

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS	113,715 (2012)	31-May-2011

$Q(\beta^-) = -7.81 \times 10^3$ 21; $S(n) = 9.34 \times 10^3$ 21; $S(p) = 4.21 \times 10^3$ 21; $Q(\alpha) = 1.72 \times 10^3$ 20 2012Wa38

Note: Current evaluation has used the following Q record $-7.81\text{E}+3$ 21 $9.34\text{e}+3204210$ 2010.72 $\times 10^3$ 20 2011AuZZ.

2003Au03: $Q(\beta^-) = 7800$ 210, $S(n) = 9340$ 200, $S(p) = 4200$ 200, $Q(\alpha) = 1720$ 200.

There is considerable discrepancy in the level schemes presented by 2000Li14, 1998Su04, and 1997Ri16. Evaluators have adopted placements of 2000Li14 and those supported by both 1998Su04, 1997Ri16. Placements suggested by 1998Su04 alone are shown dashed, where as those suggested by 1997Ri16 alone have been omitted. See (HI,xny) for additional comments. The choice of 2000Li14 over others is somewhat arbitrary.

 ^{143}Gd LevelsCross Reference (XREF) Flags

A ^{143}Tb ε decay
B (HI,xny)

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	$(1/2)^+$	39 s 2	A	$\% \varepsilon + \% \beta^+ = 100$ $T_{1/2}$: from 1978Fi02. J^π : syst for N=79 nuclei, π from $\log ft = 5.3$ to $\pi = +$. J^π : syst for N=79 nuclei.
45.1	$(3/2^+)$		A	
152.6 ^b	$(11/2^-)$	110.0 s 14	A	$\% \varepsilon + \% \beta^+ = 100$ $T_{1/2}$: Wt Av: 112 s 2 (1978Fi02), 108 s 2 (1976Wi09), 114 s 18 (1973VaYZ). J^π : $\log ft = 6.1-6.3$ to $11/2^-, 13/2^-, 9/2^-$; observed population of ^{143}Eu $15/2^-$ level 1306 (in ε decay) may be due to γ 's from higher yet unknown levels with $J = 13/2, 11/2^-$ directly populated in ε decay. Isotope shift (2005Ba64).
354.3	$(5/2^+)$		A	
407.5	$(5/2^+)$		A	
493.1	$(9/2^-)$		A	
752.3 ^b 4	$(15/2^-)$		B	
787.9	$(7/2)$		A	
1076.6 4	$(13/2^-)$		B	
1250.7	$(9/2, 11/2^-)$		A	
1474.0	$(9/2, 11/2^-)$		A	
1775.9 ^b 4	$(19/2^-)$		B	
1794.1 [@] 4	$13/2^+$		B	
1847.9 4	$(15/2^-)$		B	J^π : $13/2^+$ in 1997Ri16.
1864.2 5	$(15/2^+)$		B	
1912.3 4	$(17/2^-)$		B	
2053.8 5	$(17/2^+)$		B	
2180.9 4	$(13/2^+)$		B	J^π : $(17/2)$ in 1997Ri16.
2236.7? 5			B	
2327.9 5	$(17/2^+)$		B	
2420.0 5	$(19/2^+)$		B	
2430.5 4	$(19/2^+)$		B	
2505.1 5	$(19/2^-)$		B	
2537.3 [@] 4	$17/2^+$		B	
2651.8 ^c 5	$(21/2^+)$		B	
2668.5 5	$(23/2^+)$		B	
2670.1 6	$(23/2^-)$		B	

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Adopted Levels, Gammas (continued) ^{143}Gd Levels (continued)

E(level)	$J^\pi^\dagger$	XREF	E(level)	$J^\pi^\dagger$	XREF
2767.6 ^c 6	(23/2 ⁺)	B	6064.7 ^e 11	(37/2 ⁻)	B
2883.1 ^c 6	(25/2 ⁺)	B	6159.9 ^{&} 10	(41/2 ⁺)	B
2985.7 [?] 9	(23/2 ⁻)	B	6575.5 [@] 12	41/2 ⁺	B
2993.9 [?] 11	(23/2 ⁻)	B	6591.0 ^{&} 11	(43/2 ⁺)	B
3007.0 [?] 11	(23/2 ⁻)	B	6651.2 11		B
3087.4 ^b 5	(23/2 ⁻)	B	7098.2 13		B
3091.0 ^c 7	(27/2 ⁺)	B	7109.0 ^{&} 13	(45/2 ⁺)	B
3149.3 5	(23/2 ⁻)	B	7187.5 15		B
3159.2 ^d 6	(25/2 ⁻)	B	7281.0 [@] 13	45/2 ⁺	B
3224.3 6	(23/2)	B	7453.5 15		B
3249.4 ^d 7	(27/2 ⁻)	B	7539.1 ^{&} 12	(47/2 ⁺)	B
3273.2 [@] 5	21/2 ⁺	B	7910.2 [@] 14	49/2 ⁺	B
3284.1 5	(21/2 ⁺)	B	8039.1 ^{&} 16	(49/2 ⁺)	B
3330.6 8	(27/2 ⁻)	B	8425.5 18		B
3535.1 ^c 8	(29/2 ⁺)	B	8539.1 ^{&} 19	(51/2 ⁺)	B
3583.7 ^d 7	(29/2 ⁻)	B	8721.8 [@] 14	53/2 ⁺	B
3601.1 [?] 7	(25/2 ⁻)	B	8750.4 16		B
3821.3 ^c 8	(31/2 ⁺)	B	9594.6 16		B
3836.0 [@] 5	25/2 ⁺	B	9746.8 [@] 18	(57/2 ⁺)	B
4015.8 [?] 8	(29/2 ⁻)	B	10634.6 19		B
4126.5 8	(31/2 ⁻)	B	10935.8 [@] 20	(61/2 ⁺)	B
4214.5 9	(31/2 ⁻)	B	11942.8 [@] 23	(65/2 ⁺)	B
4251.2 [?] 8	(29/2 ⁻)	B	12924.8 [@] 25	(69/2 ⁺)	B
4395.1 [@] 7	29/2 ⁺	B	14082 [@] 3	(73/2 ⁺)	B
4453.5 ^{‡c} 8	(33/2 ⁺)	B	x ^a	J≈(47/2) [#]	B
4489.3 9	(31/2 ⁻)	B	546.0+x ^a 10	J+2	B
4646.3 8	(33/2 ⁻)	B	1155.0+x ^a 15	J+4	B
4799.0 8	(35/2)	B	1825.5+x ^a 18	J+6	B
4847.2 11	(35/2 ⁻)	B	2557.2+x ^a 19	J+8	B
4924.3 9	(31/2 ⁻)	B	3349.8+x ^a 20	J+10	B
4931.6 ^c 8	35/2 ⁺	B	4203.5+x ^a 22	J+12	B
5023.5 [@] 9	33/2 ⁺	B	5116.6+x ^a 22	J+14	B
5123.1 ^e 9	(33/2 ⁻)	B	6088.7+x ^a 23	J+16	B
5226.8 ^{&} 8	(33/2 ⁺)	B	7119.1+x ^a 24	J+18	B
5306.5 [?] 10	(37/2)	B	8207.3+x ^a 25	J+20	B
5400.2 ^{&} 8	(35/2 ⁺)	B	9354+x ^a 3	J+22	B
5587.8 ^{&} 8	(37/2 ⁺)	B	10560+x ^a 3	J+24	B
5625.7 11	(35/2 ⁻)	B	11824+x ^a 3	J+26	B
5757.2 [@] 10	37/2 ⁺	B	13148+x ^a 3	J+28	B
5764.4 ^{&} 9	(39/2 ⁺)	B	14532+x ^a 3	J+30	B
5825.5 [?] 15	(39/2)	B			

[†] From 2000Li14 for levels seen in (HI,xny) only, unless stated otherwise. J^π values are based on DCO ratios. Parity of the 13/2⁺ band is based on the polarization of 1641 γ measured by some of the authors from 2000Li14 in a separate Euroball experiment.

Except for the levels in 13/2⁺ band, the evaluators have considered uncertain J^π assignments.

[‡] Shown as part of cascade built on 21/2⁺ in 1998Su04 but not in 2000Li14.

[#] From 2000Li14, based on observation of SD band transitions in coincidence with those from normal bands.

[@] Band(A): band based on 13/2⁺ (2000Li14).

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Adopted Levels, Gammas (continued)

 ^{143}Gd Levels (continued)

[&] Band(B): band based on (33/2⁺) (2000Li14).

^a Band(C): SD band (2000Li04). Percent population $\leq 0.3\%$ of the reaction channel. Configuration= $\nu 6^{-1}\pi 9/2[404]$ (2000Li14). Since the transition energies are found to be close in energy to those for the yrast SD band in ^{143}Eu , this band is considered to be identical to ^{143}Eu SD-1 band.

^b Band(D): 11/2⁻ band (2000Li14).

^c Band(E): band based on (21/2⁺) (1998Su04,2000Li14).

^d Band(F): cascade built on (25/2⁻) (2000Li14).

^e Band(G): cascade built on (25/2⁻) (1998Su04).

Adopted Levels, Gammas (continued)

$\gamma(^{143}\text{Gd})$								
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
45.1	(3/2 ⁺)	45.1 3	100	0.0	(1/2) ⁺	[M1]	3.19 8	$\alpha(\text{L})=2.50$ 6; $\alpha(\text{M})=0.544$ 14; $\alpha(\text{N}+..)=0.146$ 4 $\alpha(\text{N})=0.125$ 3; $\alpha(\text{O})=0.0194$ 5; $\alpha(\text{P})=0.00129$ 4
354.3	(5/2 ⁺)	309.2 3	100	45.1	(3/2 ⁺)			
407.5	(5/2 ⁺)	362.4 3	100 10	45.1	(3/2 ⁺)			
		407.5 3	43 5	0.0	(1/2) ⁺			
493.1	(9/2 ⁻)	340.5 3	100	152.6	(11/2 ⁻)			
752.3	(15/2 ⁻)	599.5 5		152.6	(11/2 ⁻)	E2	0.00878 13	$\alpha(\text{K})=0.00724$ 11; $\alpha(\text{L})=0.001206$ 18; $\alpha(\text{M})=0.000266$ 4; $\alpha(\text{N}+..)=7.03\times 10^{-5}$ 10 $\alpha(\text{N})=6.07\times 10^{-5}$ 9; $\alpha(\text{O})=9.08\times 10^{-6}$ 13; $\alpha(\text{P})=4.92\times 10^{-7}$ 7
787.9	(7/2)	294.8 3	27 3	493.1	(9/2 ⁻)			
		380.3 3	100 10	407.5	(5/2 ⁺)			
		433.7 3	96 10	354.3	(5/2 ⁺)			
1076.6	(13/2 ⁻)	923.6 5		152.6	(11/2 ⁻)			
1250.7	(9/2,11/2 ⁻)	462.8 3	100	787.9	(7/2)			
1474.0	(9/2,11/2 ⁻)	223.3 3	48 5	1250.7	(9/2,11/2 ⁻)			
		686.1 3	100 10	787.9	(7/2)			
1775.9	(19/2 ⁻)	1023.7 5		752.3	(15/2 ⁻)	E2	0.00262 4	$\alpha(\text{K})=0.00221$ 4; $\alpha(\text{L})=0.000319$ 5; $\alpha(\text{M})=6.93\times 10^{-5}$ 10; $\alpha(\text{N}+..)=1.85\times 10^{-5}$ 3 $\alpha(\text{N})=1.589\times 10^{-5}$ 23; $\alpha(\text{O})=2.44\times 10^{-6}$ 4; $\alpha(\text{P})=1.534\times 10^{-7}$ 22
1794.1	13/2 ⁺	1641.1 5	100	152.6	(11/2 ⁻)	E1	0.000784 11	$\alpha(\text{K})=0.000408$ 6; $\alpha(\text{L})=5.24\times 10^{-5}$ 8; $\alpha(\text{M})=1.123\times 10^{-5}$ 16; $\alpha(\text{N}+..)=0.000313$ 5 $\alpha(\text{N})=2.58\times 10^{-6}$ 4; $\alpha(\text{O})=4.01\times 10^{-7}$ 6; $\alpha(\text{P})=2.76\times 10^{-8}$ 4; $\alpha(\text{IPF})=0.000310$ 5 Mult.: stated to be from measured pol in a euroball experiment (2000Li14).
1847.9	(15/2 ⁻)	1694.8 5	100	152.6	(11/2 ⁻)			
1864.2	(15/2 ⁺)	787.2 5		1076.6	(13/2 ⁻)			
1912.3	(17/2 ⁻)	836.1 @ 5		1076.6	(13/2 ⁻)			
		1159.8 5		752.3	(15/2 ⁻)	M1	0.00322 5	$\alpha(\text{K})=0.00274$ 4; $\alpha(\text{L})=0.000370$ 6; $\alpha(\text{M})=7.98\times 10^{-5}$ 12; $\alpha(\text{N}+..)=2.39\times 10^{-5}$ 4 $\alpha(\text{N})=1.84\times 10^{-5}$ 3; $\alpha(\text{O})=2.87\times 10^{-6}$ 4; $\alpha(\text{P})=1.98\times 10^{-7}$ 3; $\alpha(\text{IPF})=2.42\times 10^{-6}$ 5
2053.8	(17/2 ⁺)	1301.6 5		752.3	(15/2 ⁻)	E1	0.000778 11	$\alpha(\text{K})=0.000605$ 9; $\alpha(\text{L})=7.83\times 10^{-5}$ 11; $\alpha(\text{M})=1.678\times 10^{-5}$ 24; $\alpha(\text{N}+..)=7.75\times 10^{-5}$ 1 $\alpha(\text{N})=3.85\times 10^{-6}$ 6; $\alpha(\text{O})=5.99\times 10^{-7}$ 9; $\alpha(\text{P})=4.08\times 10^{-8}$ 6; $\alpha(\text{IPF})=7.30\times 10^{-5}$ 11
2180.9	(13/2 ⁺)	1429 1		752.3	(15/2 ⁻)			
		2027.8 5		152.6	(11/2 ⁻)			
2236.7?		1160.0 @ 5		1076.6	(13/2 ⁻)			

Adopted Levels, Gammas (continued)

$\gamma(^{143}\text{Gd})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
2327.9	(17/2 ⁺)	1575.8 5		752.3	(15/2 ⁻)			
2420.0	(19/2 ⁺)	507.8 5		1912.3	(17/2 ⁻)	E1	0.00455 7	$\alpha(\text{K})=0.00389$ 6; $\alpha(\text{L})=0.000524$ 8; $\alpha(\text{M})=0.0001128$ 16; $\alpha(\text{N}+..)=3.01\times 10^{-5}$ 5 $\alpha(\text{N})=2.58\times 10^{-5}$ 4; $\alpha(\text{O})=3.97\times 10^{-6}$ 6; $\alpha(\text{P})=2.56\times 10^{-7}$ 4
		555 @ 1		1864.2	(15/2 ⁺)			
		643.6 5		1775.9	(19/2 ⁻)			
2430.5	(19/2 ⁺)	102.8 5		2327.9	(17/2 ⁺)			
		376.7 5		2053.8	(17/2 ⁺)	M1	0.0525	$\alpha(\text{K})=0.0445$ 7; $\alpha(\text{L})=0.00624$ 9; $\alpha(\text{M})=0.001352$ 20; $\alpha(\text{N}+..)=0.000363$ 6 $\alpha(\text{N})=0.000311$ 5; $\alpha(\text{O})=4.84\times 10^{-5}$ 7; $\alpha(\text{P})=3.27\times 10^{-6}$ 5
		518.4 5		1912.3	(17/2 ⁻)			
		565 @ 1		1864.2	(15/2 ⁺)			
		654.5 5		1775.9	(19/2 ⁻)			
2505.1	(19/2 ⁻)	729.1 5		1775.9	(19/2 ⁻)			
		1752.8 5		752.3	(15/2 ⁻)			
2537.3	17/2 ⁺	300.5 @ 5		2236.7?				
		356.3 5		2180.9	(13/2 ⁺)			
		673.2 @ 5		1864.2	(15/2 ⁺)			
		689.3 5	35	1847.9	(15/2 ⁻)			
		743.2 5	100	1794.1	13/2 ⁺	E2	0.00527 8	$\alpha(\text{K})=0.00440$ 7; $\alpha(\text{L})=0.000683$ 10; $\alpha(\text{M})=0.0001496$ 21; $\alpha(\text{N}+..)=3.97\times 10^{-5}$ 6 $\alpha(\text{N})=3.42\times 10^{-5}$ 5; $\alpha(\text{O})=5.18\times 10^{-6}$ 8; $\alpha(\text{P})=3.02\times 10^{-7}$ 5
2651.8	(21/2 ⁺)	221.5 5		2430.5	(19/2 ⁺)			
		875.4 5		1775.9	(19/2 ⁻)			
2668.5	(23/2 ⁺)	(17.0 5)		2651.8	(21/2 ⁺)			
		248.6 5		2420.0	(19/2 ⁺)			
2670.1	(23/2 ⁻)	895.1 5		1775.9	(19/2 ⁻)			
2767.6	(23/2 ⁺)	99.5 5		2668.5	(23/2 ⁺)	(M1)	2.04 5	$\alpha(\text{K})=1.72$ 4; $\alpha(\text{L})=0.249$ 5; $\alpha(\text{M})=0.0541$ 11; $\alpha(\text{N}+..)=0.0145$ 3 $\alpha(\text{N})=0.0125$ 3; $\alpha(\text{O})=0.00193$ 4; $\alpha(\text{P})=0.000129$ 3
		115 1		2651.8	(21/2 ⁺)	M1	1.35 4	$\alpha(\text{K})=1.14$ 4; $\alpha(\text{L})=0.164$ 5; $\alpha(\text{M})=0.0357$ 11; $\alpha(\text{N}+..)=0.0096$ 3 $\alpha(\text{N})=0.00822$ 24; $\alpha(\text{O})=0.00127$ 4; $\alpha(\text{P})=8.50\times 10^{-5}$ 25
2883.1	(25/2 ⁺)	115.3 5		2767.6	(23/2 ⁺)	M1	1.34 3	$\alpha(\text{K})=1.132$ 22; $\alpha(\text{L})=0.163$ 3; $\alpha(\text{M})=0.0355$ 7; $\alpha(\text{N}+..)=0.00951$ 18 $\alpha(\text{N})=0.00816$ 16; $\alpha(\text{O})=0.001265$ 24; $\alpha(\text{P})=8.44\times 10^{-5}$ 16
		214.8 5		2668.5	(23/2 ⁺)			
2985.7?	(23/2 ⁻)	1209 @ 1		1775.9	(19/2 ⁻)			
2993.9?	(23/2 ⁻)	1218 @ 1		1775.9	(19/2 ⁻)			
3007.0?	(23/2 ⁻)	1231 @ 1		1775.9	(19/2 ⁻)			
3087.4	(23/2 ⁻)	101 @ 1		2985.7?	(23/2 ⁻)			E_γ : from 1998Su04. Not in 2000Li14, 1997Ri16.
		582.2 5		2505.1	(19/2 ⁻)			
		1311.7 5		1775.9	(19/2 ⁻)	E2	0.001612 23	$\alpha(\text{K})=0.001351$ 19; $\alpha(\text{L})=0.000187$ 3; $\alpha(\text{M})=4.05\times 10^{-5}$ 6; $\alpha(\text{N}+..)=3.30\times 10^{-5}$ 5 $\alpha(\text{N})=9.29\times 10^{-6}$ 13; $\alpha(\text{O})=1.433\times 10^{-6}$ 20; $\alpha(\text{P})=9.37\times 10^{-8}$ 14; $\alpha(\text{IPF})=2.22\times 10^{-5}$ 4

Adopted Levels, Gammas (continued)

$\gamma(^{143}\text{Gd})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
3091.0	(27/2 ⁺)	207.8 5	2883.1	(25/2 ⁺)			
3149.3	(23/2 ⁻)	(61.7 5)	3087.4	(23/2 ⁻)			
		644.3 5	2505.1	(19/2 ⁻)			
		1373.4 5	1775.9	(19/2 ⁻)			
3159.2	(25/2 ⁻)	(10.0 5)	3149.3	(23/2 ⁻)			
		71.7 5	3087.4	(23/2 ⁻)			
3224.3	(23/2)	457.1 @ 5	2767.6	(23/2 ⁺)			
		572.1 5	2651.8	(21/2 ⁺)			
3249.4	(27/2 ⁻)	90.3 5	3159.2	(25/2 ⁻)	M1	2.70 6	$\alpha(\text{K})=2.28$ 5; $\alpha(\text{L})=0.330$ 7; $\alpha(\text{M})=0.0716$ 16; $\alpha(\text{N}+..)=0.0192$ 5 $\alpha(\text{N})=0.0165$ 4; $\alpha(\text{O})=0.00255$ 6; $\alpha(\text{P})=0.000170$ 4
3273.2	21/2 ⁺	604.5 5	2668.5	(23/2 ⁺)			
		621.3 5	2651.8	(21/2 ⁺)			
		735.8 5	2537.3	17/2 ⁺	E2	0.00539 8	$\alpha(\text{K})=0.00450$ 7; $\alpha(\text{L})=0.000701$ 10; $\alpha(\text{M})=0.0001535$ 22; $\alpha(\text{N}+..)=4.07\times 10^{-5}$ 6 $\alpha(\text{N})=3.51\times 10^{-5}$ 5; $\alpha(\text{O})=5.31\times 10^{-6}$ 8; $\alpha(\text{P})=3.09\times 10^{-7}$ 5
		842.8 5	2430.5	(19/2 ⁺)			
3284.1	(21/2 ⁺)	614.9 @ 5	2668.5	(23/2 ⁺)			
		747 1	2537.3	17/2 ⁺			
		863.5 @ 5	2420.0	(19/2 ⁺)			
3330.6	(27/2 ⁻)	660.5 5	2670.1	(23/2 ⁻)			
3535.1	(29/2 ⁺)	444.3 5	3091.0	(27/2 ⁺)	M1	0.0342	$\alpha(\text{K})=0.0290$ 5; $\alpha(\text{L})=0.00405$ 6; $\alpha(\text{M})=0.000877$ 13; $\alpha(\text{N}+..)=0.000235$ 4 $\alpha(\text{N})=0.000202$ 3; $\alpha(\text{O})=3.14\times 10^{-5}$ 5; $\alpha(\text{P})=2.13\times 10^{-6}$ 3
3583.7	(29/2 ⁻)	334.3 5	3249.4	(27/2 ⁻)	M1	0.0718	$\alpha(\text{K})=0.0608$ 9; $\alpha(\text{L})=0.00856$ 13; $\alpha(\text{M})=0.00186$ 3; $\alpha(\text{N}+..)=0.000498$ 8 $\alpha(\text{N})=0.000427$ 7; $\alpha(\text{O})=6.64\times 10^{-5}$ 10; $\alpha(\text{P})=4.48\times 10^{-6}$ 7
3601.1?	(25/2 ⁻)	441.9 @ 5	3159.2	(25/2 ⁻)			
3821.3	(31/2 ⁺)	286.4 5	3535.1	(29/2 ⁺)			
		730.1 5	3091.0	(27/2 ⁺)			
3836.0	25/2 ⁺	552.2 5	3284.1	(21/2 ⁺)			
		562.4 5	3273.2	21/2 ⁺	E2	0.01030	$\alpha(\text{K})=0.00845$ 12; $\alpha(\text{L})=0.001443$ 21; $\alpha(\text{M})=0.000319$ 5; $\alpha(\text{N}+..)=8.42\times 10^{-5}$ 12 $\alpha(\text{N})=7.27\times 10^{-5}$ 11; $\alpha(\text{O})=1.084\times 10^{-5}$ 16; $\alpha(\text{P})=5.73\times 10^{-7}$ 9
		611.8 5	3224.3	(23/2)			
4015.8?	(29/2 ⁻)	432.2 @ 5	3583.7	(29/2 ⁻)	M1	0.0367	$\alpha(\text{K})=0.0312$ 5; $\alpha(\text{L})=0.00435$ 7; $\alpha(\text{M})=0.000942$ 14; $\alpha(\text{N}+..)=0.000253$ 4 $\alpha(\text{N})=0.000217$ 4; $\alpha(\text{O})=3.37\times 10^{-5}$ 5; $\alpha(\text{P})=2.29\times 10^{-6}$ 4 E_γ : placement of 519 γ ,543 γ reversed in 1998Su04 .
4126.5	(31/2 ⁻)	542.8 5	3583.7	(29/2 ⁻)			
		876 5	3249.4	(27/2 ⁻)			
4214.5	(31/2 ⁻)	883.9 5	3330.6	(27/2 ⁻)			
4251.2?	(29/2 ⁻)	650.2 @ 5	3601.1?	(25/2 ⁻)			
		667.5 @ 5	3583.7	(29/2 ⁻)			
4395.1	29/2 ⁺	559.1 5	3836.0	25/2 ⁺	E2	0.01046	$\alpha(\text{K})=0.00858$ 13; $\alpha(\text{L})=0.001468$ 21; $\alpha(\text{M})=0.000324$ 5; $\alpha(\text{N}+..)=8.56\times 10^{-5}$ 13 $\alpha(\text{N})=7.40\times 10^{-5}$ 11; $\alpha(\text{O})=1.102\times 10^{-5}$ 16; $\alpha(\text{P})=5.81\times 10^{-7}$ 9

Adopted Levels, Gammas (continued)

$\gamma(^{143}\text{Gd})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
4453.5	(33/2 ⁺)	632.2 5		3821.3	(31/2 ⁺)			
4489.3	(31/2 ⁻)	473.6 5		4015.8?	(29/2 ⁻)			
4646.3	(33/2 ⁻)	519.7 5		4126.5	(31/2 ⁻)	M1	0.0229	$\alpha(\text{K})=0.0195$ 3; $\alpha(\text{L})=0.00270$ 4; $\alpha(\text{M})=0.000585$ 9; $\alpha(\text{N}+..)=0.0001570$ 23 $\alpha(\text{N})=0.0001346$ 20; $\alpha(\text{O})=2.09\times 10^{-5}$ 3; $\alpha(\text{P})=1.424\times 10^{-6}$ 21
		1062.5 5		3583.7	(29/2 ⁻)			
4799.0	(35/2)	152.5 5		4646.3	(33/2 ⁻)			
		309.8 5		4489.3	(31/2 ⁻)			
4847.2	(35/2 ⁻)	632.7 5		4214.5	(31/2 ⁻)			
4924.3	(31/2 ⁻)	673.1 5		4251.2?	(29/2 ⁻)			
4931.6	35/2 ⁺	1110.3 5		3821.3	(31/2 ⁺)			
5023.5	33/2 ⁺	628.4 5		4395.1	29/2 ⁺	E2	0.00783 11	$\alpha(\text{K})=0.00647$ 10; $\alpha(\text{L})=0.001060$ 15; $\alpha(\text{M})=0.000233$ 4; $\alpha(\text{N}+..)=6.17\times 10^{-5}$ 9 $\alpha(\text{N})=5.33\times 10^{-5}$ 8; $\alpha(\text{O})=8.00\times 10^{-6}$ 12; $\alpha(\text{P})=4.41\times 10^{-7}$ 7
5123.1	(33/2 ⁻)	871.9 5		4251.2?	(29/2 ⁻)			
5226.8	(33/2 ⁺)	1100.5 5		4126.5	(31/2 ⁻)			
		1405 1		3821.3	(31/2 ⁺)			
5306.5?	(37/2)	283.0 5		5023.5	33/2 ⁺			
5400.2	(35/2 ⁺)	173.5 5		5226.8	(33/2 ⁺)			
		754 1		4646.3	(33/2 ⁻)			
5587.8	(37/2 ⁺)	187.7 5		5400.2	(35/2 ⁺)			
		788.7 5		4799.0	(35/2)			
		1134.4 5		4453.5	(33/2 ⁺)			
5625.7	(35/2 ⁻)	701.4 5		4924.3	(31/2 ⁻)			
5757.2	37/2 ⁺	733.7 5	100	5023.5	33/2 ⁺	E2	0.00543 8	$\alpha(\text{K})=0.00452$ 7; $\alpha(\text{L})=0.000706$ 10; $\alpha(\text{M})=0.0001546$ 22; $\alpha(\text{N}+..)=4.10\times 10^{-5}$ 6 $\alpha(\text{N})=3.54\times 10^{-5}$ 5; $\alpha(\text{O})=5.35\times 10^{-6}$ 8; $\alpha(\text{P})=3.11\times 10^{-7}$ 5
5764.4	(39/2 ⁺)	176.6 5		5587.8	(37/2 ⁺)			
		832.8 5		4931.6	35/2 ⁺			
5825.5?	(39/2)	519 1		5306.5?	(37/2)			
6064.7	(37/2 ⁻)	941.6 5		5123.1	(33/2 ⁻)			
6159.9	(41/2 ⁺)	395.4 5		5764.4	(39/2 ⁺)			
6575.5	41/2 ⁺	818.3		5757.2	37/2 ⁺	E2	0.00424 6	$\alpha(\text{K})=0.00355$ 5; $\alpha(\text{L})=0.000538$ 8; $\alpha(\text{M})=0.0001175$ 17; $\alpha(\text{N}+..)=3.12\times 10^{-5}$ 5 $\alpha(\text{N})=2.69\times 10^{-5}$ 4; $\alpha(\text{O})=4.09\times 10^{-6}$ 6; $\alpha(\text{P})=2.45\times 10^{-7}$ 4
6591.0	(43/2 ⁺)	431.1 5		6159.9	(41/2 ⁺)			
6651.2		491.4 5		6159.9	(41/2 ⁺)			
7098.2		447 1		6651.2				
7109.0	(45/2 ⁺)	518 1		6591.0	(43/2 ⁺)			
7187.5		612 1		6575.5	41/2 ⁺			
7281.0	45/2 ⁺	705.5 5	100	6575.5	41/2 ⁺	E2	0.00594 9	$\alpha(\text{K})=0.00494$ 7; $\alpha(\text{L})=0.000780$ 11; $\alpha(\text{M})=0.0001711$ 25; $\alpha(\text{N}+..)=4.54\times 10^{-5}$ 7 $\alpha(\text{N})=3.91\times 10^{-5}$ 6; $\alpha(\text{O})=5.91\times 10^{-6}$ 9; $\alpha(\text{P})=3.39\times 10^{-7}$ 5
7453.5		878 1		6575.5	41/2 ⁺			
7539.1	(47/2 ⁺)	430 1		7109.0	(45/2 ⁺)			
		441 1		7098.2				

Adopted Levels, Gammas (continued)

$\gamma(^{143}\text{Gd})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
7539.1	(47/2 ⁺)	888 <i>I</i> 948 <i>I</i>		6651.2 6591.0	(43/2 ⁺)			
7910.2	49/2 ⁺	629.2 <i>5</i>	100	7281.0	45/2 ⁺	E2	0.00780 <i>11</i>	$\alpha(\text{K})=0.00645$ <i>10</i> ; $\alpha(\text{L})=0.001057$ <i>15</i> ; $\alpha(\text{M})=0.000233$ <i>4</i> ; $\alpha(\text{N}+..)=6.15\times 10^{-5}$ <i>9</i> $\alpha(\text{N})=5.31\times 10^{-5}$ <i>8</i> ; $\alpha(\text{O})=7.97\times 10^{-6}$ <i>12</i> ; $\alpha(\text{P})=4.40\times 10^{-7}$ <i>7</i>
8039.1	(49/2 ⁺)	500 <i>I</i>		7539.1	(47/2 ⁺)			
8425.5		972 <i>I</i>		7453.5				
8539.1	(51/2 ⁺)	500 <i>I</i>		8039.1	(49/2 ⁺)			
8721.8	53/2 ⁺	811.6 <i>5</i>	100	7910.2	49/2 ⁺	E2	0.00432 <i>6</i>	$\alpha(\text{K})=0.00362$ <i>5</i> ; $\alpha(\text{L})=0.000549$ <i>8</i> ; $\alpha(\text{M})=0.0001199$ <i>17</i> ; $\alpha(\text{N}+..)=3.19\times 10^{-5}$ <i>5</i> $\alpha(\text{N})=2.74\times 10^{-5}$ <i>4</i> ; $\alpha(\text{O})=4.17\times 10^{-6}$ <i>6</i> ; $\alpha(\text{P})=2.49\times 10^{-7}$ <i>4</i>
8750.4		840 <i>I</i>		7910.2	49/2 ⁺			
9594.6		844 <i>I</i>		8750.4				
		873 <i>I</i>		8721.8	53/2 ⁺			
9746.8	(57/2 ⁺)	1025 <i>I</i>		8721.8	53/2 ⁺	(E2)	0.00261 <i>4</i>	$\alpha(\text{K})=0.00221$ <i>4</i> ; $\alpha(\text{L})=0.000318$ <i>5</i> ; $\alpha(\text{M})=6.91\times 10^{-5}$ <i>10</i> ; $\alpha(\text{N}+..)=1.84\times 10^{-5}$ <i>3</i> $\alpha(\text{N})=1.585\times 10^{-5}$ <i>23</i> ; $\alpha(\text{O})=2.43\times 10^{-6}$ <i>4</i> ; $\alpha(\text{P})=1.530\times 10^{-7}$ <i>22</i>
10634.6		1040 <i>I</i>		9594.6				
10935.8	(61/2 ⁺)	1189 <i>I</i>		9746.8	(57/2 ⁺)	(E2)	0.00194 <i>3</i>	$\alpha(\text{K})=0.001638$ <i>23</i> ; $\alpha(\text{L})=0.000230$ <i>4</i> ; $\alpha(\text{M})=4.98\times 10^{-5}$ <i>7</i> ; $\alpha(\text{N}+..)=1.77\times 10^{-5}$ <i>3</i> $\alpha(\text{N})=1.144\times 10^{-5}$ <i>17</i> ; $\alpha(\text{O})=1.761\times 10^{-6}$ <i>25</i> ; $\alpha(\text{P})=1.136\times 10^{-7}$ <i>16</i> ; $\alpha(\text{IPF})=4.41\times 10^{-6}$ <i>12</i>
11942.8	(65/2 ⁺)	1007 <i>I</i>		10935.8	(61/2 ⁺)	(E2)	0.00271 <i>4</i>	$\alpha(\text{K})=0.00229$ <i>4</i> ; $\alpha(\text{L})=0.000331$ <i>5</i> ; $\alpha(\text{M})=7.20\times 10^{-5}$ <i>11</i> ; $\alpha(\text{N}+..)=1.92\times 10^{-5}$ <i>3</i> $\alpha(\text{N})=1.650\times 10^{-5}$ <i>24</i> ; $\alpha(\text{O})=2.53\times 10^{-6}$ <i>4</i> ; $\alpha(\text{P})=1.586\times 10^{-7}$ <i>23</i>
12924.8	(69/2 ⁺)	982 <i>I</i>		11942.8	(65/2 ⁺)	(E2)	0.00286 <i>4</i>	$\alpha(\text{K})=0.00241$ <i>4</i> ; $\alpha(\text{L})=0.000350$ <i>5</i> ; $\alpha(\text{M})=7.62\times 10^{-5}$ <i>11</i> ; $\alpha(\text{N}+..)=2.03\times 10^{-5}$ <i>3</i> $\alpha(\text{N})=1.747\times 10^{-5}$ <i>25</i> ; $\alpha(\text{O})=2.67\times 10^{-6}$ <i>4</i> ; $\alpha(\text{P})=1.670\times 10^{-7}$ <i>24</i>
14082	(73/2 ⁺)	1157 <i>I</i>		12924.8	(69/2 ⁺)	(E2)	0.00204 <i>3</i>	$\alpha(\text{K})=0.001729$ <i>25</i> ; $\alpha(\text{L})=0.000244$ <i>4</i> ; $\alpha(\text{M})=5.29\times 10^{-5}$ <i>8</i> ; $\alpha(\text{N}+..)=1.613\times 10^{-5}$ <i>23</i> $\alpha(\text{N})=1.213\times 10^{-5}$ <i>18</i> ; $\alpha(\text{O})=1.87\times 10^{-6}$ <i>3</i> ; $\alpha(\text{P})=1.199\times 10^{-7}$ <i>17</i> ; $\alpha(\text{IPF})=2.02\times 10^{-6}$ <i>7</i>
546.0+x	J+2	546.0 <i>10</i>	0.33 [‡] <i>7</i>	x	J $\approx$ (47/2)			
1155.0+x	J+4	609.0 <i>10</i>	0.34 [‡] <i>7</i>	546.0+x	J+2			
1825.5+x	J+6	670.5 <i>10</i>	0.30 [‡] <i>7</i>	1155.0+x	J+4			
2557.2+x	J+8	731.7 <i>7</i>	0.38 [‡] <i>8</i>	1825.5+x	J+6			
3349.8+x	J+10	792.6 <i>7</i>	0.41 [‡] <i>9</i>	2557.2+x	J+8			
4203.5+x	J+12	853.7 <i>7</i>	0.32 [‡] <i>6</i>	3349.8+x	J+10			

Adopted Levels, Gammas (continued)

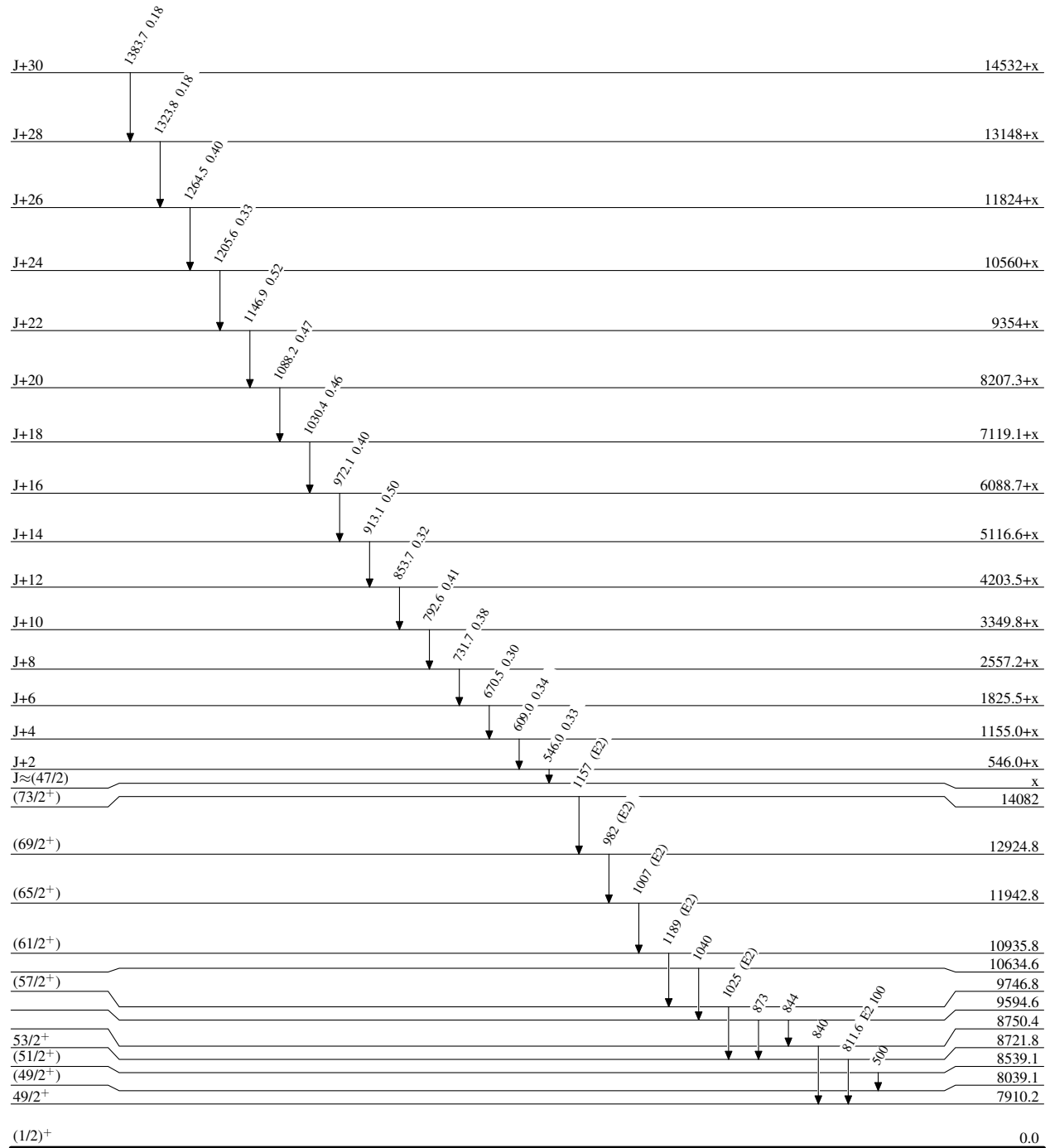
$\gamma(^{143}\text{Gd})$ (continued)

<u>E_i(level)</u>	<u>J^{π}_i</u>	<u>E_{γ}</u>	<u>I_{γ}</u>	<u>E_f</u>	<u>J^{π}_f</u>	<u>E_i(level)</u>	<u>J^{π}_i</u>	<u>E_{γ}</u>	<u>I_{γ}</u>	<u>E_f</u>	<u>J^{π}_f</u>
5116.6+x	J+14	913.1 [#] 5	0.50 [‡] [#] 11	4203.5+x	J+12	10560+x	J+24	1205.6 5	0.33 [‡] 8	9354+x	J+22
6088.7+x	J+16	972.1 6	0.40 [‡] 8	5116.6+x	J+14	11824+x	J+26	1264.5 5	0.40 [‡] 11	10560+x	J+24
7119.1+x	J+18	1030.4 8	0.46 [‡] 10	6088.7+x	J+16	13148+x	J+28	1323.8 5	0.18 [‡] 5	11824+x	J+26
8207.3+x	J+20	1088.2 5	0.47 [‡] 11	7119.1+x	J+18	14532+x	J+30	1383.7 10	0.18 [‡] 5	13148+x	J+28
9354+x	J+22	1146.9 [#] 7	0.52 [‡] [#] 11	8207.3+x	J+20						

[†] [Additional information 1.](#)
[‡] Relative intensity within the super deformed (SD) band.
[#] Contaminated line.
[@] Placement of transition in the level scheme is uncertain.

Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level

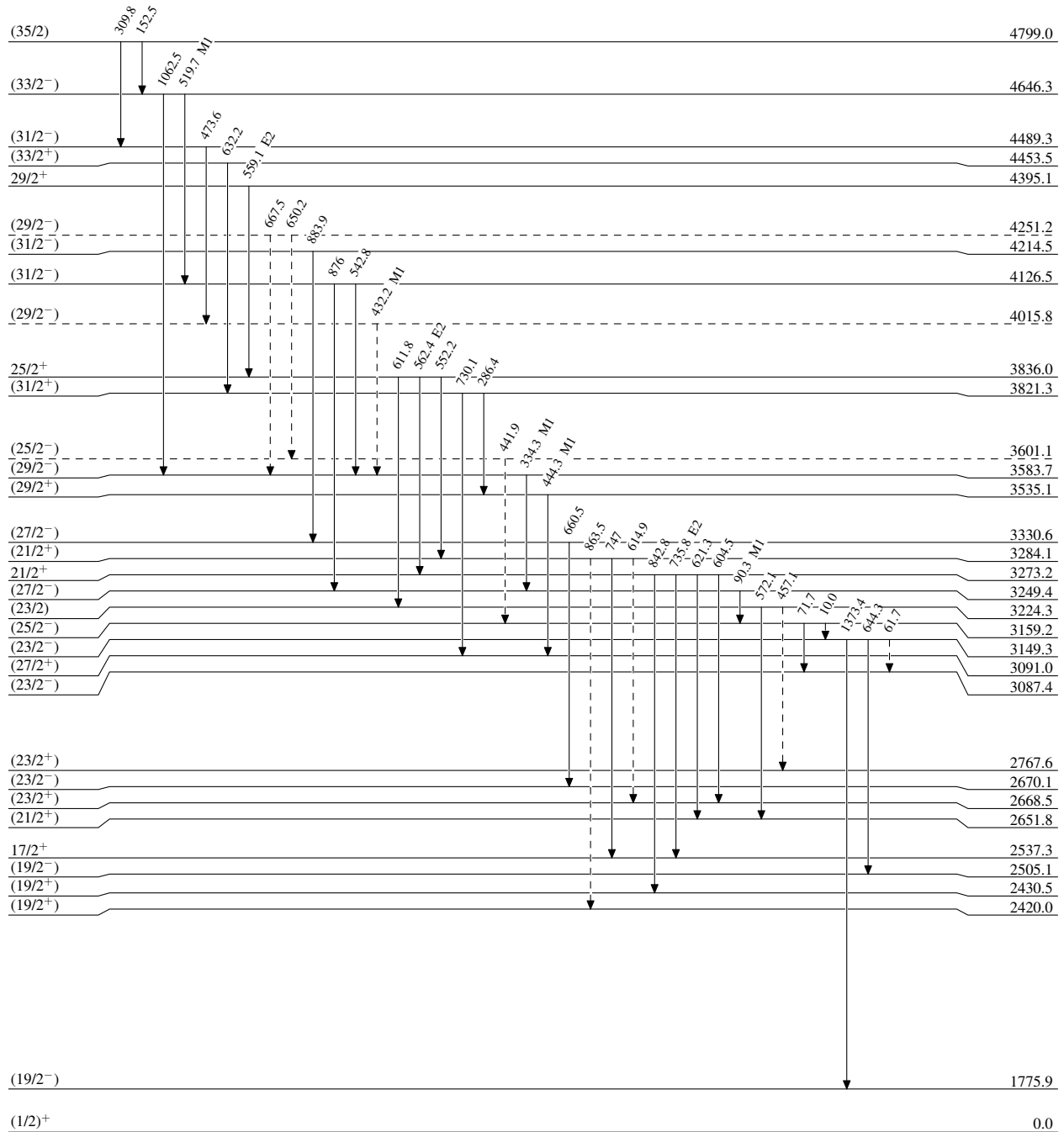


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

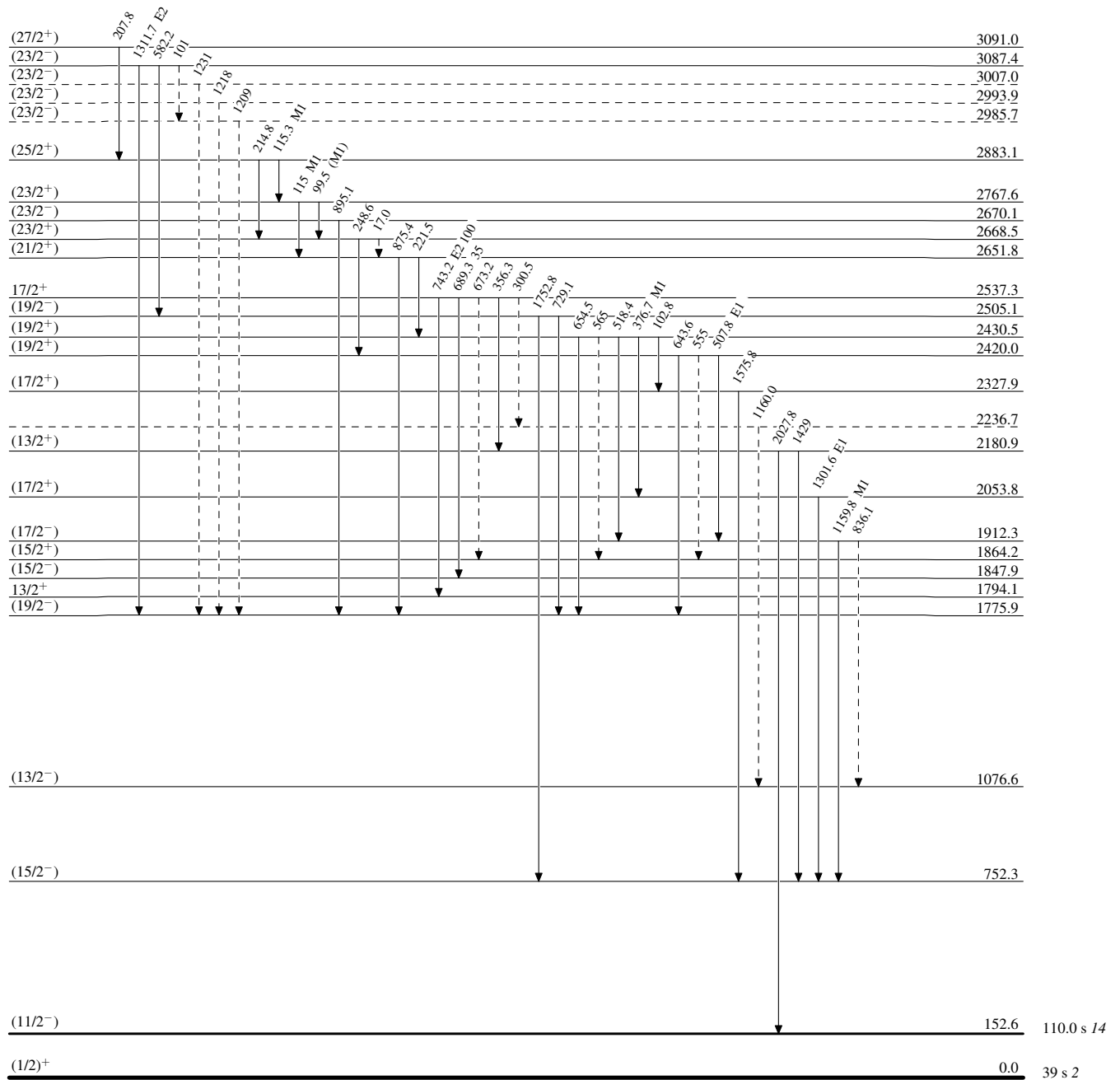
-----► γ Decay (Uncertain)

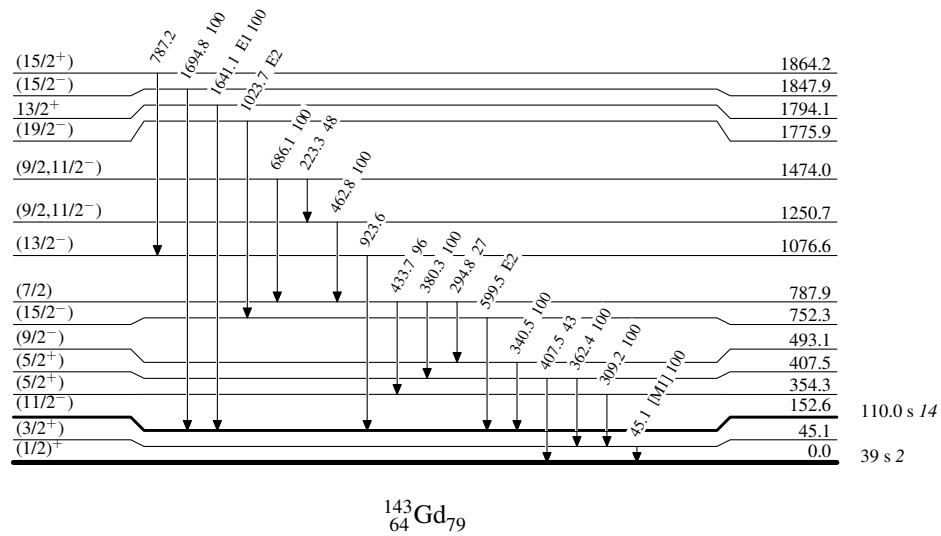
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)



Adopted Levels, Gammas

Band(A): Band based on
13/2⁺ (2000Li14)

(73/2 ⁺)	14082
1157	
(69/2 ⁺)	12924.8
982	
(65/2 ⁺)	11942.8
1007	
(61/2 ⁺)	10935.8
1189	
(57/2 ⁺)	9746.8
1025	
53/2 ⁺	8721.8
812	
49/2 ⁺	7910.2
629	
45/2 ⁺	7281.0
706	
41/2 ⁺	6575.5
818	
37/2 ⁺	5757.2
734	
33/2 ⁺	5023.5
628	
29/2 ⁺	4395.1
559	
25/2 ⁺	3836.0
562	
21/2 ⁺	3273.2
736	
17/2 ⁺	2537.3
743	
13/2 ⁺	1794.1

Band(B): Band based on
(33/2⁺) (2000Li14)

(51/2 ⁺)	8539.1
500	8039.1
(49/2 ⁺)	
500	7539.1
(47/2 ⁺)	
430	7109.0
(45/2 ⁺)	
518	6591.0
(43/2 ⁺)	
431	6159.9
(41/2 ⁺)	
395	5764.4
(39/2 ⁺)	
177	5587.8
(37/2 ⁺)	
188	5400.2
(35/2 ⁺)	
174	5226.8
(33/2 ⁺)	

Adopted Levels, Gammas (continued)

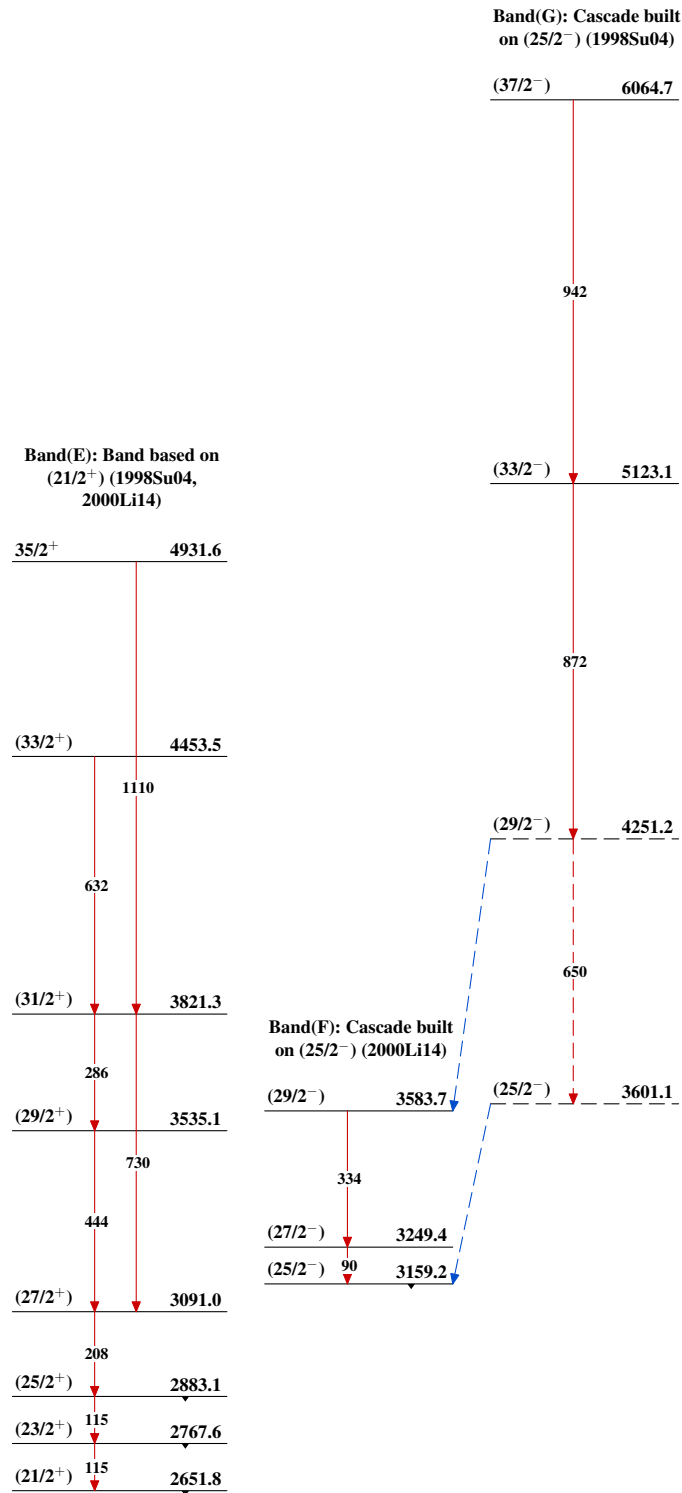
Band(C): SD band (2000Li04)

J+30		14532+x
	1384	
J+28	▼	13148+x
	1324	
J+26	▼	11824+x
	1264	
J+24	▼	10560+x
	1206	
J+22	▼	9354+x
	1147	
J+20	▼	8207.3+x
	1088	
J+18	▼	7119.1+x
	1030	
J+16	▼	6088.7+x
	972	
J+14	▼	5116.6+x
	913	
J+12	▼	4203.5+x
	854	
J+10	▼	3349.8+x
	793	
J+8	▼	2557.2+x
	732	
J+6	▼	1825.5+x
	670	
J+4	▼	1155.0+x
	609	
J+2	▼	546.0+x
J≈(47/2)	▼	x

Band(D): $11/2^-$ band
(2000Li14)

(23/2 ⁻)		3087.4
	1312	
(19/2 ⁻)	▼	1775.9
	1024	
(15/2 ⁻)	▼	752.3
(11/2 ⁻)	▼	152.6

 $^{143}_{64}\text{Gd}_{79}$

Adopted Levels, Gammas (continued) $^{143}_{64}\text{Gd}_{79}$