O})=1.737 \times 10^{-6}$ 25; $\alpha(\text{P})=1.660 \times 10^{-7}$ 24; $\alpha(\text{IPF})=2.85 \times 10^{-6}$ 4
6435.6	25 ⁻	129.2	50	6306.1	24 ⁺				
		335.2	100	6100.4	24 ⁻	M1+E2	1.5 [#] 9	0.049 11	$\alpha(\text{K})=0.040$ 10; $\alpha(\text{L})=0.0072$ 4; $\alpha(\text{M})=0.00160$ 6; $\alpha(\text{N}+..)=0.000421$ 20 $\alpha(\text{N})=0.000362$ 15; $\alpha(\text{O})=5.5 \times 10^{-5}$ 4; $\alpha(\text{P})=4.0 \times 10^{-6}$ 13
6703.4	26 ⁻	362.2	93	6073.1	23 ⁻				
		267.8	100	6435.6	25 ⁻	M1		0.1191	$\alpha(\text{K})=0.1010$ 15; $\alpha(\text{L})=0.01418$ 20; $\alpha(\text{M})=0.00306$ 5; $\alpha(\text{N}+..)=0.000823$ 12 $\alpha(\text{N})=0.000700$ 10; $\alpha(\text{O})=0.0001113$ 16; $\alpha(\text{P})=1.109 \times 10^{-5}$ 16
7028.3	27 ⁽⁻⁾	325.5		6703.4	26 ⁻				
7497.4	(27)	794.5		6703.4	26 ⁻				
7526.8	28 ⁽⁻⁾	498.5		7028.3	27 ⁽⁻⁾				
7590.8	28 ⁽⁻⁾	562.5		7028.3	27 ⁽⁻⁾				
7852.9	(29)	824.6		7028.3	27 ⁽⁻⁾				
8170.9		580.2		7590.8	28 ⁽⁻⁾				
8517.9		991.1		7526.8	28 ⁽⁻⁾				
8632.5	(29)	1135.1		7497.4	(27)				
9245.6	(31)	613.0		8632.5	(29)				
		1074.7		8170.9					
9623.6		1105.7		8517.9					
10480.0		856.4		9623.6					
11088.1		608.1		10480.0					
747.7+x	J+2	747.7 1	0.93& 9	x	J				
1545.6+x	J+4	797.9 2	0.93& 9	747.7+x	J+2				
2393.9+x	J+6	848.3 1	1.09& 11	1545.6+x	J+4				
3293.4+x	J+8	899.5 2	0.98& 10	2393.9+x	J+6				
4244.8+x	J+10	951.4 2	1.14& 11	3293.4+x	J+8				
5248.6+x	J+12	1003.8 2	1.10& 11	4244.8+x	J+10				
6305.7+x	J+14	1057.1 2	0.80& 8	5248.6+x	J+12				
7416.4+x	J+16	1110.7 2	1.05& 10	6305.7+x	J+14				
8581.7+x	J+18	1165.3 2	0.89& 9	7416.4+x	J+16				
9801.8+x	J+20	1220.1 2	0.78& 8	8581.7+x	J+18				
11077.5+x	J+22	1275.7 2	0.59& 6	9801.8+x	J+20				
12408.4+x	J+24	1330.9 2	0.74& 7	11077.5+x	J+22				

Adopted Levels, Gammas (continued)

$\gamma(^{148}\text{Eu})$ (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ</u>	<u>I_γ</u>	<u>E_f</u>	<u>J_f^π</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ</u>	<u>E_f</u>	<u>J_f^π</u>
13795.9+x	J+26	1387.5 2	0.60 ^{&} 6	12408.4+x	J+24	5838.3+y	J1+12	1104.2 6	4734.1+y	J1+10
15239.2+x	J+28	1443.3 2	0.39 ^{&} 4	13795.9+x	J+26	6996.2+y	J1+14	1157.9 9	5838.3+y	J1+12
16738.1+x	J+30	1498.9 3	0.48 ^{&} 5	15239.2+x	J+28	8208.6+y	J1+16	1212.4 8	6996.2+y	J1+14
18293.2+x	J+32	1555.1 4	0.31 ^{&} 3	16738.1+x	J+30	9477.3+y	J1+18	1268.7 7	8208.6+y	J1+16
844.2+y	J1+2	844.2 6		y	J1	10799.3+y	J1+20	1322.0 5	9477.3+y	J1+18
1739.0+y	J1+4	894.8 5		844.2+y	J1+2	12177.1+y	J1+22	1377.8 7	10799.3+y	J1+20
2685.1+y	J1+6	946.1 6		1739.0+y	J1+4	13611.1+y	J1+24	1434.0 6	12177.1+y	J1+22
3683.2+y	J1+8	998.1 5		2685.1+y	J1+6	15100.3+y	J1+26	1489.2 10	13611.1+y	J1+24
4734.1+y	J1+10	1050.9 5		3683.2+y	J1+8	16644.4+y	J1+28	1544.1 14	15100.3+y	J1+26

† Additional information 2.

‡ Based on Ice from ¹⁴⁸Eu IT decay and (p,3nγ); and γ(θ), DCO, linear polarization, Ice data from (¹³C,4nγ).

Estimated from Ice data in (¹³C,4nγ).

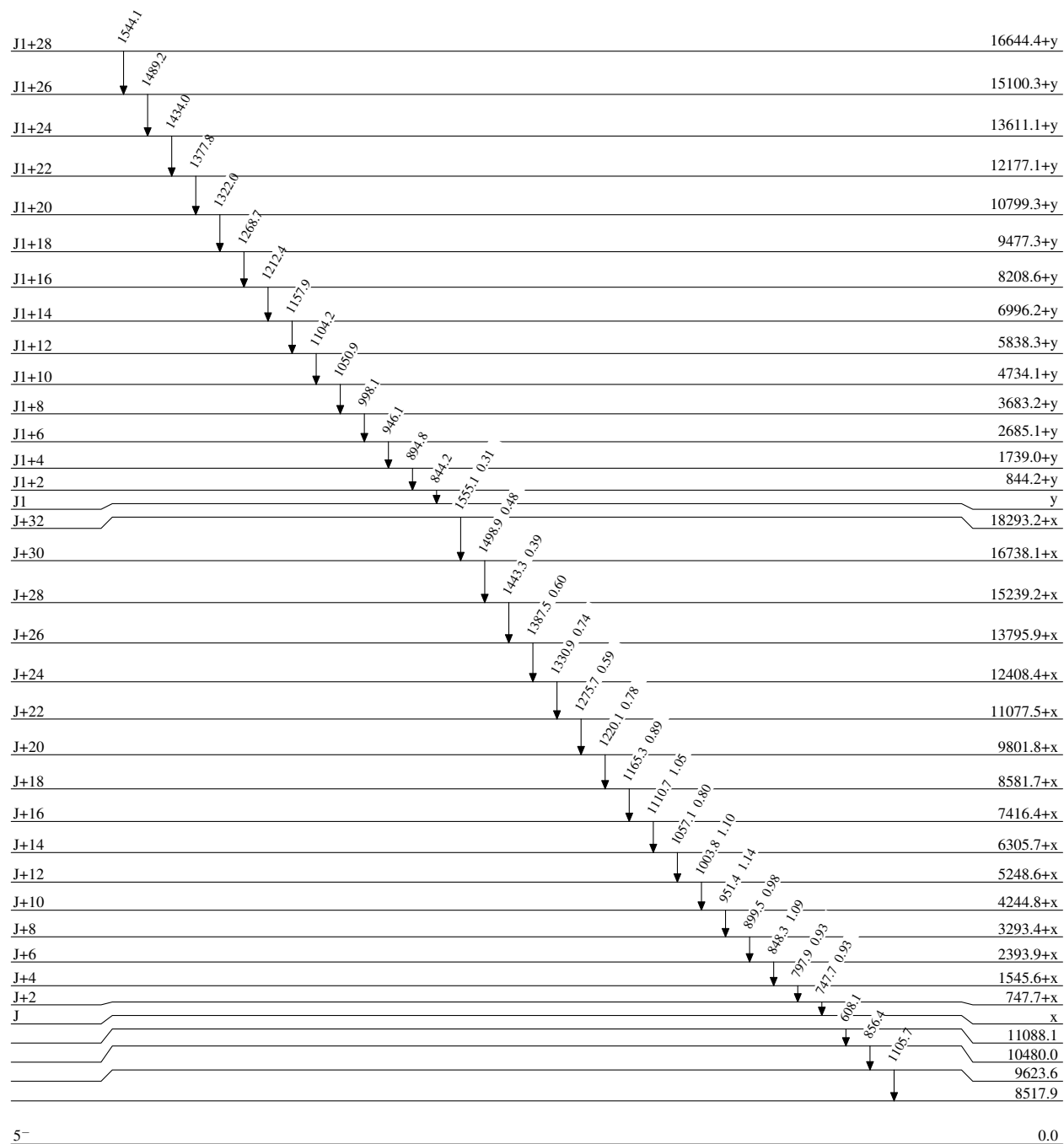
@ Not given by authors in (¹³C,4nγ).

& Relative intensities within the SD-1 band, normalized to ≈1 for the strongest transition in the mid-energy region of the band.

^a Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas**Level Scheme**

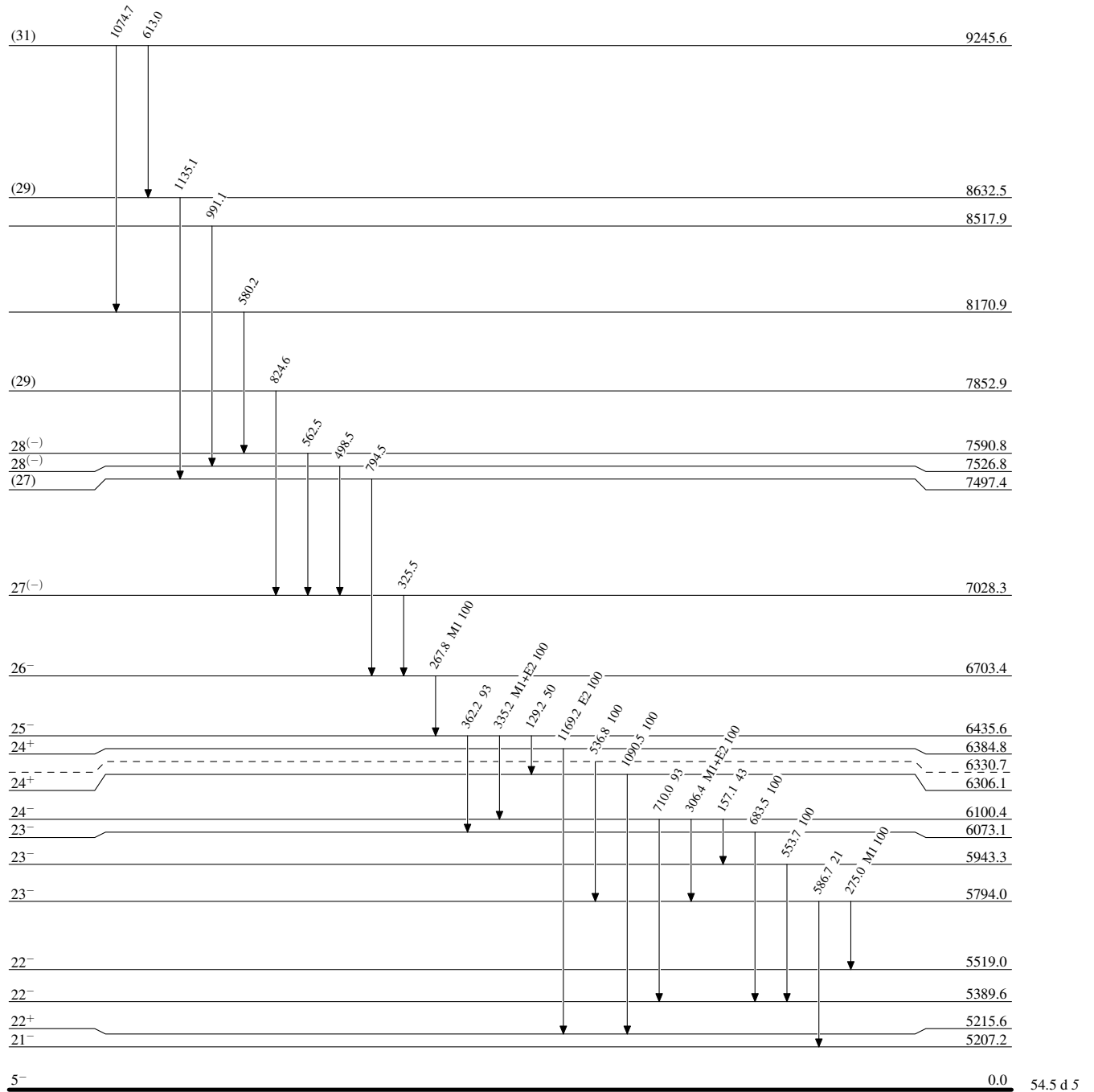
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

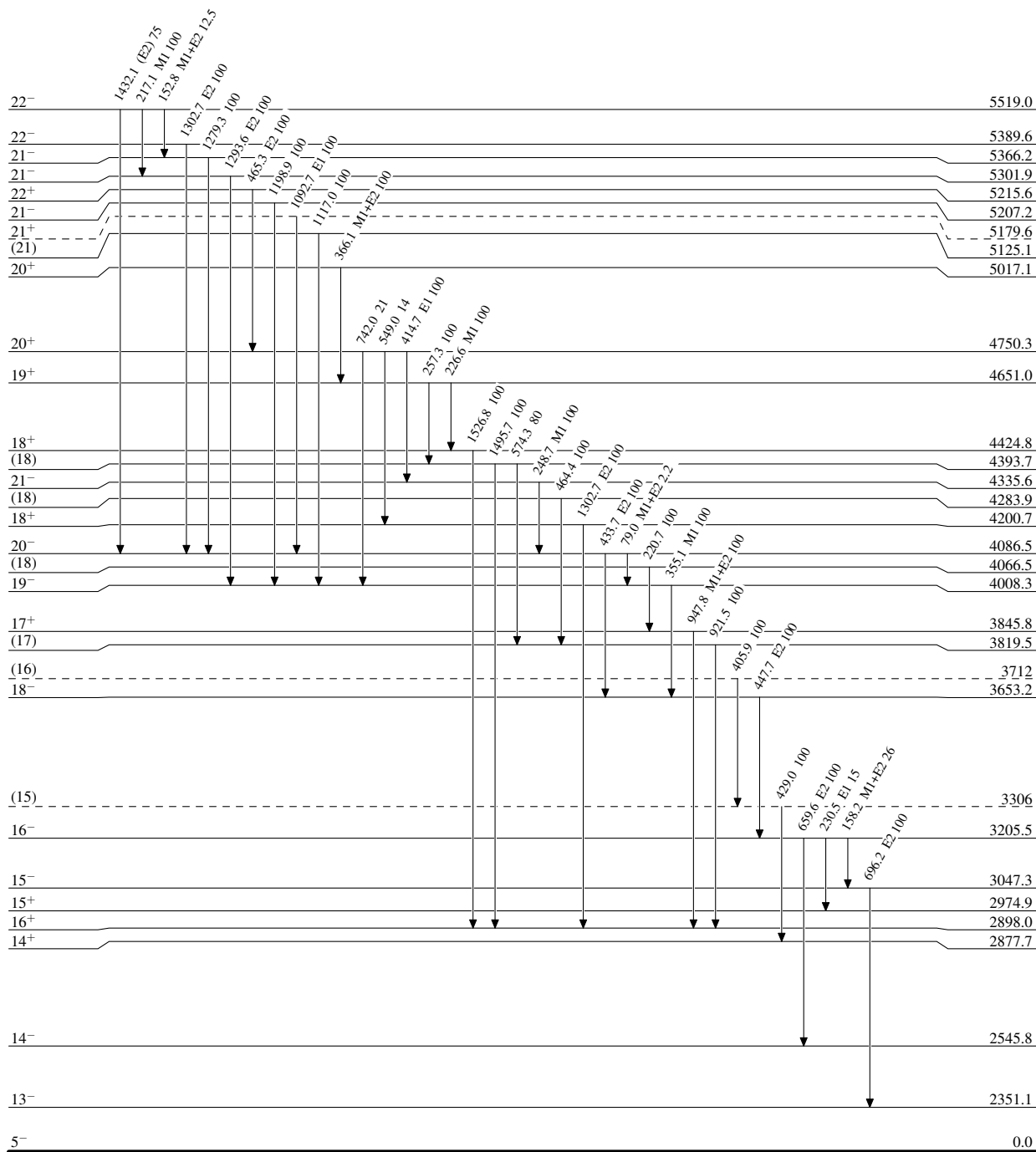
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

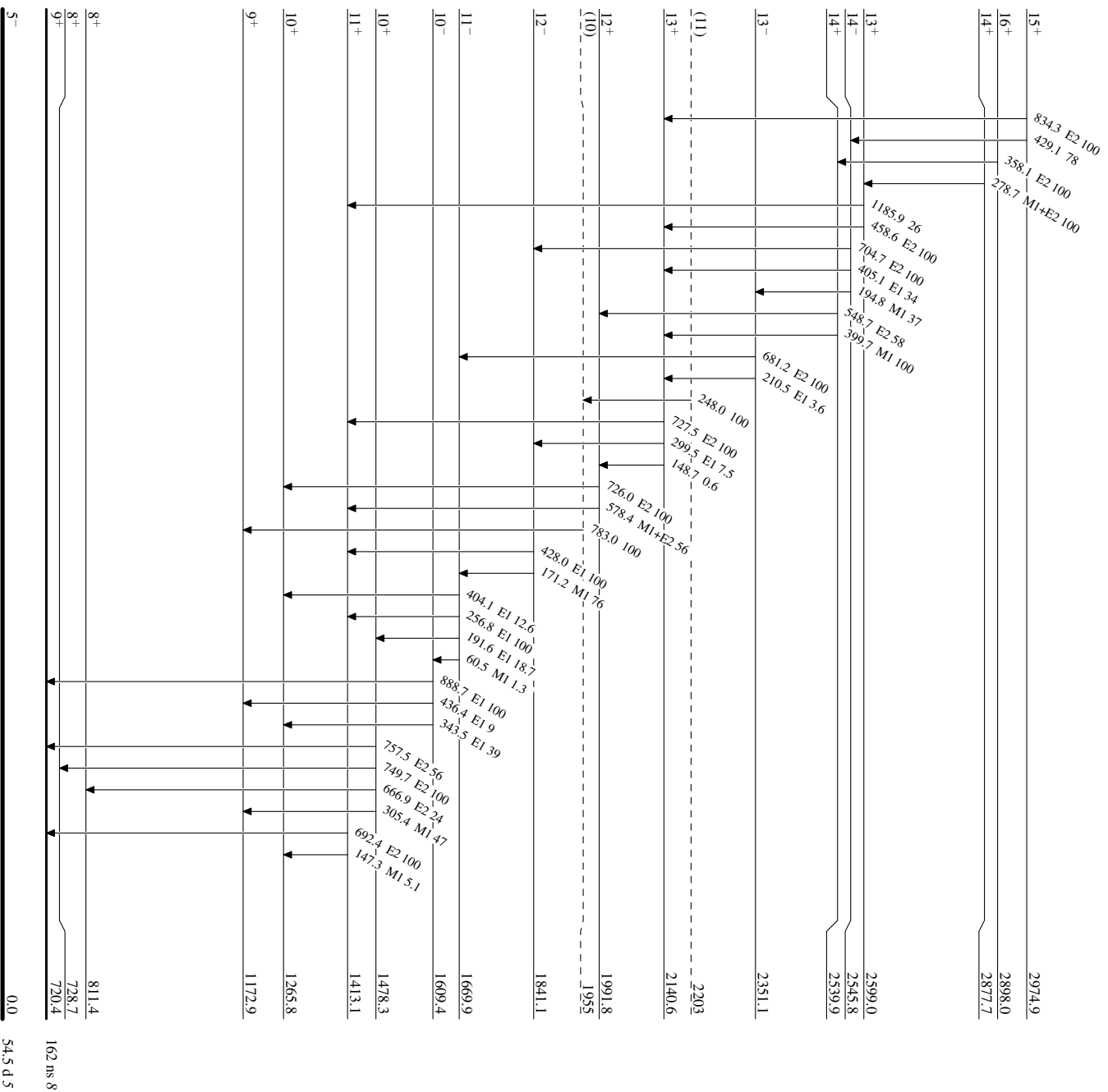
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



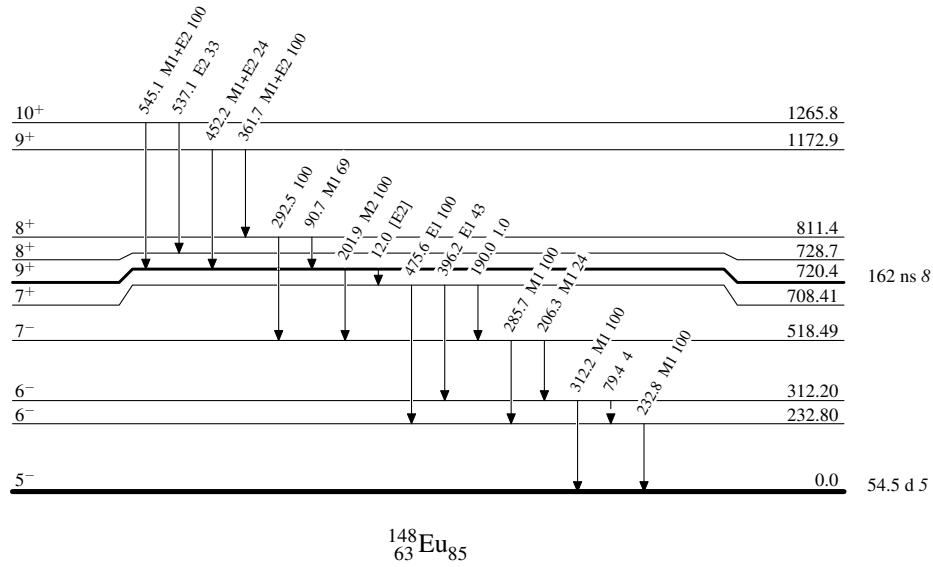
¹⁴⁸Eu₈₅

Adopted Levels, Gammas

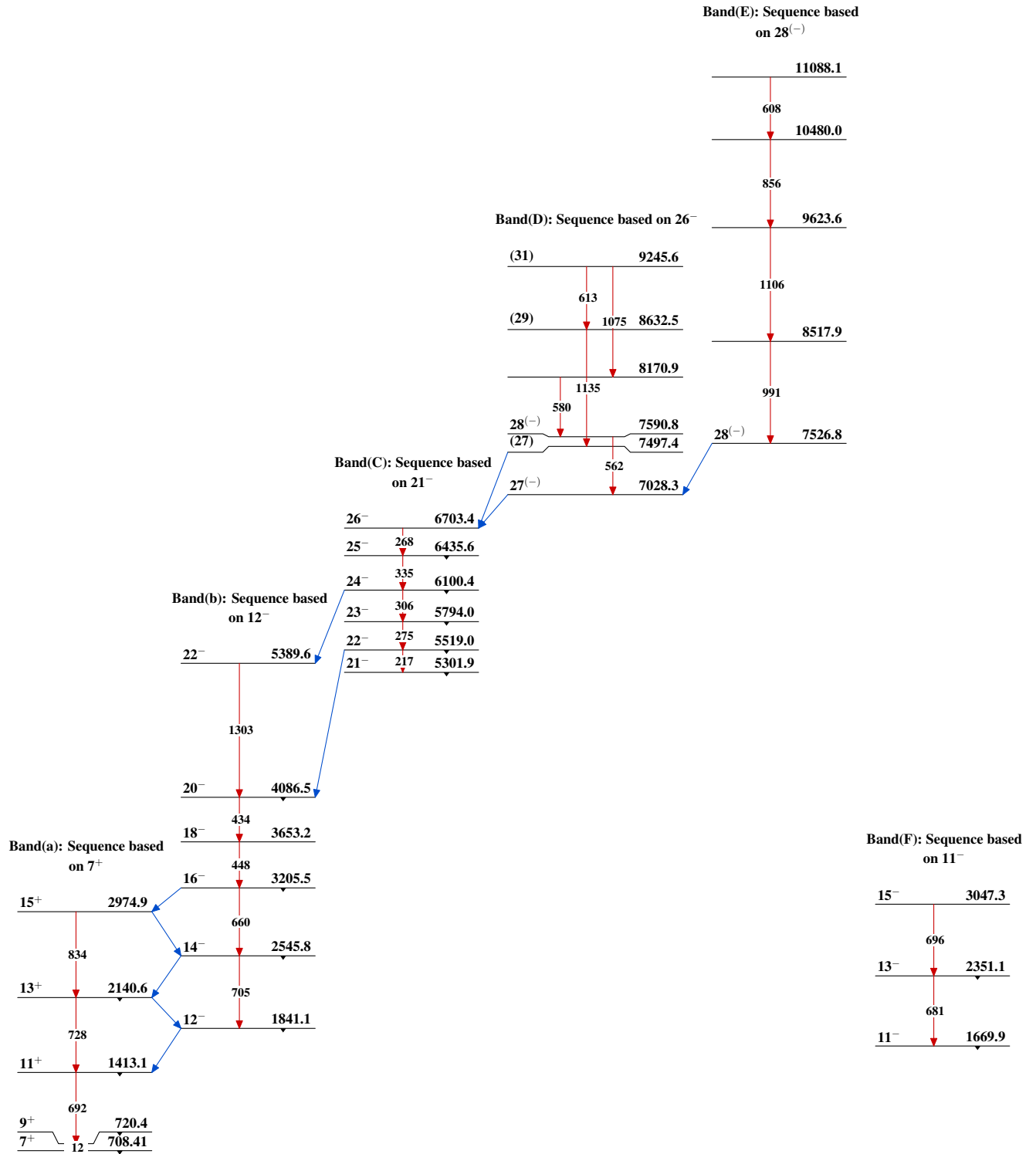
Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

Adopted Levels, Gammas



Adopted Levels, Gammas (continued)

Band(A): SD-1 band (1998Ha21)		Band(B): SD-2 band (1998Ha21)	
J+32	18293.2+x	J1+28	16644.4+y
	↓ 1555		↓ 1544
J+30	16738.1+x	J1+26	15100.3+y
	↓ 1499		↓ 1489
J+28	15239.2+x	J1+24	13611.1+y
	↓ 1443		↓ 1434
J+26	13795.9+x	J1+22	12177.1+y
	↓ 1388		↓ 1378
J+24	12408.4+x	J1+20	10799.3+y
	↓ 1331		↓ 1322
J+22	11077.5+x	J1+18	9477.3+y
	↓ 1276		↓ 1269
J+20	9801.8+x	J1+16	8208.6+y
	↓ 1220		↓ 1212
J+18	8581.7+x	J1+14	6996.2+y
	↓ 1165		↓ 1158
J+16	7416.4+x	J1+12	5838.3+y
	↓ 1111		↓ 1104
J+14	6305.7+x	J1+10	4734.1+y
	↓ 1057		↓ 1051
J+12	5248.6+x	J1+8	3683.2+y
	↓ 1004		↓ 998
J+10	4244.8+x	J1+6	2685.1+y
	↓ 951		↓ 946
J+8	3293.4+x	J1+4	1739.0+y
	↓ 900		↓ 895
J+6	2393.9+x	J1+2	844.2+y
	↓ 848		↓ 844
J+4	1545.6+x	J1	y
	↓ 798		
J+2	747.7+x		
	↓ 748		
J	x		