Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 208,1 (2026)	17-Jan-2026

Q(β^-)=−5732 *13*; S(n)=8983.8 *12*; S(p)=6013.8 *24*; Q(α)=3271.29 *3* 2021Wa16
S(2n)=16326 *4*, S(2p)=9851.0 *28* (2021Wa16).
Additional information 1.
Other reactions: 1991Fl03: spin dependence of GDR in Gd isotopes.
There are problems in reconciling log *ft* values from ^{148}Tb ε decay (2.20 min) with ΔJ^π of the transitions. More data are needed to clarify these problems.

^{148}Gd Levels

Cross Reference (XREF) Flags

A	^{148}Tb ε decay (60 min)	D	^{148}Gd(p,p′)
B	^{148}Tb ε decay (2.20 min)	E	(HI,xnγ)
C	^{152}Dy α decay	F	(HI,xnγ):SD

E(level)[†]	J$^\pi$[‡#]	T$_{1/2}$[@]	XREF	Comments
0.0[&]	0$^+$	72.3 y *23*	ABCDE	%α=100 T$_{1/2}$: weighted average of the following values (in y): 86.9 *39* (2023Ch11), 70.9 *10* (2003Fu10, preliminary result after two year measurement), 74.6 *30* (1981Pr06), 84 *9* (1962Si14). Others: 97.5 *65* (1966Fr11). See also 1953Ra02. rms charge radius <r^2>$^{1/2}$=5.008 fm *17* (2013An02).
784.433[&] *15*	2$^+$	4.2 ps *12*	AB DE	J$^\pi$: L(p,p′)=2.
1273.492[a] *18*	3$^-$	34.7 ps *21*	AB DE	J$^\pi$: L(p,p′)=3.
1416.378[&] *20*	4$^+$	8.1 ps *24*	AB DE	J$^\pi$: L(p,p′)=4.
1810.98[&] *7*	6$^+$	178 ps *20*	B DE	J$^\pi$: L(p,p′)=6. log *ft*=6.3 from 9$^+$ to this level is very low.
1834.59 *5*	2$^+$,3$^+$		A	J$^\pi$: from $\gamma(\theta)$ of oriented nuclei in ε decay (60 min).
1863.445 *24*	2$^+$		A D	J$^\pi$: L(p,p′)=2.
1912.97[a] *6*	4$^-$		AB E	J$^\pi$: γ to 3$^-$ is M1, no γ to 2$^+$.
2082.11[a] *6*	5$^-$	2.6 ps *13*	AB DE	J$^\pi$: L(p,p′)=5.
2188.67 *4*	2$^+$		A D	J$^\pi$: L(p,p′)=2.
2233.60 *4*	3$^-$		A D	J$^\pi$: L(p,p′)=3.
2310.97 *5*	2$^+$		A D	J$^\pi$: L(p,p′)=2.
2424.10 *9*	3$^+$,4$^+$		A	J$^\pi$: from $\gamma(\theta)$ of oriented nuclei in ε decay (60 min); π from M1+E2 γ to 4$^+$, 1416.
2503.70 *6*	(1,2,3)$^-$		A	J$^\pi$: γ to 3$^-$ is E2,M1 and γ to 2$^+$.
2505.80 *4*	3$^-$		A D	J$^\pi$: γ to 4$^+$ is E1; γ to 2$^+$.
2522.04 *11*	4$^+$		A D	J$^\pi$: L(p,p′)=4.
2563.81[a] *9*	7$^-$	21.3 ps *30*	B E	J$^\pi$: γ to 5$^-$ is E2; γ to 6$^+$ is E1.
2566.82[a] *18*	6$^-$		E	J$^\pi$: γ to 5$^-$ is M1; γ to 6$^-$ is E2.
2614.59 *5*	2$^+$		A D	J$^\pi$: L(p,p′)=2.
2632.65[b] *8*	5$^-$		A DE	J$^\pi$: L(p,p′)=5.
2693.35[&] *10*	8$^+$	13.2 ps *28*	B DE	J$^\pi$: γ to 6$^+$ is E2; no γ to J<6.
2694.67[a] *13*	9$^-$	16.6 ns *3*	B E	μ=−0.16 *2* (2020StZV,1987Da27) Q=0.96 *5* (2021StZZ,1982Ha22) J$^\pi$: γ to 7$^-$ is E2, γ to 6$^+$ is E3. T$_{1/2}$: weighted average of 17.5 ns *10* (1990Pi17), 17.5 ns *10* (1984Lu09), 16.5 *3* (1979Ha15), 17.3 ns *20* (1973Kr10), 16.3 ns *9* (1972HaXQ), and 16.7 ns *9* (1971HaXD). μ: Other: −0.252 *81* (1979Ha15); both 1987Da27 and 1979Ha15 used the

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)†	Jπ‡#	$T_{1/2}$@	XREF	Comments
				time dependent perturbed angular distribution method. Q: measured by the time dependent perturbed angular distribution method (1982Ha22).
2700.06 *7*	$(1^-,2^+)$		A	Jπ: γ to 0^+ and 3^-.
2763 *3*	4^+		D	Jπ: L(p,p′)=4.
2782.60 *17*			B E	Jπ: $(4^+,5,6^+)$ from gammas to 4^+ and 6^+; not consistent with log *ft*=7.1 or log $f^{1u}t$=8.6 from 9^+ of ^{148}Tb ε decay (2.20 min).
2868.74 *20*	$(7)^+$		B DE	Jπ: M1,E2 γ to 6^+ and γ from 8^+; not populated from 9^+ of ^{148}Tb ε decay (2.20 min).
2872.89 *7*	$(2^-,3,4^+)$		A	Jπ: gammas to 2^+ and 4^-.
2886.31 *10*	$(2^+,3,4^+)$		A	Jπ: gammas to 2^+ and 4^+.
2915.50 *8*	3^-		A D	Jπ: L(p,p′)=3.
2934.9 *5*	$(9)^+$		E	Jπ: M1 γ to 8^+.
2936.61[b] *24*	7^-	3.8 ps *26*	B DE	Jπ: E1(+M2) γ to 6^- and γ from 9^-.
3029.59[a] *13*	8^-	52 ps *13*	B E	Jπ: M1 γ to 7^- and M1 γ to 9^-.
3045.7 *3*			B	
3065			A	
3076.12 *24*			A	
3089.70 *8*	$(1^-,2^+)$		A	Jπ: gammas to 0^+ and 3^-.
3128.8 *3*			B	
3130.87 *16*	$(1,2^+)$		A	Jπ: γ to 0^+.
3152.48[b] *14*	8^-		B E	Jπ: M1 γ to 7^- and γ to 9^-.
3157.0 *3*			B	
3179.7[b] *6*	7^-		E	Jπ: M1 ΔJ=0 γ to 7^-.
3295.03 *15*	$(1,2^+)$		A	Jπ: γ to 0^+.
3310.4[b] *4*	8^-		E	Jπ: M1 γ to 7^- and γ from 9^-.
3357.80 *24*			B	
3367.26[b] *15*	9^-	19.1 ps *21*	E	Jπ: M1 γ to 8^- and γ to 7^-.
3478.0 *3*	(8^+)		B	Jπ: log *ft*=6.1 from 9^+ ε decay (2.20 min) parent and γ to 6^+.
3502.1 *4*			B	
3574.94 *21*	$(1^-,2^+)$		A	Jπ: gammas to 0^+ and 3^-.
3645.92 *23*	(8^+)		B	Jπ: gammas to 6^+ and 8^+; and log *ft*=6.1 in ε decay (2.20 min) from 9^+.
3666.6 *4*	10^-		B E	Jπ: M1 γ to 9^-.
3701.48[a] *20*	11^-	<5 ps	E	$T_{1/2}$: adopted by evaluator from 1 ps *+4−1* in (HI,xnγ).
3758.24[c] *19*	10^+	7.6 ps *10*	B E	Jπ: E1(+M2) γ to 9^-.
3768.35 *24*			B	
3808.34 *19*	(8^+)		B	Jπ: gammas to 6^+ and 9^-; and log *ft*=6.2 in ε decay (2.20 min) from 9^+.
3822.4 *4*	10^+		E	Jπ: E2 γ from 12^+ and γ to 8^+.
3868.66 *18*	$(8,9,10^+)$		B	Jπ: gamma to 8^+ and log *ft*=6.3 in ε decay (2.20 min) from 9^+.
3918.22[b] *19*	10^-	8.9 ps *15*	E	Jπ: E2 γ to 8^- and γ to 9^-.
3980.42 *20*	12^+	60 ps *5*	E	Jπ: E1(+M2) γ to 11^- and E3 γ to 9^-.
3990.51 *20*	$(8,9,10)^+$		B	Jπ: gammas to 8^+ and 9^-; and log *ft*=6.0 in ε decay (2.20 min) from 9^+.
4051.0 *6*	$(2^+,3)$		A	Jπ: gammas to 2^+ and 4^+, and log *ft*≈7.2 in ε decay (60 min) from 2^-.
4068.22 *25*	(2)		A	Jπ: gammas to 0^+ and 4^-.
4119.24 *14*	$(8)^+$		B	Jπ: log *ft*=5.2 for ε decay (2.20 min) from 9^+; γ to 6^+.
4121.47[b] *21*	11^-	4.6 ps *34*	E	Jπ: E2 γ to 9^- and γ to 11^-.
4170.25 *20*	$(8,9^-)$		B	Jπ: gammas to 7^- and 9^-; and log *ft*=6.0 in ε decay (2.20 min) from 9^+.
4271.4 *4*	$(8,9,10^+)$		B	Jπ: gamma to 8^+; and log *ft*=6.3 in ε decay (2.20 min) from 9^+.
4312.01 *17*	$(8)^+$		B	Jπ: gammas to 7^-, 8^- and 8^+; and log *ft*=5.1 for ε decay (2.20 min) from 9^+.
4408.90 *16*	$(8)^+$		B	Jπ: gammas to 7^+, 7^- and 9^-; and log *ft*=5.2 for ε decay (2.20 min) from 9^+.
4429.74[b] *23*	12^-	12 ps *9*	E	Jπ: E2 γ to 10^+ and γ to 11^-.
4500.33[c] *19*	12^+	3.9 ps *21*	E	
4542.27 *22*	$2^{(+)},3$		A	Jπ: gammas to 3^- and 4^+, and log *ft*≈6.8 in ε decay (60 min) from 2^-.

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	$T_{1/2}$[@]	XREF	Comments
4551.04[b] *23*	13(−)	38 ps *6*	E	Jπ: D γ from 14+; π=(−) based on negative parity sequence in (HI,xnγ).
4740.6[b] *4*	13(−)		E	Jπ: D γ to 12−; π=(−) based on negative parity sequence in (HI,xnγ).
4906.0[b] *3*	14(−)	<12 ps	E	Jπ: D γ from 15−; π=(−) based on negative parity sequence in (HI,xnγ). $T_{1/2}$: adopted by evaluator from 3 ps *+9–3* in (HI,xnγ).
5025.83[c] *21*	14+	25 ps *14*	E	Jπ: E2 γ to 12+ and γ to 13(−).
5117.51[b] *25*	15(−)	16 ps *8*	E	Jπ: E2 γ to 13(−) and D γ to 14−.
5167.8 *4*			E	
5355.57[c] *25*	16(+)	184 ps *26*	E	Jπ: D γ to 15(−); π=(+) based on positive parity sequence in (HI,xnγ).
5438.6 *4*	16		E	
5578.6 *9*			E	
5800.3 *9*			E	
5832.7[c] *3*	18(+)		E	Jπ: E2 γ to 16(+).
5882.8 *8*			E	
5933.7[b] *5*	17(−)		E	Jπ: D γ to 16 and γ to 15(−).
6210.9[d] *4*	17(−)		E	Jπ: D γ to 18(+); π=(−) based on negative parity sequence in (HI,xnγ).
6268.4 *8*			E	
6381.4 *6*	(18)		E	Jπ: assumed in (HI,xnγ).
6545.6[d] *4*	18(−)		E	Jπ: D γ to 17(−); π=(−) based on negative parity sequence in (HI,xnγ).
6574.9 *6*	19(+)		E	Jπ: D γ to 18 and D γ from 20(−).
6640.8[d] *3*	19(−)		E	Jπ: D γ to 18(+); π=(−) based on negative parity sequence in (HI,xnγ).
6834.5[d] *4*	20(−)	1.5 ns *3*	E	Jπ: E2 γ to 18(−) and D γ to 19.
7051.3 *7*	(19)		E	Jπ: D γ to (18).
7110.3 *8*	20(+)		E	Jπ: Q γ from 14+.
7155.7[d] *5*	21(−)		E	Jπ: E2 γ to 19(−) and D γ to 20(−).
7274.2 *8*	20(+)		E	Jπ: D γ to 19(+).
7333.6 *9*			E	
7530.8 *7*	21(+)		E	Jπ: D γ to 20(+).
7790.8 *7*	22(+)		E	Jπ: E2 γ to 20(+).
8004.9 *7*	22(−)		E	Jπ: E2 γ to 20(−).
8242.9 *9*	22(−)		E	Jπ: E2 γ to 20(−).
8304.5 *8*	23(−)		E	Jπ: E2 γ to 21(−).
8309.1 *9*	23(+)		E	Jπ: D γ to 22(+).
8364.0 *7*	23(−)		E	Jπ: E2 γ to 21(−).
8455.5 *7*	23(−)		E	Jπ: D γ to 22(+).
8609.1 *10*	23		E	Jπ: D γ to 22(+).
8639.1 *8*	24(−)		E	Jπ: D γ to 23(−).
8832.1 *8*	24		E	Jπ: D γ's to 23(+) and 23(−).
8987.1 *9*	25(−)		E	Jπ: E2 γ to 23(−).
9243.7 *10*	25(−)		E	Jπ: E2 γ to 24(−).
9258.8 *9*			E	
9652.7 *11*	26(−)		E	Jπ: γ's from 27(−) and to 25(−), respectively.
9757.6 *10*	26		E	Jπ: D γ to 25(−).
9934.3 *13*			E	
9957.3 *12*	26(−)		E	Jπ: D γ from 27(−) and γ to 25(−).
10046.5 *9*	25(−)		E	Jπ: E2 γ to 23(−).
10063.0 *12*	27		E	Jπ: D γ to 26.
10317.9 *9*	27(−)		E	Jπ: E2 γ to 25(−).
10474.3 *12*	(27)		E	Jπ: γ's from 28 and to 26, respectively.
10694.0 *11*	27(−)		E	Jπ: γ's from 29(−), from 28, and to 26(−), respectively.
10760.1 *14*	(28)		E	Jπ: γ's from 30 and to 27, respectively.
10869.8 *14*	(28)		E	Jπ: γ's from 30 and to 27, respectively.

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)†	Jπ‡#	$T_{1/2}$@	XREF	Comments
11158.4 *11*	28		E	Jπ: D γ to 27(−).
11185.7 *12*	29		E	Jπ: E2 γ to 27.
11456.9 *12*	29		E	Jπ: D γ to 28.
11477.9 *12*	29(−)		E	Jπ: E2 γ to 27(−).
11545.9 *11*	29(−)		E	Jπ: E2 γ to 27(−).
11587.0 *12*	(30)		E	Jπ: γ's from 31(−) and to 29, respectively.
11727.6 *13*	30		E	Jπ: D γ to 29.
12012.8 *16*			E	
12064.1 *13*	30		E	Jπ: D γ to 29.
12138.6 *11*	31(−)		E	Jπ: E2 γ to 29(−).
12284.9 *12*	30		E	Jπ: D γ to 29.
12381.9 *13*	31		E	Jπ: E2 γ to 29.
12529.5 *12*	32		E	Jπ: D γ to 31(−).
12683.2 *13*			E	
13039.1 *13*	33		E	Jπ: D γ to 32.
13125.9 *15*	33(−)		E	Jπ: E2 γ to 31(−).
13147.7 *13*	(32)		E	Jπ: γ's from 34 and to 31, respectively.
13244.0 *15*			E	
13354.3? *16*			E	
13555.0 *14*	(33)		E	Jπ: γ's from 34 and to 32, respectively.
13736.0 *13*	34		E	Jπ: D γ to 33.
13869.9 *14*	35	1.5 ns *3*	E	μ=+21 *6* (1989Ha15) Jπ: D γ to 34.
13888.3 *16*	(34)		E	Jπ: γ's from 36 and to 33, respectively.
13911.5 *17*			E	
14011.3 *17*	34		E	Jπ: D γ to 33.
14145.8 *16*	35		E	Jπ: E2 γ to 33.
14206.6 *17*	36		E	Jπ: D γ to 35.
14924.4 *17*	36		E	Jπ: (D+Q) γ to 35.
15165.7? *19*	38		E	Jπ: E2 γ to 36.
15727.8 *19*			E	
16077.6 *22*			E	
16112.1 *19*	(38)		E	Jπ: (E2) γ to 36.
16204.2? *22*		<0.17 ps	E	
16257.4? *22*			E	
16406.8 *22*	(40)		E	Jπ: (E2) γ to (38).
16473.7 *22*	(39)		E	Jπ: (D) γ to 38.
17241.0? *24*			E	
17320.2? *24*			E	
17370.8 *24*	(42)		E	Jπ: (E2) γ to (40).
18482 *3*	(44)	<0.17 ps	E	Jπ: assumed by 1990Dr05, (HI,xnγ).
19149?	(46)		E	Jπ: assumed by 1990Dr05, (HI,xnγ).
x[e]	J≈(29)		F	Additional information 2. Jπ: ≈(29) from 699.9γ as a possible J=31 to J=29 transition based on the assignment (1993Ha19) of 652.3γ as a J=29 to J=27 transition. A tentative 652.3γ was reported by 1993Ha19 but is removed by 1995DeZZ. Theoretical analysis by 1993Ra07 suggests J=27, 29; J=25, 27 was proposed (1993Ra07) with the 652.3γ as the lowest energy transition.
699.90+x[e] *10*	J+2		F	
1447.80+x[e] *15*	J+4		F	
2243.61+x[e] *18*	J+6		F	
3090.31+x[e] *20*	J+8		F	
3988.21+x[e] *23*	J+10		F	
4938.51+x[e] *25*	J+12		F	

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
5942.4+x[e] 3	J+14	F	
7001.1+x[e] 3	J+16	F	
8115.3+x[e] 3	J+18	F	
9285.9+x[e] 4	J+20	F	
10513.7+x[e] 4	J+22	F	
11799.3+x[e] 4	J+24	F	
13143.4+x[e] 4	J+26	F	
14545.9+x[e] 5	J+28	F	
16007.3+x[e] 5	J+30	F	
17527.8+x[e] 6	J+32	F	
19108.3+x[e] 9	J+34	F	
20748.3+x[e] 13	J+36	F	
22448.6+x[e] 15	J+38	F	
y[f]	J1≈(30)	F	Additional information 3. Jπ: ≈(30) from assignment of 789γ as J=34 to 32 transition. Negative parity is suggested by 1993Ha19. 1993Ra07 suggest J=30, 32 (assuming 789γ as the lowest transition).
741.8+y[f] 3	J1+2	F	
1530.7+y[f] 4	J1+4	F	
2369.5+y[f] 5	J1+6	F	
3258.6+y[f] 5	J1+8	F	
4198.4+y[f] 5	J1+10	F	
5188.8+y[f] 6	J1+12	F	
6228.5+y[f] 7	J1+14	F	
7316.3+y[f] 7	J1+16	F	
8451.5+y[f] 7	J1+18	F	
9634.2+y[f] 7	J1+20	F	
10865.4+y[f] 8	J1+22	F	
12146.3+y[f] 8	J1+24	F	
13478.6+y[f] 8	J1+26	F	
14861.9+y[f] 9	J1+28	F	
16299.4+y[f] 10	J1+30	F	
17790.5+y[f] 13	J1+32	F	
19336.7+y[f] 17	J1+34	F	
z[g]	J2	F	Additional information 4.
830.3+z[g] 6	J2+2	F	
1706.0+z[g] 7	J2+4	F	
2631.0+z[g] 7	J2+6	F	
3606.7+z[g] 8	J2+8	F	
4634.2+z[g] 8	J2+10	F	
5713.8+z[g] 9	J2+12	F	
6846.5+z[g] 9	J2+14	F	
8032.4+z[g] 10	J2+16	F	
9271.7+z[g] 10	J2+18	F	
10564.6+z[g] 10	J2+20	F	
11909.1+z[g] 11	J2+22	F	
13304.4+z[g] 12	J2+24	F	
14739.6+z[g] 13	J2+26	F	

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)[†]	J$^{\pi}$[‡#]	XREF	Comments
16182.2+z[g] *16*	J2+28	F	E(level): the ordering of the 1447.7γ-1442.6γ cascade is adopted from 1996De04, based on relative Iγ's. A reverse ordering is proposed by 1995DeZZ.
17629.9+z[g] *17*	J2+30	F	
19101.9+z[g] *20*	J2+32	F	
u[h]	J3	F	Additional information 5.
849.7+u[h] *3*	J3+2	F	
1739.7+u[h] *4*	J3+4	F	
2678.4+u[h] *5*	J3+6	F	
3666.8+u[h] *5*	J3+8	F	
4706.4+u[h] *6*	J3+10	F	
5797.5+u[h] *7*	J3+12	F	
6941.7+u[h] *8*	J3+14	F	
8139.7+u[h] *8*	J3+16	F	
9392.5+u[h] *9*	J3+18	F	
10700.6+u[h] *9*	J3+20	F	
12065.0+u[h] *10*	J3+22	F	
13486.4+u[h] *11*	J3+24	F	
14964.9+u[h] *11*	J3+26	F	
16501.8+u[h] *15*	J3+28	F	
v[i]	J4	F	Additional information 6.
853.7+v[i] *3*	J4+2	F	
1753.6+v[i] *4*	J4+4	F	
2698.5+v[i] *5*	J+6	F	
3689.9+v[i] *5*	J4+8	F	
4727.8+v[i] *6*	J4+10	F	
5812.4+v[i] *6*	J4+12	F	
6944.3+v[i] *7*	J4+14	F	
8123.8+v[i] *7*	J4+16	F	
9350.3+v[i] *7*	J4+18	F	
10624.1+v[i] *7*	J4+20	F	
11946.2+v[i] *8*	J4+22	F	
13315.9+v[i] *8*	J4+24	F	
14733.0+v[i] *9*	J4+26	F	
16197.9+v[i] *10*	J4+28	F	
17711.0+v[i] *14*	J4+30	F	
19273.0+v[i] *17*	J4+32	F	
w[j]	J5	F	Additional information 7.
802.2+w[j] *3*	J5+2	F	
1651.6+w[j] *4*	J5+4	F	
2549.0+w[j] *4*	J5+6	F	
3494.9+w[j] *5*	J5+8	F	
4491.0+w[j] *5*	J5+10	F	
5537.8+w[j] *5*	J5+12	F	
6637.2+w[j] *6*	J5+14	F	
7789.4+w[j] *6*	J5+16	F	
8996.2+w[j] *6*	J5+18	F	

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
10257.2+w[j] 7	J5+20	F	
11573.8+w[j] 7	J5+22	F	
12945.9+w[j] 7	J5+24	F	
14374.4+w[j] 7	J5+26	F	
15859.6+w[j] 8	J5+28	F	
17402.0+w[j] 9	J5+30	F	
r[k]	J6	F	Additional information 8.
911.8+r[k] 4	J6+2	F	
1873.7+r[k] 5	J6+4	F	
2892.1+r[k] 6	J6+6	F	
3969.0+r[k] 7	J6+8	F	
5101.0+r[k] 8	J6+10	F	
6287.7+r[k] 9	J6+12	F	
7527.4+r[k] 10	J6+14	F	
8817.6+r[k] 10	J6+16	F	
10152.6+r[k] 10	J6+18	F	
11530.7+r[k] 11	J6+20	F	
12956.2+r[k] 12	J6+22	F	
14431.4+r[k] 13	J6+24	F	
15960.3+r[k] 14	J6+26	F	
s[l]	J7	F	Additional information 9.
887.0+s[l] 3	J7+2	F	
1822.4+s[l] 5	J7+4	F	
2812.3+s[l] 7	J7+6	F	
3858.2+s[l] 7	J7+8	F	
4961.4+s[l] 13	J7+10	F	
6120.6+s[l] 13	J7+12	F	
7332.7+s[l] 13	J7+14	F	
8596.7+s[l] 14	J7+16	F	
9908.0+s[l] 14	J7+18	F	
11263.4+s[l] 15	J7+20	F	
12664.9+s[l] 15	J7+22	F	
14115.5+s[l] 16	J7+24	F	
15618.5+s[l] 16	J7+26	F	
t[m]	J8	F	Additional information 10.
868.4+t[m] 3	J8+2	F	
1783.4+t[m] 5	J8+4	F	
2745.6+t[m] 6	J8+6	F	
3755.3+t[m] 6	J8+8	F	
4811.6+t[m] 6	J8+10	F	
5916.5+t[m] 7	J8+12	F	
7069.9+t[m] 7	J8+14	F	
8271.5+t[m] 8	J8+16	F	
9521.3+t[m] 8	J8+18	F	

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

E(level)[†]	J$^{\pi}$[‡#]	XREF
10818.5+t[m] *8*	J8+20	F
12157.8+t[m] *10*	J8+22	F
13509.8+t[m] *13*	J8+24	F

[†] From a least-squares fit to Eγ data with ΔEγ=1 keV for Eγ's with no assigned uncertainty.

[‡] Except where noted otherwise, J^{π} assignments are based on conversion electron and $\gamma(\theta)$ of oriented nuclei from ε decay (60 min), conversion electron data from ε decay (2.20 min), and $\gamma\gamma(\theta)$, excitation function, conversion electron and $\gamma\gamma(\theta)$ data from (HI,xnγ), with J values generally increasing with excitation energy for the latter dataset. Starting at 7274 level and above the normal deformation data are exclusively from (HI,xnγ) (1990Dr06) with parity assumed by the authors based on theoretical and level scheme arguments and tacitly adopted as tentative by the evaluator.

[#] Band designations for normal deformed states are from (HI,xnγ) (1990Pi17). Except for the ground state (g.s.) band, the other medium-to-high excitation sequences can be classified as single-particle sequences rather than collective bands. This is due to the fact that, having only two valence neutrons over the Z=64, N=82 doubly magic shell, such a nucleus typically starts at smaller oblate deformations and develops shape coexistence in the normal deformation regime. At very high excitation energies, it develops very large prolate, superdeformed shapes with corresponding collective rotational superdeformed bands. For uniformity, the evaluator kept the conventional designation of bands for all sequences.

[@] From (HI,xnγ), unless indicated otherwise.

[&] Band(A): ν^2 states.

[a] Band(B): ν^2 x octupole states.

[b] Band(C): ν^2 x $\pi^{+1}\pi^{-1}$ states.

[c] Band(D): ν^2 x π^2 states.

[d] Band(E): $\nu^2\pi^2$ x octupole states.

[e] Band(F): SD-1 band (1995DeZZ,1993Ha19,1988De10). Configuration=$\pi 6^2$ $\nu(7^1 1/2[651],\alpha=-1/2)$ (1998By02). Q(intrinsic)=14.6 *2* (1996Sa15). Percent population=1.6 *1* (1996De04), 1.30 *15* (1993Ha19), 0.72 *25* (1997Zh03) in ^{124}Sn(^{29}Si,5nγ) E=157 MeV (1996De04,1997Zh03), E=155 MeV (1993Ha19). Other values from 1992Fl02: 1.9 *5* in ^{76}Ge(^{76}Ge,4nγ); 0.8 *2* in ^{124}Sn(^{29}Si,5nγ) and 0.5 *2* in ^{122}Sn(^{30}Si,4nγ).

[f] Band(G): SD-2 band (1995DeZZ,1993Ha19,1996De04). Configuration=$\pi 6^2$ $\nu(7^1 1/2[651],\alpha=+1/2)$ (1998By02). Promotion of neutron from 1/2[651],α=−1/2 to 1/2[651],α=+1/2. Q(intrinsic)=14.8 *3* (1996Sa15). Percent population=0.7 *2* (1996De04), 0.62 *20* (1993Ha19).

[g] Band(H): SD-3 band (1995DeZZ,1996De04). This band reveals a backbend at a rotational frequency of ≈0.72 MeV. configuration=$\pi 6^2$ $\nu((1/2[651],\alpha=-1/2)(1/2[651],\alpha=+1/2))$ (1998By02). Promotion of neutron from 1/2[770],α=−1/2 to 1/2[651],α=+1/2. Q(intrinsic)=17.8 *13* (1996Sa15). Percent population=0.4 *2* (1996De04), 18% *3* of SD-1 (1995DeZZ).

[h] Band(I): SD-4 band (1995DeZZ,1996De04). Configuration=$\pi 6^2$ $\nu(7^1(1/2[651],\alpha=-1/2)(1/2[651],\alpha=+1/2))$ (1998By02). Promotion of neutron from 5/2[642],α=+1/2 to 1/2[651],α=+1/2. Percent population=0.5 *2* (1996De04), 12% *4* of SD-1 band (1995DeZZ).

[i] Band(J): SD-5 band (1995DeZZ,1996De04). configuration=$\pi(6^4 1/2[301]^{-2})$ $\nu(7^2(1/2[651],\alpha=-1/2)$ $(1/2[651],\alpha=+1/2))$ (1998By02). This involves promotion of two neutrons from 1/2[411] to 7^1 and 1/2[651],α=+1/2 orbitals. Or configuration=$\pi(6^2(1/2[301],\alpha=-1/2)^{-1}(3/2[651],\alpha=+1/2))$ $\nu(7^1 1/2[651],\alpha=-1/2)$ (1998By02). This band is identical (in transition energies) to ^{152}Dy SD-1 band. Percent population=0.5 *1* (1996De04), 23% *4* of SD-1 band (1995DeZZ).

[j] Band(K): SD-6 band (1995DeZZ,1996De04,1997Ha19). Configuration=$\pi 6^2$ $\nu(7^1(1/2[651],\alpha=-1/2)(1/2[651],\alpha=+1/2))$ (1998By02). Promotion of neutron from 1/2[411],α=+1/2 to 1/2[651],α=+1/2. 1997Ha19 provide evidence for ΔJ=2 staggering of 0.37 keV *12*, and propose that this band is identical to ^{149}Gd SD-1, yrast band. Percent population=0.4 *1* (1996De04), 16% *3* of SD-1 band (1995DeZZ).

[k] Band(L): SD-7 band (1998By02). configuration=$\pi 6^2$ $\nu(7^1$(5/2[402] or 9/2[514])) (1998By02). Promotion of neutron from 1/2[651],α=−1/2 to 5/2[402] or 9/2[514]. Bands SD-7 and SD-8 are probably signature partners. Percent population=5-10% of SD-1 band (1998By02).

[l] Band(M): SD-8 band (1998By02). Configuration=$\pi 6^2$ $\nu(7^1$(5/2[402] or 9/2[514])) (1998By02). Promotion of neutron from 1/2[651],α=−1/2 to 5/2[402] or 9/2[514]. Bands SD-7 and SD-8 are probably signature partners. Percent population=5-10% of

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Adopted Levels, Gammas (continued)

^{148}Gd Levels (continued)

SD-1 band (1998By02).

[m] Band(N): SD-9 band (1998By02). Percent population=5-10% of SD-1 band (1998By02).

Adopted Levels, Gammas (continued)

$\gamma(^{148}Gd)$

Additional information 11.

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
784.433	2^+	784.430 *16*	100	0.0	0^+	E2		0.00466 *7*	B(E2)(W.u.)=9.7 *+39−22* α(K)=0.00390 *5*; α(L)=0.000597 *8*; α(M)=0.0001305 *18* α(N)=2.99×10^{-5} *4*; α(O)=4.53×10^{-6} *6*; α(P)=2.69×10^{-7} *4*
1273.492	3^-	489.049 *12*	100[&] *2*	784.433	2^+	E1+M2	+0.18 *9*	0.0075 *30*	B(E1)(W.u.)=5.68×10^{-5} *+37−41* α(K)=0.0063 *25*; α(L)=9; α(M)=2.0×10^{-4} *9* α(N)=4.6×10^{-5} *20*; α(O)=7.0×10^{-6} *32*; α(P)=4.5×10^{-7} *21* B(M2)(W.u.)=35 *+41−27* exceeds RUL=1.
		1273.5	0.87[&] *7*	0.0	0^+	[E3]		0.00338 *5*	B(E3)(W.u.)=42.4 *+44−42* α(K)=0.00281 *4*; α(L)=0.000440 *6*; α(M)=9.64×10^{-5} *13* α(N)=2.211×10^{-5} *31*; α(O)=3.37×10^{-6} *5*; α(P)=2.038×10^{-7} *29*; α(IPF)=4.74×10^{-6} *7* E_γ: from (HI,xnγ).
1416.378	4^+	142.878 *14*	2.90 *13*	1273.492	3^-	E1		0.1116 *16*	B(E1)(W.u.)=2.9×10^{-4} *+12−7* α(K)=0.0941 *13*; α(L)=0.01368 *19*; α(M)=0.00296 *4* α(N)=0.000672 *9*; α(O)=9.98×10^{-5} *14*; α(P)=5.53×10^{-6} *8*
		631.947 *17*	100 *2*	784.433	2^+	E2		0.00772 *11*	B(E2)(W.u.)=14 *+6−4* α(K)=0.00638 *9*; α(L)=0.001044 *15*; α(M)=0.0002298 *32* α(N)=5.25×10^{-5} *7*; α(O)=7.88×10^{-6} *11*; α(P)=4.36×10^{-7} *6*
1810.98	6^+	394.55 *8*	100	1416.378	4^+	E2		0.0267 *4*	B(E2)(W.u.)=7.0 *+9−7* α(K)=0.02123 *30*; α(L)=0.00428 *6*; α(M)=0.000959 *13* α(N)=0.0002177 *31*; α(O)=3.16×10^{-5} *4*; α(P)=1.386×10^{-6} *19*
1834.59	2^+,3^+	1050.15 *4*	100	784.433	2^+	E2+M3		0.00266 *18*	α(K)=0.00225 *15*; α(L)=0.000325 *24*; α(M)=7.1×10^{-5} *5* α(N)=1.62×10^{-5} *12*; α(O)=2.49×10^{-6} *19*; α(P)=1.58×10^{-7} *12* Mult.,δ: ΔJ=0 or 1 γ. δ is +3 *+4−1* or −0.12 *19* if $J^\pi=2^+$; or +0.31 *12* if $J^\pi=3^+$ from $\gamma(\theta)$ of oriented nuclei in ε decay (60 min). Additional information 12.
1863.445	2^+	589.9 *7*	5.2 *3*	1273.492	3^-				
		1079.025 *25*	100.0 *22*	784.433	2^+	M1+E2	+4.6 *+35−14*	0.00242 *7*	α(K)=0.00205 *6*; α(L)=0.000291 *8*; α(M)=6.31×10^{-5} *17* α(N)=1.45×10^{-5} *4*; α(O)=2.23×10^{-6} *6*; α(P)=1.42×10^{-7} *5*
		1863.39 *4*	49.2 *10*	0.0	0^+				
1912.97	4^-	639.47 *7*	100	1273.492	3^-	M1		0.01362 *19*	α(K)=0.01159 *16*; α(L)=0.001595 *22*; α(M)=0.000345 *5*

$^{148}_{64}Gd_{84}$-10

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
									α(N)=7.94×10^{-5} *11*; α(O)=1.236×10^{-5} *17*; α(P)=8.44×10^{-7} *12*
2082.11	5$^-$	169.2 *1*	4.3	1912.97	4$^-$				
		271.1 *2*	8.8	1810.98	6$^+$	E1(+M2)	≤0.23	0.034 *14*	B(E1)(W.u.)=3.4×10^{-4} *+49−17* α(K)=0.029 *11*; α(L)=0.0045 *20*; α(M)=1.0×10^{-3} *5* α(N)=2.2×10^{-4} *11*; α(O)=3.4×10^{-5} *16*; α(P)=2.1×10^{-6} *10*
		666.0 *4*	7.2	1416.378	4$^+$	E1(+M2)	≤0.34	0.0042 *17*	B(E1)(W.u.)=1.8×10^{-5} *+27−10* α(K)=0.0036 *14*; α(L)=5.1×10^{-4} *22*; α(M)=1.1×10^{-4} *5* α(N)=2.5×10^{-5} *11*; α(O)=3.9×10^{-6} *17*; α(P)=2.6×10^{-7} *11*
		808.7 *1*	100	1273.492	3$^-$	E2		0.00435 *6*	B(E2)(W.u.)=11 *+9−4* α(K)=0.00365 *5*; α(L)=0.000554 *8*; α(M)=0.0001210 *17* α(N)=2.77×10^{-5} *4*; α(O)=4.21×10^{-6} *6*; α(P)=2.514×10^{-7} *35*
2188.67	2$^+$	915.30 *12*	14.2 *16*	1273.492	3$^-$				
		1404.22 *4*	100.0 *24*	784.433	2$^+$	M1+E2		0.00177 *33*	α(K)=0.00147 *29*; α(L)=0.00020 *4*; α(M)=4.3×10^{-5} *8* α(N)=9.9×10^{-6} *18*; α(O)=1.53×10^{-6} *29*; α(P)=1.04×10^{-7} *22*; α(IPF)=4.73×10^{-5} *28* δ: +2.0 *+10−7* or +0.04 *+19−14* from γ(θ) of oriented nuclei in ε decay (60 min).
		2188.65 *7*	80 *3*	0.0	0$^+$				
2233.60	3$^-$	960.09 *7*	100 *9*	1273.492	3$^-$	M1+E2		0.0040 *10*	α(K)=0.0034 *9*; α(L)=0.00048 *11*; α(M)=0.000103 *23* α(N)=2.4×10^{-5} *5*; α(O)=3.7×10^{-6} *9*; α(P)=2.4×10^{-7} *7* Mult.,δ: ΔJ=0 γ. δ is +0.02 *+21−14* or +1.3 *+4−5* from γ(θ) of oriented nuclei in ε decay (60 min).
		1449.16 *4*	84 *3*	784.433	2$^+$	E1(+M2)	+0.09 *10*	0.00078 *10*	α(K)=0.00053 *9*; α(L)=6.8×10^{-5} *12*; α(M)=1.47×10^{-5} *27* α(N)=3.4×10^{-6} *6*; α(O)=5.2×10^{-7} *10*; α(P)=3.6×10^{-8} *7*; α(IPF)=0.000167 *5* δ: from γ(θ) of oriented nuclei in ε decay (60 min).
2310.97	2$^+$	1526.45 *7*	55.0 *22*	784.433	2$^+$	M1+E2		0.00153 *26*	α(K)=0.00123 *22*; α(L)=0.000165 *28*; α(M)=3.6×10^{-5} *6* α(N)=8.2×10^{-6} *14*; α(O)=1.28×10^{-6} *22*; α(P)=8.7×10^{-8} *17*; α(IPF)=8.9×10^{-5} *5* δ: +2.4 *+22−10* or −0.0 *2* from γ(θ) of oriented nuclei in ε decay (60 min).
		2311.03 *7*	100 *3*	0.0	0$^+$				
2424.10	3$^+$,4$^+$	1007.72 *9*	100 *9*	1416.378	4$^+$	M1+E2		0.0036 *9*	α(K)=0.0031 *8*; α(L)=0.00042 *9*; α(M)=9.2×10^{-5} *20* α(N)=2.1×10^{-5} *5*; α(O)=3.3×10^{-6} *8*; α(P)=2.2×10^{-7} *6* δ: −1.2 *8* if J^π=3$^+$; +0.6 *8* if J^π=4$^+$ from γ(θ) of oriented nuclei in ε decay (60 min).
		1639.66 *22*	65 *9*	784.433	2$^+$				

$^{148}_{64}Gd_{84}$-11

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
2503.70	(1,2,3)$^-$	1230.18 *5*	56.6 *23*	1273.492	3$^-$	E2,M1	0.0023 *5*	α(K)=0.0020 *4*; α(L)=0.00027 *5*; α(M)=5.8×10^{-5} *12* α(N)=1.33×10^{-5} *27*; α(O)=2.1×10^{-6} *4*; α(P)=1.39×10^{-7} *33*; α(IPF)=9.6×10^{-6} *5* Mult.: from internal conversion and γ(θ) data in ε decay (60 min).
		1719.63 *20*	100 *6*	784.433	2$^+$			
2505.80	3$^-$	1089.41 *3*	100.0 *22*	1416.378	4$^+$	E1	0.000969 *14*	α(K)=0.000832 *12*; α(L)=0.0001082 *15*; α(M)=2.323×10^{-5} *33* α(N)=5.33×10^{-6} *7*; α(O)=8.27×10^{-7} *12*; α(P)=5.60×10^{-8} *8* Mult.: from internal conversion and γ(θ) data in ε decay (60 min).
		1722.5 *3*	15 *4*	784.433	2$^+$			
2522.04	4$^+$	1105.65 *11*	100 *5*	1416.378	4$^+$	M1+E2	0.0029 *7*	α(K)=0.0025 *6*; α(L)=0.00034 *7*; α(M)=7.4×10^{-5} *16* α(N)=1.7×10^{-5} *4*; α(O)=2.6×10^{-6} *6*; α(P)=1.8×10^{-7} *5*; α(IPF)=3.89×10^{-7} *22* Mult.,δ: ΔJ=0 γ. δ is −0.18 *20* or +1.5 *+10−6* from γ(θ) of oriented nuclei in ε decay (60 min).
		1248.2 *8*	33 *8*	1273.492	3$^-$			
		1737.9 *6*	27 *5*	784.433	2$^+$			
2563.81	7$^-$	481.65 *10*	100	2082.11	5$^-$	E2	0.01541 *22*	B(E2)(W.u.)=13.0 *+25−19* α(K)=0.01249 *17*; α(L)=0.002278 *32*; α(M)=0.000506 *7* α(N)=0.0001152 *16*; α(O)=1.699×10^{-5} *24*; α(P)=8.34×10^{-7} *12*
		752.8 *2*	68	1810.98	6$^+$	E1	1.97×10^{-3} *3*	B(E1)(W.u.)=1.07×10^{-5} *+21−19* α(K)=0.001687 *24*; α(L)=0.0002230 *31*; α(M)=4.80×10^{-5} *7* α(N)=1.100×10^{-5} *15*; α(O)=1.699×10^{-6} *24*; α(P)=1.127×10^{-7} *16* I_γ: from (HI,xnγ).
2566.82	6$^-$	484.8 *2*		2082.11	5$^-$	M1	0.0274 *4*	α(K)=0.02324 *33*; α(L)=0.00323 *5*; α(M)=0.000699 *10* α(N)=0.0001610 *23*; α(O)=2.505×10^{-5} *35*; α(P)=1.702×10^{-6} *24*
		653.6 *5*		1912.97	4$^-$	E2	0.00712 *10*	α(K)=0.00590 *8*; α(L)=0.000954 *13*; α(M)=0.0002097 *30* α(N)=4.79×10^{-5} *7*; α(O)=7.20×10^{-6} *10*; α(P)=4.03×10^{-7} *6*
		755.6 *4*		1810.98	6$^+$			
2614.59	2$^+$	1342.2 *6*	9 *4*	1273.492	3$^-$			
		1830.14 *4*	100 *6*	784.433	2$^+$	M1+E2	0.00120 *15*	α(K)=0.00084 *12*; α(L)=0.000112 *16*; α(M)=2.41×10^{-5} *33* α(N)=5.5×10^{-6} *8*; α(O)=8.6×10^{-7} *12*; α(P)=5.9×10^{-8} *9*; α(IPF)=0.000223 *15* Mult.,δ: ΔJ=0 γ. δ is +2.5 *+14−8* or −0.03 *5* from γ(θ) of oriented nuclei in ε decay (60 min).

$^{148}_{64}Gd_{84}$-12

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
2614.59	2+	2614.3 *6*	38 *3*	0.0	0+				
2632.65	5−	820.3 *4*		1810.98	6+	E1(+M2)	≤0.34	0.0026 *9*	α(K)=0.0022 *8*; α(L)=3.0×10^{-4} *12*; α(M)=6.6×10^{-5} *26* α(N)=1.5×10^{-5} *6*; α(O)=2.3×10^{-6} *9*; α(P)=1.6×10^{-7} *6*
		1215.2 *4*		1416.378	4+	E1(+M2)	≤0.37	0.0012 *4*	α(K)=9.9×10^{-4} *31*; α(L)=1.3×10^{-4} *4*; α(M)=2.9×10^{-5} *10* α(N)=6.6×10^{-6} *22*; α(O)=1.02×10^{-6} *35*; α(P)=7.0×10^{-8} *24*; α(IPF)=2.95×10^{-5} *18*
		1357.8 *4*		1273.492	3−				
		1848.36 *8*		784.433	2+				
2693.35	8+	129.5 *2*	3.4	2563.81	7−	E1		0.1454 *21*	B(E1)(W.u.)=2.8×10^{-4} *+10−7* α(K)=0.1225 *18*; α(L)=0.01796 *26*; α(M)=0.00389 *6* α(N)=0.000882 *13*; α(O)=0.0001305 *19*; α(P)=7.10×10^{-6} *10*
		882.41 *8*	100	1810.98	6+	E2		0.00359 *5*	B(E2)(W.u.)=1.65 *+44−29* α(K)=0.00302 *4*; α(L)=0.000449 *6*; α(M)=9.79×10^{-5} *14* α(N)=2.242×10^{-5} *31*; α(O)=3.42×10^{-6} *5*; α(P)=2.087×10^{-7} *29*
2694.67	9−	130.8 *3*	100.0[&] *16*	2563.81	7−	E2		0.956 *15*	B(E2)(W.u.)=7.31 *17* α(K)=0.550 *9*; α(L)=0.314 *5*; α(M)=0.0735 *13* α(N)=0.01644 *28*; α(O)=0.00219 *4*; α(P)=2.86×10^{-5} *4* I_γ: other: I(130.8γ)/I(883.6γ)=0.67 *8* from comparison of measured $T_{1/2}$ and presented B(E3)(W.u.)(883.6γ) (1984Lu09).
		883.6 *3*	66.0[&] *16*	1810.98	6+	E3		0.00802 *11*	B(E3)(W.u.)=33.7 *10* α(K)=0.00650 *9*; α(L)=0.001186 *17*; α(M)=0.000264 *4* α(N)=6.04×10^{-5} *8*; α(O)=9.02×10^{-6} *13*; α(P)=4.76×10^{-7} *7* Additional information 13. Mult.: from γ(θ) and RUL.
2700.06	(1−,2+)	1426.49 *8*	43 *3*	1273.492	3−				
		1915.54 *19*	63 *4*	784.433	2+	M1+E2	+0.8 *6*	0.00119 *10*	α(K)=0.00078 *7*; α(L)=0.000104 *9*; α(M)=2.25×10^{-5} *20* α(N)=5.2×10^{-6} *5*; α(O)=8.1×10^{-7} *7*; α(P)=5.6×10^{-8} *6*; α(IPF)=0.000269 *13* δ: from γ(θ) in ε decay (60 min).
		2700.57 *20*	100 *4*	0.0	0+				
2782.60		971.7 *3*	68	1810.98	6+				
		1366.4 *3*	100	1416.378	4+				
2868.74	(7)+	1057.7 *3*	100	1810.98	6+	M1,E2		0.0032 *8*	α(K)=0.0027 *7*; α(L)=0.00038 *8*; α(M)=8.2×10^{-5} *18* α(N)=1.9×10^{-5} *4*; α(O)=2.9×10^{-6} *7*; α(P)=1.9×10^{-7} *5*
2872.89	(2−,3,4+)	960.09[e] *7*	100 *9*	1912.97	4−				α(K)=0.0034 *9*; α(L)=0.00048 *11*; α(M)=0.000103 *23* α(N)=2.4×10^{-5} *5*; α(O)=3.7×10^{-6} *9*; α(P)=2.4×10^{-7} *7*

$^{148}_{64}Gd_{84}$-13

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
2872.89	(2$^-$,3,4$^+$)	1599.39 *6*	100 *3*	1273.492	3$^-$				
		2089 *1*	41 *6*	784.433	2$^+$				
2886.31	(2$^+$,3,4$^+$)	382.0 *8*	24 *12*	2503.70	(1,2,3)$^-$				
		1470.1 *8*	20 *8*	1416.378	4$^+$				
		2101.87 *10*	100 *8*	784.433	2$^+$				
2915.50	3$^-$	1002.48 *9*	27.7 *17*	1912.97	4$^-$	M1,E2		0.0036 *9*	α(K)=0.0031 *8*; α(L)=0.00043 *10*; α(M)=9.3×10^{-5} *20* α(N)=2.1×10^{-5} *5*; α(O)=3.3×10^{-6} *8*; α(P)=2.2×10^{-7} *6*
		1641.98 *21*	37 *5*	1273.492	3$^-$				
		2131.14 *11*	100 *3*	784.433	2$^+$	E1+M2	−0.19 *7*	1.01×10^{-3} *3*	α(K)=0.000310 *35*; α(L)=4.0×10^{-5} *5*; α(M)=8.6×10^{-6} *10* α(N)=1.97×10^{-6} *24*; α(O)=3.1×10^{-7} *4*; α(P)=2.12×10^{-8} *26*; α(IPF)=0.000650 *16*
2934.9	(9)$^+$	241.5 *5*	100	2693.35	8$^+$	M1		0.1711 *26*	α(K)=0.1449 *22*; α(L)=0.02059 *31*; α(M)=0.00447 *7* α(N)=0.001028 *16*; α(O)=0.0001597 *24*; α(P)=1.073×10^{-5} *16*
2936.61	7$^-$	1125.6 *3*	100	1810.98	6$^+$	E1(+M2)	≤0.14	0.00099 *7*	B(E1)(W.u.)=4×10^{-5} *+10−2* α(K)=0.00084 *6*; α(L)=0.000111 *9*; α(M)=2.38×10^{-5} *19* α(N)=5.5×10^{-6} *4*; α(O)=8.5×10^{-7} *7*; α(P)=5.7×10^{-8} *5*; α(IPF)=4.33×10^{-6} *8*
3029.59	8$^-$	334.9 *2*	63	2694.67	9$^-$	M1		0.0714 *10*	B(M1)(W.u.)=0.0042 *+15−10* α(K)=0.0606 *9*; α(L)=0.00852 *12*; α(M)=0.001847 *26* α(N)=0.000425 *6*; α(O)=6.61×10^{-5} *9*; α(P)=4.46×10^{-6} *6*
		465.8 *2*	100	2563.81	7$^-$	M1		0.0303 *4*	B(M1)(W.u.)=0.0025 *+9−5* α(K)=0.0257 *4*; α(L)=0.00358 *5*; α(M)=0.000776 *11* α(N)=0.0001786 *25*; α(O)=2.78×10^{-5} *4*; α(P)=1.886×10^{-6} *26*
3045.7		1234.7 *3*	100	1810.98	6$^+$				
3065		1230[e]	100	1834.59	2$^+$,3$^+$				
3076.12		1802.62 *24*	100	1273.492	3$^-$				
3089.70	(1$^-$,2$^+$)	1007.72 *9*	100 *9*	2082.11	5$^-$				
		1816.06 *9*	69 *4*	1273.492	3$^-$				
		3090.5 *15*	25 *8*	0.0	0$^+$				
3128.8		1317.8 *3*	100	1810.98	6$^+$				
3130.87	(1,2$^+$)	2345.1 *8*	63 *9*	784.433	2$^+$				
		3130.89 *16*	100 *7*	0.0	0$^+$				

$^{148}_{64}Gd_{84}$-14

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
3152.48	8⁻	122.9 *1*	75	3029.59	8⁻				
		457.9 *3*	100	2694.67	9⁻				
		588.6 *3*	95	2563.81	7⁻	M1		0.01675 *24*	α(K)=0.01424 *20*; α(L)=0.001967 *28*; α(M)=0.000425 *6* α(N)=9.79×10^{-5} *14*; α(O)=1.525×10^{-5} *21*; α(P)=1.039×10^{-6} *15*
3157.0		1346.0 *3*	100	1810.98	6⁺				
3179.7	7⁻	243.1 *5*	100	2936.61	7⁻	M1		0.1681 *25*	α(K)=0.1423 *21*; α(L)=0.02022 *31*; α(M)=0.00439 *7* α(N)=0.001010 *15*; α(O)=0.0001569 *24*; α(P)=1.054×10^{-5} *16* Mult.: ΔJ=0 γ.
3295.03	(1,2⁺)	2510.56 *15*	100 *8*	784.433	2⁺				
		3295.5 *10*	33 *11*	0.0	0⁺				
3310.4	8⁻	280.6 *5*		3029.59	8⁻				
		373.8 *3*		2936.61	7⁻	M1		0.0535 *8*	α(K)=0.0454 *6*; α(L)=0.00637 *9*; α(M)=0.001380 *20* α(N)=0.000318 *4*; α(O)=4.94×10^{-5} *7*; α(P)=3.34×10^{-6} *5*
3357.80		1546.9 *3*	100	1810.98	6⁺				
3367.26	9⁻	57		3310.4	8⁻				E$_\gamma$,I$_\gamma$: measured by 2003Po02 which give I(γ+ce) branching=5.8%.
		214.8 *1*	48	3152.48	8⁻	M1		0.2354 *33*	B(M1)(W.u.)=0.0185 *+39−36* α(K)=0.1992 *28*; α(L)=0.0284 *4*; α(M)=0.00616 *9* α(N)=0.001419 *20*; α(O)=0.0002203 *31*; α(P)=1.478×10^{-5} *21*
		337.7 *3*	57	3029.59	8⁻	M1		0.0699 *10*	B(M1)(W.u.)=0.0057 *+12−11* α(K)=0.0592 *8*; α(L)=0.00833 *12*; α(M)=0.001807 *26* α(N)=0.000416 *6*; α(O)=6.46×10^{-5} *9*; α(P)=4.37×10^{-6} *6*
		430.5 *4*	34	2936.61	7⁻	[E2]		0.02091 *30*	α(K)=0.01677 *24*; α(L)=0.00323 *5*; α(M)=0.000721 *10* α(N)=0.0001638 *23*; α(O)=2.396×10^{-5} *34*; α(P)=1.107×10^{-6} *16* B(E2)(W.u.)=4.9 *+11−10*
		673.9 *3*	100	2693.35	8⁺	E1(+M2)	≤0.41	0.0047 *23*	B(E1)(W.u.)=1.32×10^{-5} *+47−39* α(K)=0.0040 *19*; α(L)=5.7×10^{-4} *29*; α(M)=1.2×10^{-4} *6* α(N)=2.9×10^{-5} *15*; α(O)=4.4×10^{-6} *23*; α(P)=2.9×10^{-7} *15*
		803.4	46	2563.81	7⁻	[E2]		0.00442 *6*	α(K)=0.00370 *5*; α(L)=0.000563 *8*; α(M)=0.0001229 *17* α(N)=2.81×10^{-5} *4*; α(O)=4.27×10^{-6} *6*; α(P)=2.55×10^{-7} *4* B(E2)(W.u.)=0.29 *+7−6*
3478.0	(8⁺)	1667.0 *3*	100	1810.98	6⁺				
3502.1		938.3 *3*	100	2563.81	7⁻				
3574.94	(1⁻,2⁺)	2301.44 *21*	100 *10*	1273.492	3⁻				
		3574.6 *10*	90 *13*	0.0	0⁺				
3645.92	(8⁺)	952.7 *3*	25	2693.35	8⁺				
		1834.8 *3*	100	1810.98	6⁺				
3666.6	10⁻	971.9 *3*	100	2694.67	9⁻	M1		0.00490 *7*	α(K)=0.00417 *6*; α(L)=0.000566 *8*; α(M)=0.0001223 *17* α(N)=2.82×10^{-5} *4*; α(O)=4.39×10^{-6} *6*; α(P)=3.02×10^{-7} *4*
3701.48	11⁻	1006.8 *2*	100	2694.67	9⁻	E2		0.00271 *4*	α(K)=0.002291 *32*; α(L)=0.000331 *5*; α(M)=7.20×10^{-5} *10* α(N)=1.650×10^{-5} *23*; α(O)=2.529×10^{-6} *35*; α(P)=1.587×10^{-7} *22*

$^{148}_{64}Gd_{84}$-15

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
3758.24	10^+	1063.6 *2*	100	2694.67	9^-	E1(+M2)	≤0.18	0.00115 *14*	B(E1)(W.u.)=2.62×10^{-5} *+43−36* α(K)=0.00098 *12*; α(L)=0.000130 *17*; α(M)=2.8×10^{-5} *4* α(N)=6.4×10^{-6} *8*; α(O)=1.00×10^{-6} *13*; α(P)=6.7×10^{-8} *9*
3768.35		1957.2 *3*	100	1810.98	6^+				
3808.34	(8^+)	1113.7 *3*	39	2694.67	9^-				
		1115.0 *3*	50	2693.35	8^+				
		1997.3 *3*	100	1810.98	6^+				
3822.4	10^+	1127.5	100	2694.67	9^-				
		1129.1	29	2693.35	8^+				
3868.66	$(8,9,10^+)$	1174.0 *3*	100	2694.67	9^-				
		1175.4 *3*	28	2693.35	8^+				
3918.22	10^-	551.0 *2*	27	3367.26	9^-				
		765.7 *2*	100	3152.48	8^-	E2		0.00492 *7*	B(E2)(W.u.)=2.6 *+6−4* α(K)=0.00411 *6*; α(L)=0.000634 *9*; α(M)=0.0001387 *19* α(N)=3.17×10^{-5} *4*; α(O)=4.81×10^{-6} *7*; α(P)=2.83×10^{-7} *4*
		888.6 *3*	73	3029.59	8^-				
3980.42	12^+	278.9 *2*	100.0[&] *2*	3701.48	11^-	E1(+M2)	≤0.19	0.028 *9*	B(E1)(W.u.)=1.75×10^{-4} *20* α(K)=0.023 *7*; α(L)=0.0035 *13*; α(M)=7.7×10^{-4} *29* α(N)=1.8×10^{-4} *7*; α(O)=2.7×10^{-5} *10*; α(P)=1.7×10^{-6} *6*
		1285.6 *5*	2.7[&] *2*	2694.67	9^-	E3		0.00331 *5*	B(E3)(W.u.)=69 *+8−7* α(K)=0.00276 *4*; α(L)=0.000429 *6*; α(M)=9.41×10^{-5} *13* α(N)=2.158×10^{-5} *30*; α(O)=3.29×10^{-6} *5*; α(P)=1.996×10^{-7} *28*; α(IPF)=5.48×10^{-6} *8* Additional information 14.
3990.51	$(8,9,10)^+$	1208.2 *3*	87	2782.60					
		1295.5 *3*	17	2694.67	9^-				
		1297.2 *3*	100	2693.35	8^+				
4051.0	$(2^+,3)$	2634.6 *10*	39 *10*	1416.378	4^+				
		2777.5 *10*	≈20	1273.492	3^-				
		3266.4 *10*	100 *61*	784.433	2^+				
4068.22	(2)	2155.33 *25*	100 *16*	1912.97	4^-				
		2794.6 *10*	51 *11*	1273.492	3^-				
		4066.8 *10*	43 *11*	0.0	0^+				
4119.24	$(8)^+$	1089.7 *3*	13.0	3029.59	8^-				
		1250.5 *3*	8.7	2868.74	$(7)^+$				
		1336.6 *3*	13.0	2782.60					
		1424.6 *3*	21.7	2694.67	9^-				
		1425.9 *3*	100	2693.35	8^+				
		1555.4 *3*	19.1	2563.81	7^-				
		2308.2 *3*	23.5	1810.98	6^+				

$^{148}_{64}Gd_{84}$-16

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
4121.47	11^-	420.6 *5*	5.4	3701.48	11^-			
		754.2 *2*	100	3367.26	9^-	E2	0.00509 *7*	B(E2)(W.u.)=10 *+12−5* α(K)=0.00425 *6*; α(L)=0.000658 *9*; α(M)=0.0001441 *20* α(N)=3.30×10^{-5} *5*; α(O)=4.99×10^{-6} *7*; α(P)=2.93×10^{-7} *4*
4170.25	(8,9$^-$)	1475.6 *3*	100	2694.67	9^-			
		1476.9 *3*	80	2693.35	8^+			
		1606.4 *3*	33	2563.81	7^-			
4271.4	(8,9,10$^+$)	1578.0 *3*	100	2693.35	8^+			
4312.01	$(8)^+$	443.4 *3*	4.4	3868.66	(8,9,10$^+$)			
		954.3 *3*	22.2	3357.80				
		1282.3 *3*	23.3	3029.59	8^-			
		1618.7 *3*	100	2693.35	8^+			
		1748.1 *3*	50	2563.81	7^-			
4408.90	$(8)^+$	540.3 *3*	8.9	3868.66	(8,9,10$^+$)			
		640.4 *3*	23.2	3768.35				
		1540.1 *3*	7.1	2868.74	$(7)^+$			
		1714.3 *3*	28.6	2694.67	9^-			
		1715.7 *3*	100	2693.35	8^+			
		1845.0 *3*	37.5	2563.81	7^-			
4429.74	12^-	308.4 *2*	100	4121.47	11^-	M1	0.0888 *13*	B(M1)(W.u.)=0.029 *+33−13* α(K)=0.0753 *11*; α(L)=0.01062 *15*; α(M)=0.002303 *32* α(N)=0.000530 *7*; α(O)=8.24×10^{-5} *12*; α(P)=5.56×10^{-6} *8*
		511.6	88	3918.22	10^-			
		727.9 *5*	20	3701.48	11^-			
4500.33	12^+	519.9 *1*	100	3980.42	12^+	E2	0.01260 *18*	B(E2)(W.u.)=40 *+40−15* α(K)=0.01028 *14*; α(L)=0.001812 *25*; α(M)=0.000401 *6* α(N)=9.15×10^{-5} *13*; α(O)=1.356×10^{-5} *19*; α(P)=6.92×10^{-7} *10* Mult.: ΔJ=0 γ.
		677.9 *3*	17	3822.4	10^+	E2	0.00653 *9*	B(E2)(W.u.)=1.8 *+19−7* α(K)=0.00542 *8*; α(L)=0.000866 *12*; α(M)=0.0001901 *27* α(N)=4.35×10^{-5} *6*; α(O)=6.55×10^{-6} *9*; α(P)=3.71×10^{-7} *5*
		742.1 *1*	76	3758.24	10^+	E2	0.00529 *7*	B(E2)(W.u.)=5.2 *+50−20* α(K)=0.00441 *6*; α(L)=0.000686 *10*; α(M)=0.0001501 *21* α(N)=3.43×10^{-5} *5*; α(O)=5.20×10^{-6} *7*; α(P)=3.03×10^{-7} *4*
		798.9	9	3701.48	11^-	[E1]	1.75×10^{-3} *3*	α(K)=0.001499 *21*; α(L)=0.0001976 *28*; α(M)=4.25×10^{-5} *6* α(N)=9.74×10^{-6} *14*; α(O)=1.506×10^{-6} *21*; α(P)=1.003×10^{-7} *14* B(E1)(W.u.)=5×10^{-6} *+6−2*
4542.27	$2^{(+)}$,3	3125.4 *3*	47 *6*	1416.378	4^+			
		3269.2 *3*	100 *8*	1273.492	3^-			
4551.04	$13^{(-)}$	121.3 *1*	100	4429.74	12^-			

$^{148}_{64}Gd_{84}$-17

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
4551.04	13$^{(-)}$	429.5 *3*	73	4121.47	11$^-$	[E2]	0.02104 *30*	α(K)=0.01687 *24*; α(L)=0.00325 *5*; α(M)=0.000726 *10* α(N)=0.0001650 *23*; α(O)=2.413×10^{-5} *34*; α(P)=1.114×10^{-6} *16* B(E2)(W.u.)=7.8 *+18−15*
		571.0	30	3980.42	12$^+$	[E1]	0.00351 *5*	α(K)=0.00300 *4*; α(L)=0.000402 *6*; α(M)=8.66×10^{-5} *12* α(N)=1.985×10^{-5} *28*; α(O)=3.05×10^{-6} *4*; α(P)=1.987×10^{-7} *28* B(E1)(W.u.)=5.0×10^{-6} *+14−11*
4740.6	13$^{(-)}$	311.0 *4*	100	4429.74	12$^-$	D		
4906.0	14$^{(-)}$	355.0 *2*	100	4551.04	13$^{(-)}$			
5025.83	14$^+$	285.5 *5*	5	4740.6	13$^{(-)}$	[E1]	0.01805 *27*	α(K)=0.01534 *23*; α(L)=0.002129 *31*; α(M)=0.000460 *7* α(N)=0.0001050 *15*; α(O)=1.593×10^{-5} *23*; α(P)=9.72×10^{-7} *14* B(E1)(W.u.)=1.6×10^{-5} *+16−7*
		475.3 *5*	13	4551.04	13$^{(-)}$	D		B(E1)(W.u.)=9×10^{-6} *+9−4*; B(M1)(W.u.)=8×10^{-4} *+8−4*
		525.5 *1*	100	4500.33	12$^+$	E2	0.01225 *17*	B(E2)(W.u.)=10 *+9−4* α(K)=0.01001 *14*; α(L)=0.001756 *25*; α(M)=0.000389 *5* α(N)=8.86×10^{-5} *12*; α(O)=1.315×10^{-5} *18*; α(P)=6.74×10^{-7} *9*
		1045.3 *3*	7	3980.42	12$^+$	[E2]	2.51×10^{-3} *4*	α(K)=0.002122 *30*; α(L)=0.000305 *4*; α(M)=6.61×10^{-5} *9* α(N)=1.517×10^{-5} *21*; α(O)=2.326×10^{-6} *33*; α(P)=1.470×10^{-7} *21* B(E2)(W.u.)=0.022 *+21−9*
5117.51	15$^{(-)}$	211.5 *2*	78	4906.0	14$^{(-)}$	D		B(E1)(W.u.)=7×10^{-4} *+6−3*; B(M1)(W.u.)=0.06 *+5−2*
		566.4 *2*	100	4551.04	13$^{(-)}$	E2	0.01012 *14*	B(E2)(W.u.)=7 *+6−3* α(K)=0.00831 *12*; α(L)=0.001415 *20*; α(M)=0.000312 *4* α(N)=7.13×10^{-5} *10*; α(O)=1.063×10^{-5} *15*; α(P)=5.63×10^{-7} *8*
5167.8		1187.4 *3*	100	3980.42	12$^+$			
5355.57	16$^{(+)}$	238.0 *2*	13	5117.51	15$^{(-)}$	D		B(E1)(W.u.)=1.08×10^{-5} *+26−23*; B(M1)(W.u.)=9.8×10^{-4} *+24−21*
		329.8 *2*	100	5025.83	14$^+$	[E2]	0.0452 *6*	α(K)=0.0351 *5*; α(L)=0.00787 *11*; α(M)=0.001777 *25* α(N)=0.000402 *6*; α(O)=5.76×10^{-5} *8*; α(P)=2.228×10^{-6} *31* B(E2)(W.u.)=14.4 *+24−18*
5438.6	16	321.1 *3*	100	5117.51	15$^{(-)}$			
		532.1	16	4906.0	14$^{(-)}$			
5578.6		410.8	100	5167.8				
5800.3		221.8	100	5578.6				
5832.7	18$^{(+)}$	477.1 *1*	100	5355.57	16$^{(+)}$	E2	0.01580 *22*	α(K)=0.01280 *18*; α(L)=0.002344 *33*; α(M)=0.000521 *7* α(N)=0.0001186 *17*; α(O)=1.748×10^{-5} *24*; α(P)=8.54×10^{-7} *12*
5882.8		444.3	100	5438.6	16			
5933.7	17$^{(-)}$	133.4	≈15	5800.3				
		495.1 *6*	100	5438.6	16	D		
		578.3	39	5355.57	16$^{(+)}$			
		816.0	36	5117.51	15$^{(-)}$			

$^{148}_{64}Gd_{84}$-18

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ @	E_f	J_f^π	Mult. #	α †	Comments
6210.9	$17^{(-)}$	378.4	25	5832.7	$18^{(+)}$	D		
		855.3 *3*	100	5355.57	$16^{(+)}$			
6268.4		435.6	100	5832.7	$18^{(+)}$			
6381.4	(18)	447.7	100	5933.7	$17^{(-)}$			
		498.7	43	5882.8				
		548.8	36	5832.7	$18^{(+)}$			
6545.6	$18^{(-)}$	334.7 *3*	100	6210.9	$17^{(-)}$	D		
		612.1	9	5933.7	$17^{(-)}$			
6574.9	$19^{(+)}$	193.4	62	6381.4	(18)	D		
		306.3	27	6268.4				
		742.1	100	5832.7	$18^{(+)}$			
6640.8	$19^{(-)}$	808.1 *2*	100	5832.7	$18^{(+)}$	D		
6834.5	$20^{(-)}$	193.7 *2*	63	6640.8	$19^{(-)}$			
		259.4	13	6574.9	$19^{(+)}$	[E1]	0.02304 *32*	α(K)=0.01956 *27*; α(L)=0.00273 *4*; α(M)=0.000590 *8* α(N)=0.0001346 *19*; α(O)=2.038×10^{-5} *29*; α(P)=1.230×10^{-6} *17* B(E1)(W.u.)=5.4×10^{-7} *+18−13*
		288.9 *2*	41	6545.6	$18^{(-)}$	E2	0.0677 *10*	B(E2)(W.u.)=0.75 *+23−17* α(K)=0.0514 *7*; α(L)=0.01266 *18*; α(M)=0.00287 *4* α(N)=0.000649 *9*; α(O)=9.19×10^{-5} *13*; α(P)=3.19×10^{-6} *5*
		1001.9 *3*	100	5832.7	$18^{(+)}$	[M2]	0.01137 *16*	α(K)=0.00959 *13*; α(L)=0.001394 *20*; α(M)=0.000304 *4* α(N)=7.00×10^{-5} *10*; α(O)=1.087×10^{-5} *15*; α(P)=7.31×10^{-7} *10* B(M2)(W.u.)=0.33 *+9−6*
7051.3	(19)	670.0	100	6381.4	(18)	D		
		1218.6	55	5832.7	$18^{(+)}$			
7110.3	$20^{(+)}$	1277.5	100	5832.7	$18^{(+)}$	Q		
7155.7	$21^{(-)}$	321.1 *3*	100	6834.5	$20^{(-)}$	D		
		515.7	8	6640.8	$19^{(-)}$	E2	0.01287 *18*	α(K)=0.01049 *15*; α(L)=0.001856 *26*; α(M)=0.000411 *6* α(N)=9.37×10^{-5} *13*; α(O)=1.389×10^{-5} *19*; α(P)=7.05×10^{-7} *10*
7274.2	$20^{(+)}$	223.0	14	7051.3	(19)			
		699.3	100	6574.9	$19^{(+)}$	D		
7333.6		758.7	100	6574.9	$19^{(+)}$			
7530.8	$21^{(+)}$	197.2	28	7333.6				
		256.7	100	7274.2	$20^{(+)}$	D		
		420.4	7	7110.3	$20^{(+)}$			
		479.4	9	7051.3	(19)			
7790.8	$22^{(+)}$	260.0	100	7530.8	$21^{(+)}$	D		
		680.5	9	7110.3	$20^{(+)}$	E2	0.00647 *9*	α(K)=0.00537 *8*; α(L)=0.000857 *12*; α(M)=0.0001882 *26* α(N)=4.30×10^{-5} *6*; α(O)=6.48×10^{-6} *9*; α(P)=3.68×10^{-7} *5*
8004.9	$22^{(-)}$	849.2	7	7155.7	$21^{(-)}$			

$^{148}_{64}Gd_{84}$-19

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
8004.9	$22^{(-)}$	1170.5	100	6834.5	$20^{(-)}$	E2	2.00×10^{-3} *3*	α(K)=0.001690 *24*; α(L)=0.0002379 *33*; α(M)=5.15×10^{-5} *7* α(N)=1.183×10^{-5} *17*; α(O)=1.820×10^{-6} *25*; α(P)=1.172×10^{-7} *16*; α(IPF)=2.88×10^{-6} *4*
8242.9	$22^{(-)}$	1408.4	100	6834.5	$20^{(-)}$	E2	1.43×10^{-3} *2*	α(K)=0.001178 *16*; α(L)=0.0001616 *23*; α(M)=3.49×10^{-5} *5* α(N)=8.02×10^{-6} *11*; α(O)=1.239×10^{-6} *17*; α(P)=8.17×10^{-8} *11*; α(IPF)=4.57×10^{-5} *6*
8304.5	$23^{(-)}$	1148.8	100	7155.7	$21^{(-)}$	E2	2.07×10^{-3} *3*	α(K)=0.001754 *25*; α(L)=0.0002476 *35*; α(M)=5.37×10^{-5} *8* α(N)=1.232×10^{-5} *17*; α(O)=1.895×10^{-6} *27*; α(P)=1.216×10^{-7} *17*; α(IPF)=1.599×10^{-6} *22*
8309.1	$23^{(+)}$	518.2	100	7790.8	$22^{(+)}$	D		
8364.0	$23^{(-)}$	573.5	5	7790.8	$22^{(+)}$			
		1208.2	100	7155.7	$21^{(-)}$	E2	1.88×10^{-3} *3*	α(K)=0.001587 *22*; α(L)=0.0002223 *31*; α(M)=4.81×10^{-5} *7* α(N)=1.105×10^{-5} *15*; α(O)=1.702×10^{-6} *24*; α(P)=1.101×10^{-7} *15*; α(IPF)=6.42×10^{-6} *9*
8455.5	$23^{(-)}$	151.1	21	8304.5	$23^{(-)}$			
		212.7	32	8242.9	$22^{(-)}$			
		450.6	73	8004.9	$22^{(-)}$			
		664.6	100	7790.8	$22^{(+)}$	D		
8609.1	23	818.2	100	7790.8	$22^{(+)}$	D		
8639.1	$24^{(-)}$	183.6	100	8455.5	$23^{(-)}$	D		
		330	31	8309.1	$23^{(+)}$			
		634.3	76	8004.9	$22^{(-)}$			
8832.1	24	222.9	45	8609.1	23			
		376.7	17	8455.5	$23^{(-)}$	D		
		468.2	12	8364.0	$23^{(-)}$			
		522.8	100	8309.1	$23^{(+)}$	D		
8987.1	$25^{(-)}$	155.0	65	8832.1	24			
		348.0	79	8639.1	$24^{(-)}$			
		623.0	100	8364.0	$23^{(-)}$	E2	0.00799 *11*	α(K)=0.00660 *9*; α(L)=0.001086 *15*; α(M)=0.0002390 *33* α(N)=5.46×10^{-5} *8*; α(O)=8.18×10^{-6} *11*; α(P)=4.50×10^{-7} *6*
9243.7	$25^{(-)}$	604.5	100	8639.1	$24^{(-)}$	D		
9258.8		619.6	100	8639.1	$24^{(-)}$			
		895	84	8364.0	$23^{(-)}$			
9652.7	$26^{(-)}$	665.7	100	8987.1	$25^{(-)}$			
9757.6	26	513.9	54	9243.7	$25^{(-)}$	D		
		770.7	100	8987.1	$25^{(-)}$	D		
9934.3		1102.2	100	8832.1	24			
9957.3	$26^{(-)}$	713.7	100	9243.7	$25^{(-)}$			

$^{148}_{64}Gd_{84}$-20

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
10046.5	$25^{(-)}$	787.9	24	9258.8				
		1682.4	100	8364.0	$23^{(-)}$			
		1741.8	8	8304.5	$23^{(-)}$			
10063.0	27	305.3	100	9757.6	26	D		
10317.9	$27^{(-)}$	271.5	100	10046.5	$25^{(-)}$	E2	0.0822 *12*	α(K)=0.0618 *9*; α(L)=0.01592 *22*; α(M)=0.00362 *5* α(N)=0.000818 *11*; α(O)=0.0001152 *16*; α(P)=3.79×10^{-6} *5*
		360.6	13	9957.3	$26^{(-)}$	D		
		560.5	10	9757.6	26			
		665	12	9652.7	$26^{(-)}$			
		1330.6	8	8987.1	$25^{(-)}$			
10474.3	(27)	716.6	100	9757.6	26			
10694.0	$27^{(-)}$	1041.5	100	9652.7	$26^{(-)}$			
10760.1	(28)	697	100	10063.0	27			
10869.8	(28)	807	100	10063.0	27			
11158.4	28	464.5	12	10694.0	$27^{(-)}$			
		684.1	19	10474.3	(27)			
		840.4	100	10317.9	$27^{(-)}$	D		
11185.7	29	1122.6	100	10063.0	27	E2	2.17×10^{-3} *3*	α(K)=0.001837 *26*; α(L)=0.000260 *4*; α(M)=5.65×10^{-5} *8* α(N)=1.295×10^{-5} *18*; α(O)=1.991×10^{-6} *28*; α(P)=1.273×10^{-7} *18*; α(IPF)=6.88×10^{-7} *10*
11456.9	29	271.1	22	11185.7	29			
		298.5	100	11158.4	28	D		
11477.9	$29^{(-)}$	1160.0	100	10317.9	$27^{(-)}$	E2	2.03×10^{-3} *3*	α(K)=0.001720 *24*; α(L)=0.0002425 *34*; α(M)=5.26×10^{-5} *7* α(N)=1.206×10^{-5} *17*; α(O)=1.856×10^{-6} *26*; α(P)=1.193×10^{-7} *17*; α(IPF)=2.192×10^{-6} *31*
11545.9	$29^{(-)}$	851.9	76	10694.0	$27^{(-)}$			
		1227.9	100	10317.9	$27^{(-)}$	E2	1.82×10^{-3} *3*	α(K)=0.001537 *22*; α(L)=0.0002148 *30*; α(M)=4.65×10^{-5} *7* α(N)=1.068×10^{-5} *15*; α(O)=1.645×10^{-6} *23*; α(P)=1.066×10^{-7} *15*; α(IPF)=8.84×10^{-6} *12*
11587.0	(30)	130.1	100	11456.9	29			
11727.6	30	541.9	78	11185.7	29	D		
		858.0	74	10869.8	(28)			
		967.4	100	10760.1	(28)	E2	0.00295 *4*	α(K)=0.002489 *35*; α(L)=0.000363 *5*; α(M)=7.89×10^{-5} *11* α(N)=1.808×10^{-5} *25*; α(O)=2.77×10^{-6} *4*; α(P)=1.722×10^{-7} *24*
12012.8		555.9	100	11456.9	29			
12064.1	30	878.4	100	11185.7	29	D		
12138.6	$31^{(-)}$	74.5		12064.1	30			
		411.0	39	11727.6	30	D		
		551.8	14	11587.0	(30)			

$^{148}_{64}Gd_{84}$-21

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
12138.6	$31^{(-)}$	592.7	100	11545.9	$29^{(-)}$	E2	0.00903 *13*	α(K)=0.00744 *10*; α(L)=0.001245 *17*; α(M)=0.000275 *4* α(N)=6.27×10^{-5} *9*; α(O)=9.37×10^{-6} *13*; α(P)=5.06×10^{-7} *7*
		660.7	48	11477.9	$29^{(-)}$	E2	0.00694 *10*	α(K)=0.00575 *8*; α(L)=0.000927 *13*; α(M)=0.0002036 *29* α(N)=4.65×10^{-5} *7*; α(O)=7.00×10^{-6} *10*; α(P)=3.93×10^{-7} *6*
12284.9	30	828.0	42	11456.9	29	D		
		1126.5	100	11158.4	28			
12381.9	31	925.0	100	11456.9	29	E2	0.00325 *5*	α(K)=0.00273 *4*; α(L)=0.000402 *6*; α(M)=8.75×10^{-5} *12* α(N)=2.006×10^{-5} *28*; α(O)=3.06×10^{-6} *4*; α(P)=1.890×10^{-7} *26*
12529.5	32	244.5	10	12284.9	30			
		390.9	100	12138.6	$31^{(-)}$	D		
		942.6	19	11587.0	(30)			
12683.2		1096.0	100	11587.0	(30)			
13039.1	33	355.8	6	12683.2				
		509.7	100	12529.5	32	D		
		657.2	27	12381.9	31			
13125.9	$33^{(-)}$	987.3	100	12138.6	$31^{(-)}$	E2	0.00283 *4*	α(K)=0.002386 *33*; α(L)=0.000346 *5*; α(M)=7.53×10^{-5} *11* α(N)=1.726×10^{-5} *24*; α(O)=2.64×10^{-6} *4*; α(P)=1.652×10^{-7} *23*
13147.7	(32)	464.2	40	12683.2				
		765.8	100	12381.9	31			
		1009.3	60	12138.6	$31^{(-)}$			
13244.0		561.0	100	12683.2				
13354.3?		824.8	100	12529.5	32			
13555.0	(33)	1025.6	100	12529.5	32			
13736.0	34	181.0	8	13555.0	(33)	D		
		492.1	5	13244.0				
		588.3	20	13147.7	(32)			
		696.7	100	13039.1	33	D		
13869.9	35	134.0	100	13736.0	34	D		B(E1)(W.u.)=5.6×10^{-5} *+15−9*; B(M1)(W.u.)=0.0051 *+14−9*
		1340.3	19	12529.5	32	[E3]	0.00302 *4*	α(K)=0.002518 *35*; α(L)=0.000387 *5*; α(M)=8.48×10^{-5} *12* α(N)=1.945×10^{-5} *27*; α(O)=2.97×10^{-6} *4*; α(P)=1.820×10^{-7} *25*; α(IPF)=9.75×10^{-6} *14* B(E3)(W.u.)=12.8 *+39−30*
13888.3	(34)	849.2	100	13039.1	33			
13911.5		41.6	100	13869.9	35			
14011.3	34	972.2	100	13039.1	33	D		
14145.8	35	1106.7	100	13039.1	33	E2	2.23×10^{-3} *3*	α(K)=0.001890 *26*; α(L)=0.000269 *4*; α(M)=5.83×10^{-5} *8* α(N)=1.336×10^{-5} *19*; α(O)=2.053×10^{-6} *29*; α(P)=1.310×10^{-7} *18*; α(IPF)=3.83×10^{-7} *5*
14206.6	36	295.1	14	13911.5				

$^{148}_{64}Gd_{84}$-22

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
14206.6	36	336.7	100	13869.9	35	D		
14924.4	36	778.6	100	14145.8	35	(D+Q)		
		1036.1	27	13888.3	(34)			
15165.7?	38	959.1	100	14206.6	36	E2	0.00301 *4*	α(K)=0.002534 *35*; α(L)=0.000370 *5*; α(M)=8.05×10^{-5} *11* α(N)=1.844×10^{-5} *26*; α(O)=2.82×10^{-6} *4*; α(P)=1.753×10^{-7} *25*
15727.8		803.4	100	14924.4	36			
16077.6		349.8	100	15727.8				
16112.1	(38)	1187.7	100	14924.4	36	(E2)	1.94×10^{-3} *3*	α(K)=0.001642 *23*; α(L)=0.0002306 *32*; α(M)=4.99×10^{-5} *7* α(N)=1.146×10^{-5} *16*; α(O)=1.765×10^{-6} *25*; α(P)=1.138×10^{-7} *16*; α(IPF)=4.29×10^{-6} *6*
16204.2?		1038.5	100	15165.7?	38			
16257.4?		1091.7	100	15165.7?	38			
16406.8	(40)	294.7	100	16112.1	(38)	(E2)	0.0637 *9*	α(K)=0.0485 *7*; α(L)=0.01177 *16*; α(M)=0.00267 *4* α(N)=0.000603 *8*; α(O)=8.56×10^{-5} *12*; α(P)=3.02×10^{-6} *4*
16473.7	(39)	1308.0	100	15165.7?	38	(D)		
17241.0?		834.2	100	16406.8	(40)			
17320.2?		846.5	100	16473.7	(39)			
17370.8	(42)	964.0	100	16406.8	(40)	(E2)	0.00297 *4*	α(K)=0.002507 *35*; α(L)=0.000366 *5*; α(M)=7.95×10^{-5} *11* α(N)=1.823×10^{-5} *26*; α(O)=2.79×10^{-6} *4*; α(P)=1.735×10^{-7} *24*
18482	(44)	1110.9	100	17370.8	(42)			
19149?	(46)	667[e]	100	18482	(44)			
699.90+x	J+2	699.9 *1*	0.54[a] *15*	x	J≈(29)			
1447.80+x	J+4	747.9 *1*	0.87[a] *9*	699.90+x	J+2			
2243.61+x	J+6	795.8 *1*	0.99[a] *8*	1447.80+x	J+4			
3090.31+x	J+8	846.7 *1*	0.97[a] *8*	2243.61+x	J+6			
3988.21+x	J+10	897.9 *1*	1.00[a] *8*	3090.31+x	J+8			
4938.51+x	J+12	950.3 *1*	0.97[a] *8*	3988.21+x	J+10			
5942.4+x	J+14	1003.9 *1*	1.00[a] *10*	4938.51+x	J+12			
7001.1+x	J+16	1058.7 *1*	0.98[a] *9*	5942.4+x	J+14			
8115.3+x	J+18	1114.2 *1*	0.99[a] *10*	7001.1+x	J+16			
9285.9+x	J+20	1170.6 *1*	1.00[a] *15*	8115.3+x	J+18			
10513.7+x	J+22	1227.8 *1*	0.84[a] *7*	9285.9+x	J+20			
11799.3+x	J+24	1285.6 *1*	0.71[a] *8*	10513.7+x	J+22			
13143.4+x	J+26	1344.0 *2*	0.66[a] *7*	11799.3+x	J+24			
14545.9+x	J+28	1402.5 *2*	0.55[a] *6*	13143.4+x	J+26			
16007.3+x	J+30	1461.4 *2*	0.48[a] *7*	14545.9+x	J+28			
17527.8+x	J+32	1520.5 *3*	0.34[a] *5*	16007.3+x	J+30			
19108.3+x	J+34	1580.5 *6*	0.19[a] *3*	17527.8+x	J+32			

$^{148}_{64}Gd_{84}$-23

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π
20748.3+x	J+36	1640.0 *10*	0.15[a] *5*	19108.3+x	J+34
22448.6+x	J+38	1700.3 *6*	0.07[a] *3*	20748.3+x	J+36
741.8+y	J1+2	741.8[b] *3*		y	J1≈(30)
1530.7+y	J1+4	788.9 *2*	0.46[a] *10*	741.8+y	J1+2
2369.5+y	J1+6	838.8 *2*	0.88[a] *9*	1530.7+y	J1+4
3258.6+y	J1+8	889.1 *2*	0.89[a] *9*	2369.5+y	J1+6
4198.4+y	J1+10	939.8 *2*	0.93[a] *15*	3258.6+y	J1+8
5188.8+y	J1+12	990.4 *3*	1.00[a] *11*	4198.4+y	J1+10
6228.5+y	J1+14	1039.7 *2*	0.95[a] *20*	5188.8+y	J1+12
7316.3+y	J1+16	1087.8 *2*	1.03[a] *15*	6228.5+y	J1+14
8451.5+y	J1+18	1135.2 *2*	0.94[a] *10*	7316.3+y	J1+16
9634.2+y	J1+20	1182.7 *2*	0.82[a] *8*	8451.5+y	J1+18
10865.4+y	J1+22	1231.2 *2*	0.79[a] *8*	9634.2+y	J1+20
12146.3+y	J1+24	1280.9 *2*	0.77[a] *8*	10865.4+y	J1+22
13478.6+y	J1+26	1332.2 *2*	0.62[a] *7*	12146.3+y	J1+24
14861.9+y	J1+28	1383.3 *3*	0.56[a] *6*	13478.6+y	J1+26
16299.4+y	J1+30	1437.5 *5*	0.44[a] *5*	14861.9+y	J1+28
17790.5+y	J1+32	1491.1 *8*	0.27[a] *4*	16299.4+y	J1+30
19336.7+y	J1+34	1546.2 *10*	0.23[a] *4*	17790.5+y	J1+32
830.3+z	J2+2	830.3[c] *6*	0.23[ac] *5*	z	J2
1706.0+z	J2+4	875.7 *3*	0.42[a] *6*	830.3+z	J2+2
2631.0+z	J2+6	925.0 *2*	0.43[a] *7*	1706.0+z	J2+4
3606.7+z	J2+8	975.7 *3*	0.62[a] *7*	2631.0+z	J2+6
4634.2+z	J2+10	1027.5 *2*	0.63[a] *8*	3606.7+z	J2+8
5713.8+z	J2+12	1079.6 *3*	0.95[a] *11*	4634.2+z	J2+10
6846.5+z	J2+14	1132.7 *2*	1.00[a] *12*	5713.8+z	J2+12
8032.4+z	J2+16	1185.9 *3*	0.93[a] *30*	6846.5+z	J2+14
9271.7+z	J2+18	1239.3 *3*	0.72[a] *15*	8032.4+z	J2+16
10564.6+z	J2+20	1292.9 *3*	0.95[a] *20*	9271.7+z	J2+18
11909.1+z	J2+22	1344.5 *3*	0.71[a] *18*	10564.6+z	J2+20
13304.4+z	J2+24	1395.2 *4*	0.64[a] *15*	11909.1+z	J2+22
14739.6+z	J2+26	1435.2 *5*	0.46[a] *8*	13304.4+z	J2+24
16182.2+z	J2+28	1442.6 *10*	0.40[a] *12*	14739.6+z	J2+26
17629.9+z	J2+30	1447.7 *6*	0.18[a] *9*	16182.2+z	J2+28
19101.9+z	J2+32	1472.0 *10*	0.22[a] *8*	17629.9+z	J2+30
849.7+u	J3+2	849.7[b] *3*		u	J3
1739.7+u	J3+4	890.0 *2*	0.62[a] *15*	849.7+u	J3+2
2678.4+u	J3+6	938.7 *2*	0.60[a] *12*	1739.7+u	J3+4
3666.8+u	J3+8	988.4 *3*	0.64[a] *10*	2678.4+u	J3+6
4706.4+u	J3+10	1039.6 *3*	0.68[a] *10*	3666.8+u	J3+8
5797.5+u	J3+12	1091.1 *3*	0.92[a] *15*	4706.4+u	J3+10
6941.7+u	J3+14	1144.2 *3*	1.05[a] *20*	5797.5+u	J3+12
8139.7+u	J3+16	1198.0 *3*	1.00[a] *15*	6941.7+u	J3+14
9392.5+u	J3+18	1252.8 *3*	1.02[a] *13*	8139.7+u	J3+16
10700.6+u	J3+20	1308.1 *3*	0.88[a] *15*	9392.5+u	J3+18
12065.0+u	J3+22	1364.4 *3*	0.90[a] *18*	10700.6+u	J3+20
13486.4+u	J3+24	1421.3 *4*	0.82[a] *10*	12065.0+u	J3+22
14964.9+u	J3+26	1478.5 *4*	0.57[a] *9*	13486.4+u	J3+24
16501.8+u	J3+28	1536.9 *10*	0.30[a] *10*	14964.9+u	J3+26
853.7+v	J4+2	853.7 *3*	0.45[a] *6*	v	J4
1753.6+v	J4+4	899.9 *2*	0.83[a] *9*	853.7+v	J4+2
2698.5+v	J+6	944.9 *3*	0.85[a] *10*	1753.6+v	J4+4
3689.9+v	J4+8	991.4 *2*	0.86[a] *10*	2698.5+v	J+6
4727.8+v	J4+10	1037.9 *2*	0.85[a] *20*	3689.9+v	J4+8
5812.4+v	J4+12	1084.6 *2*	1.00[a] *15*	4727.8+v	J4+10
6944.3+v	J4+14	1131.9 *2*	1.00[a] *13*	5812.4+v	J4+12
8123.8+v	J4+16	1179.5 *2*	0.90[a] *10*	6944.3+v	J4+14
9350.3+v	J4+18	1226.5 *2*	0.80[a] *10*	8123.8+v	J4+16
10624.1+v	J4+20	1273.8 *2*	0.80[a] *10*	9350.3+v	J4+18
11946.2+v	J4+22	1322.1 *2*	0.52[a] *8*	10624.1+v	J4+20
13315.9+v	J4+24	1369.6 *2*	0.50[a] *10*	11946.2+v	J4+22
14733.0+v	J4+26	1417.1 *3*	0.44[a] *7*	13315.9+v	J4+24
16197.9+v	J4+28	1464.9 *4*	0.31[a] *5*	14733.0+v	J4+26
17711.0+v	J4+30	1513.1 *10*	0.26[a] *4*	16197.9+v	J4+28
19273.0+v	J4+32	1562[c] *1*	0.20[ac] *6*	17711.0+v	J4+30
802.2+w	J5+2	802.2[d] *3*		w	J5
1651.6+w	J5+4	849.44 *22*		802.2+w	J5+2
2549.0+w	J5+6	897.40 *16*	0.91[a] *12*	1651.6+w	J5+4
3494.9+w	J5+8	945.86 *15*	1.00[a] *12*	2549.0+w	J5+6
4491.0+w	J5+10	996.08 *19*	1.00[a] *22*	3494.9+w	J5+8
5537.8+w	J5+12	1046.83 *14*	1.00[a] *10*	4491.0+w	J5+10
6637.2+w	J5+14	1099.39 *16*	0.95[a] *18*	5537.8+w	J5+12
7789.4+w	J5+16	1152.20 *15*	0.97[a] *10*	6637.2+w	J5+14
8996.2+w	J5+18	1206.76 *24*	1.00[a] *15*	7789.4+w	J5+16
10257.2+w	J5+20	1261.00 *16*	1.00[a] *19*	8996.2+w	J5+18
11573.8+w	J5+22	1316.57 *14*	0.96[a] *10*	10257.2+w	J5+20

$^{148}_{64}Gd_{84}$-24

Adopted Levels, Gammas (continued)

γ(^{148}Gd) (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
12945.9+w	J5+24	1372.10 *22*	0.78[a] *9*	11573.8+w	J5+22	4961.4+s	J7+10	1103.2 *10*	3858.2+s	J7+8
14374.4+w	J5+26	1428.55 *24*	0.77[a] *10*	12945.9+w	J5+24	6120.6+s	J7+12	1159.2 *3*	4961.4+s	J7+10
15859.6+w	J5+28	1485.15 *26*	0.70[a] *15*	14374.4+w	J5+26	7332.7+s	J7+14	1212.1 *3*	6120.6+s	J7+12
17402.0+w	J5+30	1542.4 *4*	0.63[a] *15*	15859.6+w	J5+28	8596.7+s	J7+16	1264.0 *3*	7332.7+s	J7+14
911.8+r	J6+2	911.8 *4*		r	J6	9908.0+s	J7+18	1311.3 *3*	8596.7+s	J7+16
1873.7+r	J6+4	961.9 *3*		911.8+r	J6+2	11263.4+s	J7+20	1355.4 *4*	9908.0+s	J7+18
2892.1+r	J6+6	1018.4 *3*		1873.7+r	J6+4	12664.9+s	J7+22	1401.4 *4*	11263.4+s	J7+20
3969.0+r	J6+8	1076.9 *3*		2892.1+r	J6+6	14115.5+s	J7+24	1450.6 *4*	12664.9+s	J7+22
5101.0+r	J6+10	1132.0 *4*		3969.0+r	J6+8	15618.5+s	J7+26	1503.0 *5*	14115.5+s	J7+24
6287.7+r	J6+12	1186.7 *3*		5101.0+r	J6+10	868.4+t	J8+2	868.4 *3*	t	J8
7527.4+r	J6+14	1239.7 *4*		6287.7+r	J6+12	1783.4+t	J8+4	915.0 *3*	868.4+t	J8+2
8817.6+r	J6+16	1290.2 *3*		7527.4+r	J6+14	2745.6+t	J8+6	962.2 *3*	1783.4+t	J8+4
10152.6+r	J6+18	1335.0 *3*		8817.6+r	J6+16	3755.3+t	J8+8	1009.7 *2*	2745.6+t	J8+6
11530.7+r	J6+20	1378.1 *4*		10152.6+r	J6+18	4811.6+t	J8+10	1056.3 *2*	3755.3+t	J8+8
12956.2+r	J6+22	1425.4 *4*		11530.7+r	J6+20	5916.5+t	J8+12	1104.9 *2*	4811.6+t	J8+10
14431.4+r	J6+24	1475.2 *4*		12956.2+r	J6+22	7069.9+t	J8+14	1153.4 *2*	5916.5+t	J8+12
15960.3+r	J6+26	1528.9 *5*		14431.4+r	J6+24	8271.5+t	J8+16	1201.6 *3*	7069.9+t	J8+14
887.0+s	J7+2	887.0 *3*		s	J7	9521.3+t	J8+18	1249.8 *2*	8271.5+t	J8+16
1822.4+s	J7+4	935.4 *4*		887.0+s	J7+2	10818.5+t	J8+20	1297.2 *3*	9521.3+t	J8+18
2812.3+s	J7+6	989.9 *4*		1822.4+s	J7+4	12157.8+t	J8+22	1339.3 *6*	10818.5+t	J8+20
3858.2+s	J7+8	1045.9 *3*		2812.3+s	J7+6	13509.8+t	J8+24	1351.9 *7*	12157.8+t	J8+22

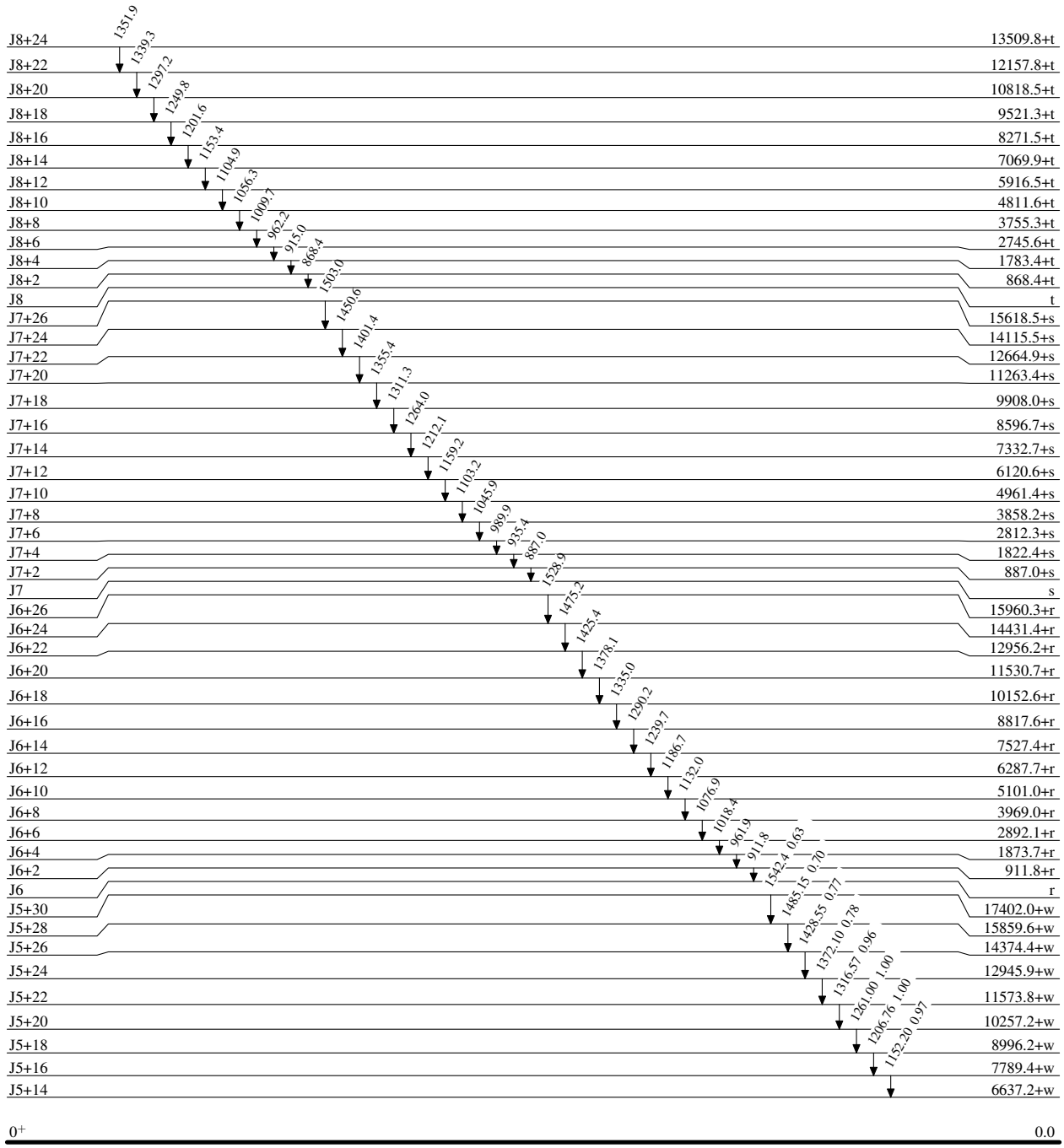
[†] Additional information 15.
[‡] From ε decay, (HI,xnγ), and (HI,xnγ):SD.
[#] Except where noted otherwise, mult assignments are based on conversion electron and γ(θ) of oriented nuclei from ε decay (60 min), conversion electron data from ε decay (2.20 min), γγ (θ), excitation function, conversion electron and γγ(θ) data from (HI,xnγ).
[@] Relative photon branching from each level for gammas from normal deformed states as opposed to relative intensity within each SD band.
[&] Branching ratio from (HI,xnγ) (2000Po13).
[a] Relative intensity within each SD band, normalized to ≈1 for the most intense transition in that band.
[b] γ not reported by 1996De04.
[c] From 1996De04 only.
[d] From 1995DeZZ. γ not reported by 1996De04 and 1997Ha19.
[e] Placement of transition in the level scheme is uncertain.

$^{148}_{64}Gd_{84}$-25

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

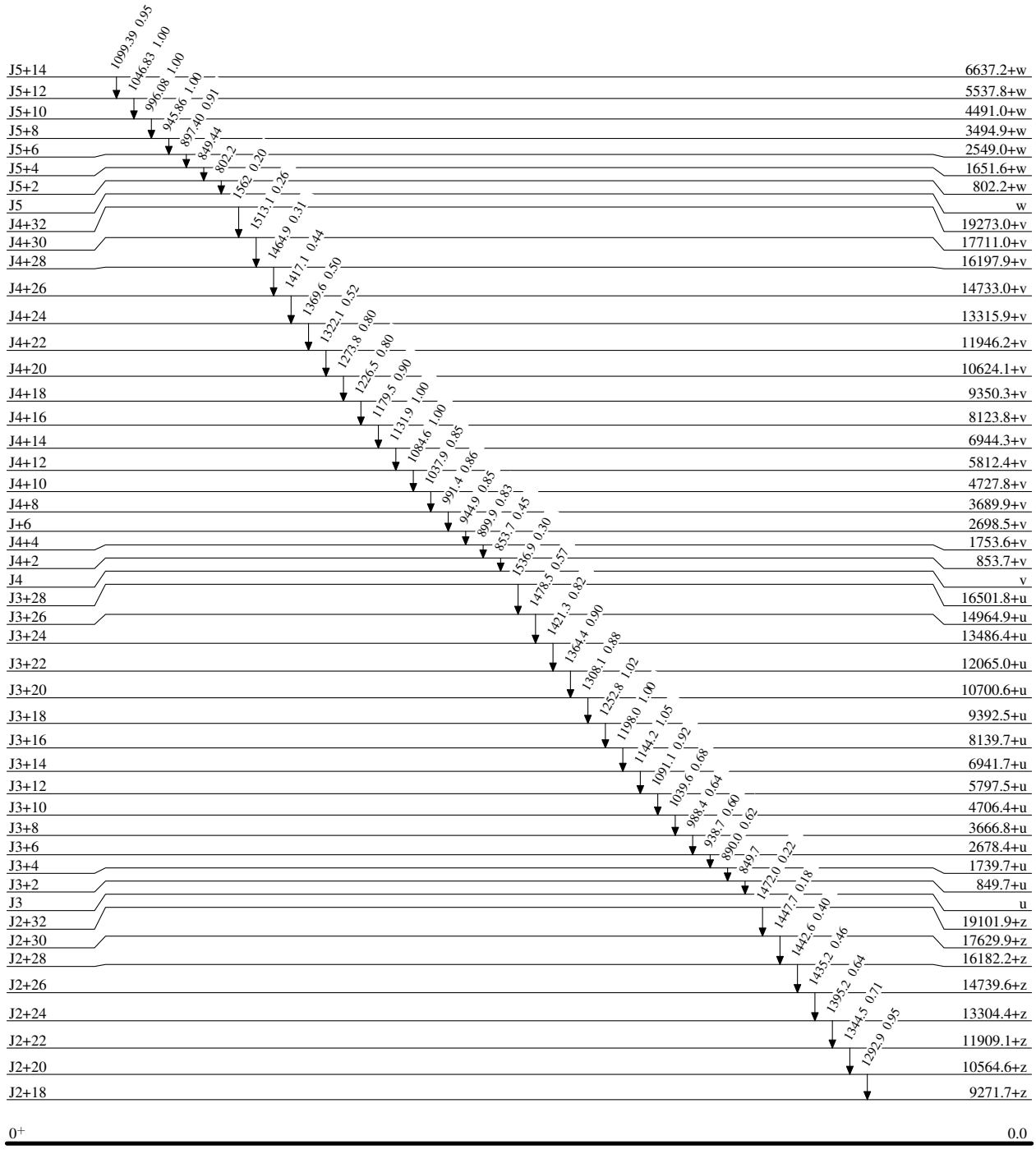


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

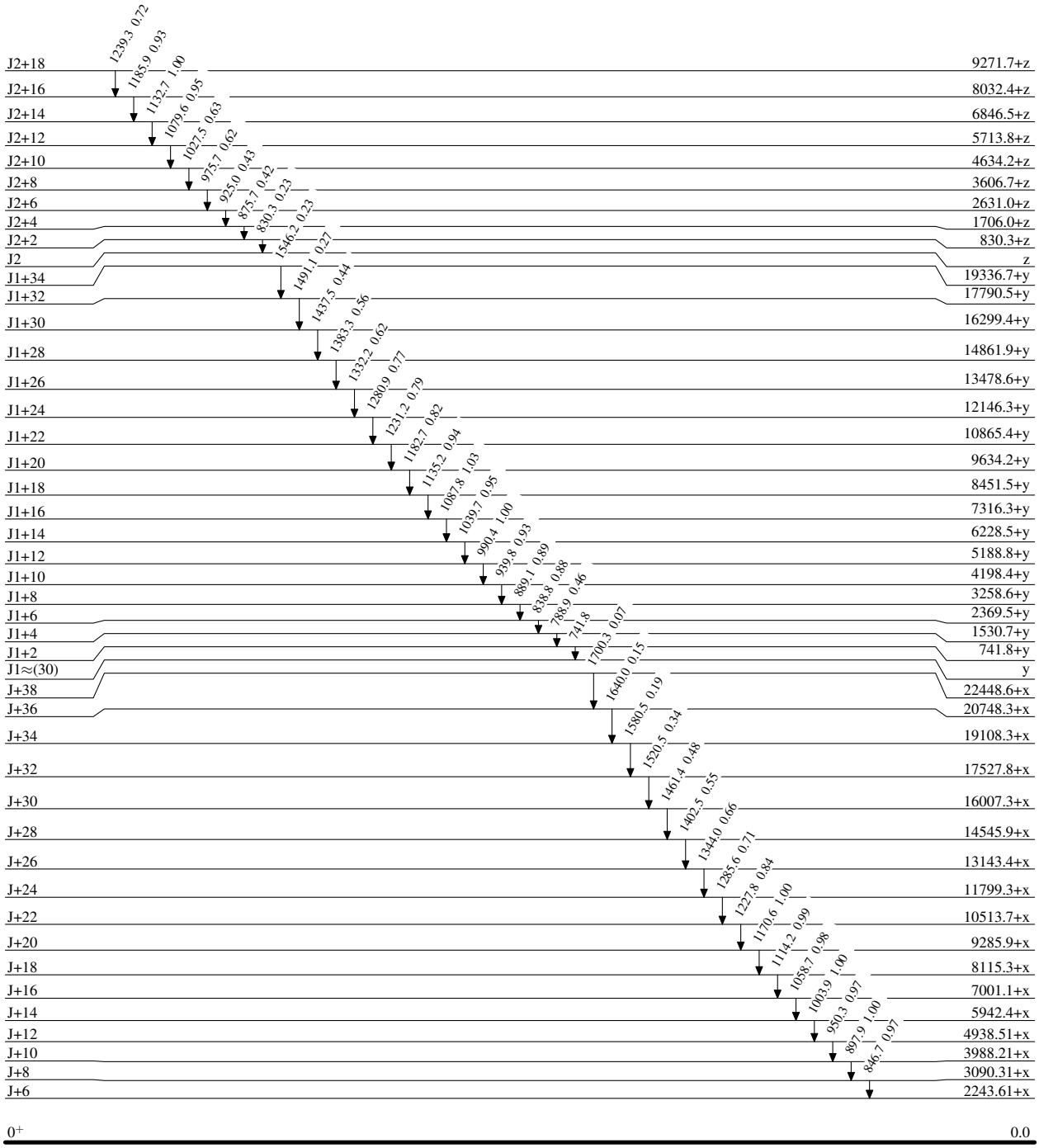


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{148}_{64}Gd_{84}$

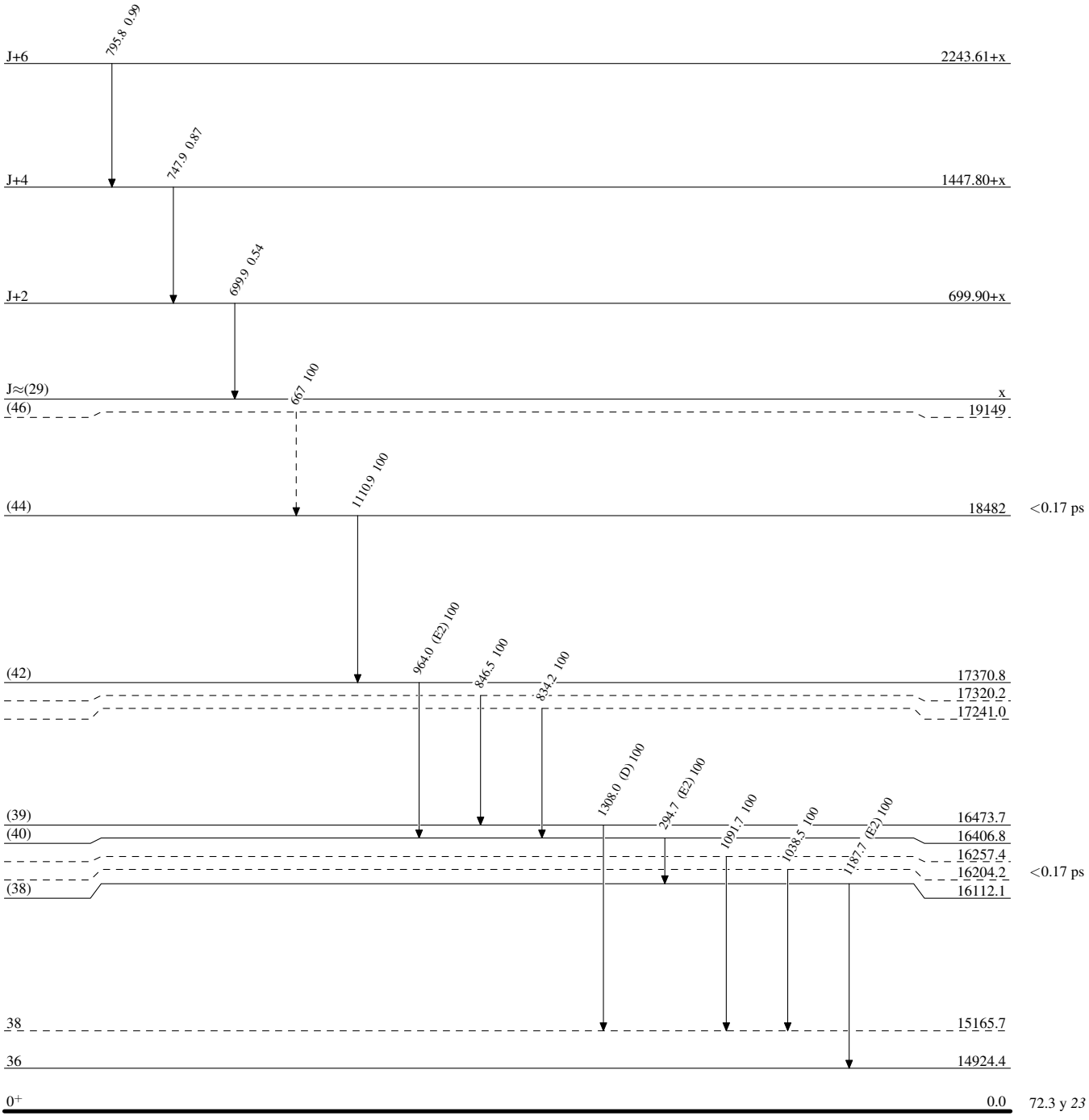
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

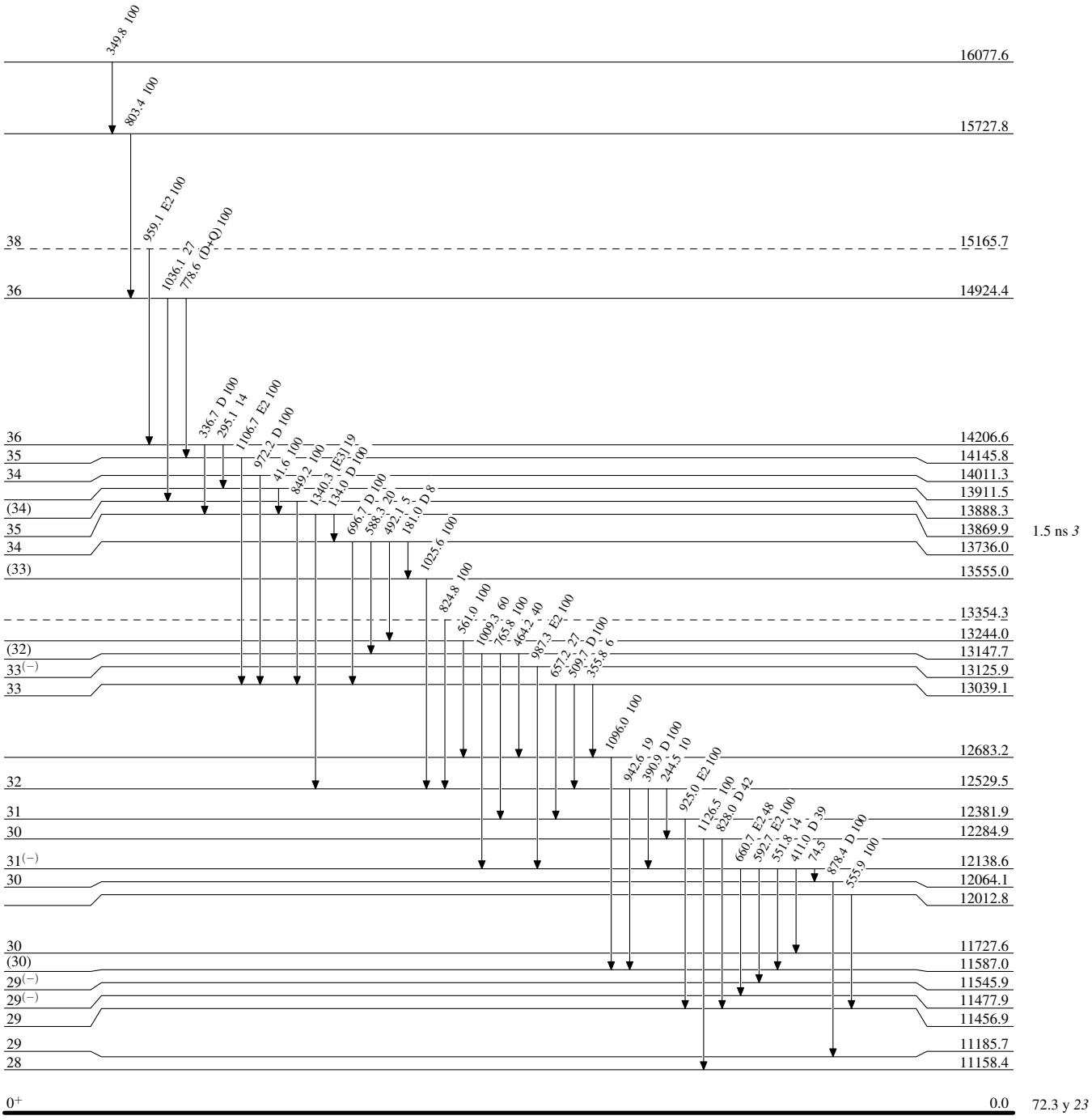


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

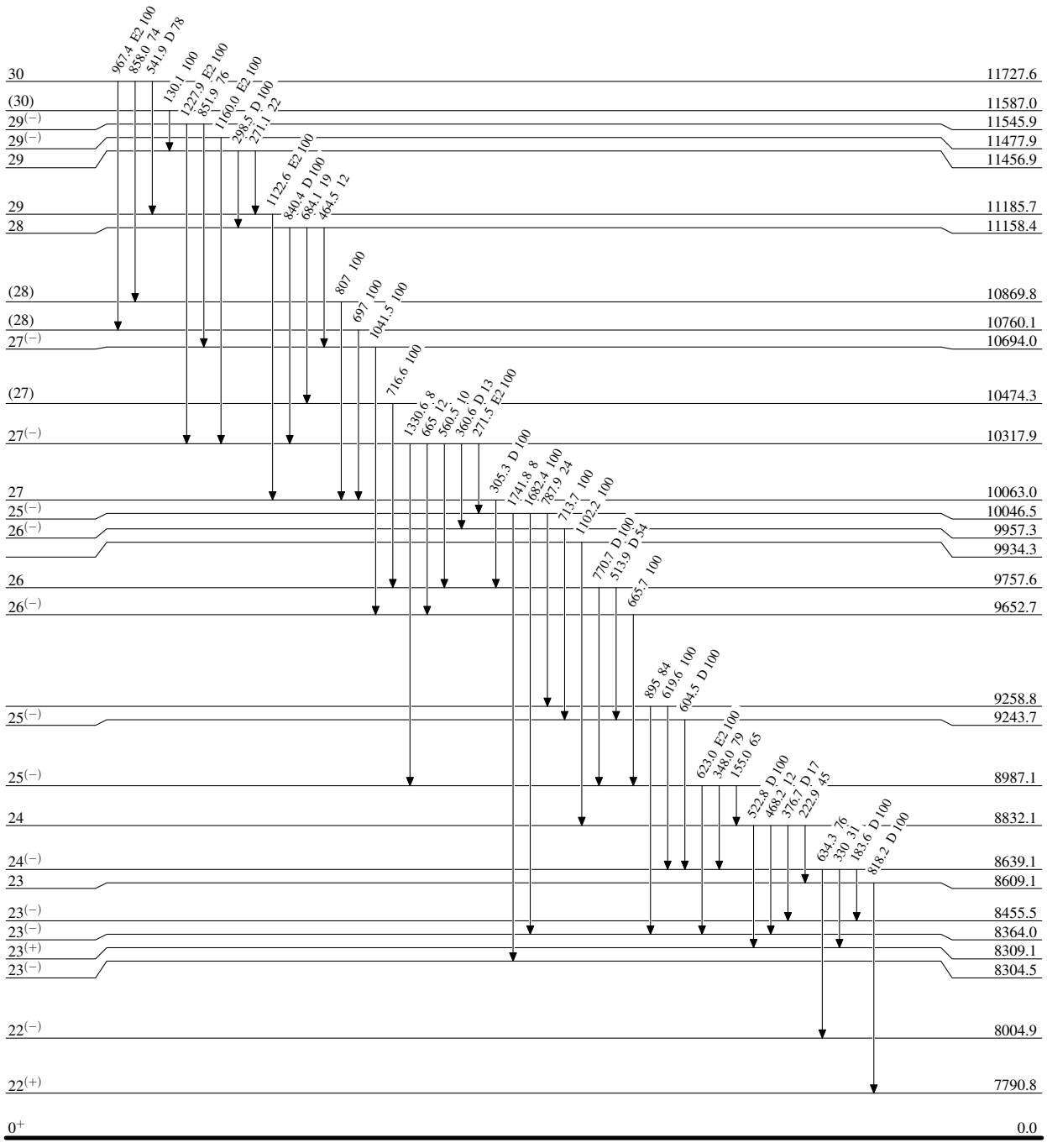


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

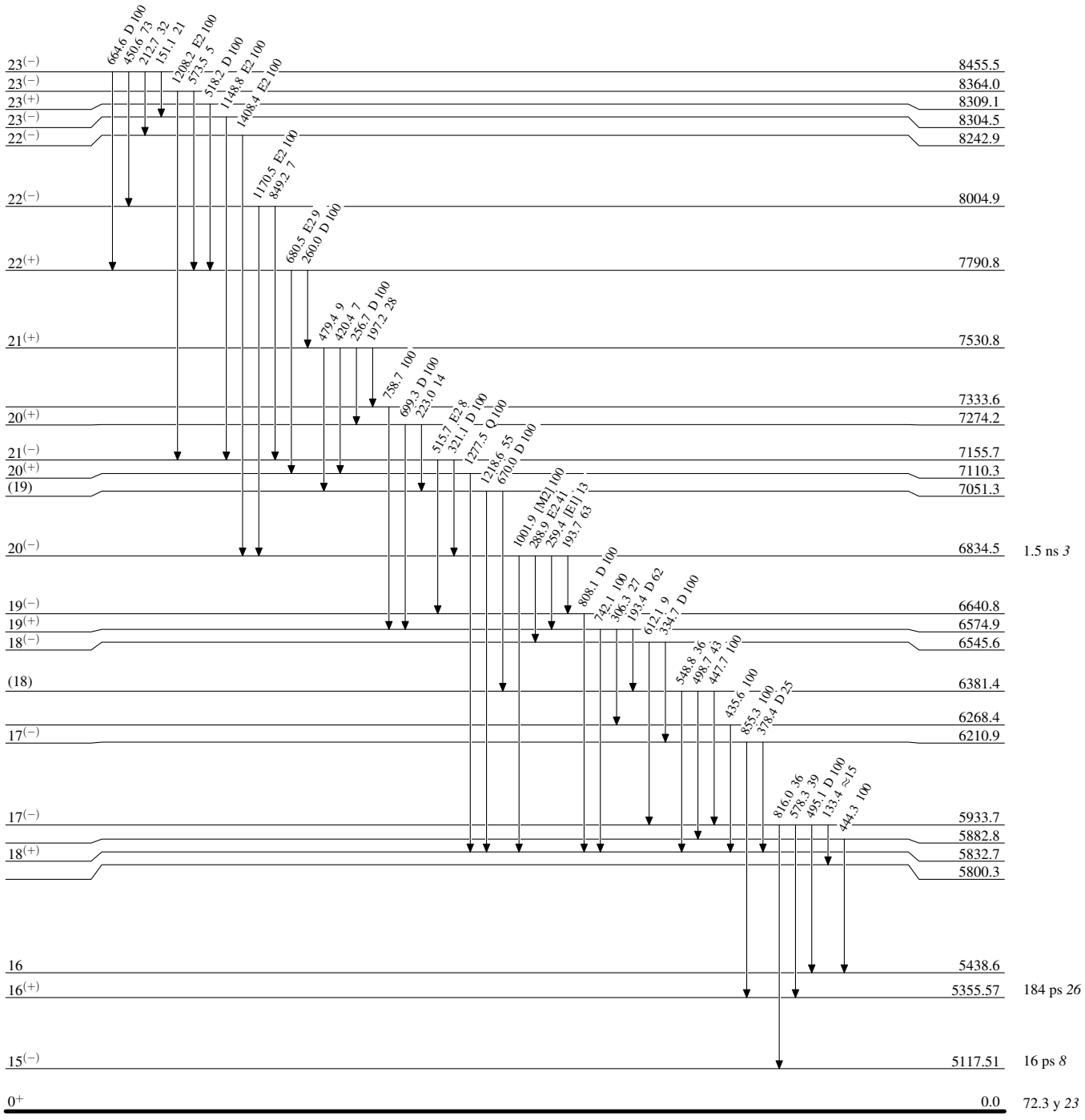


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

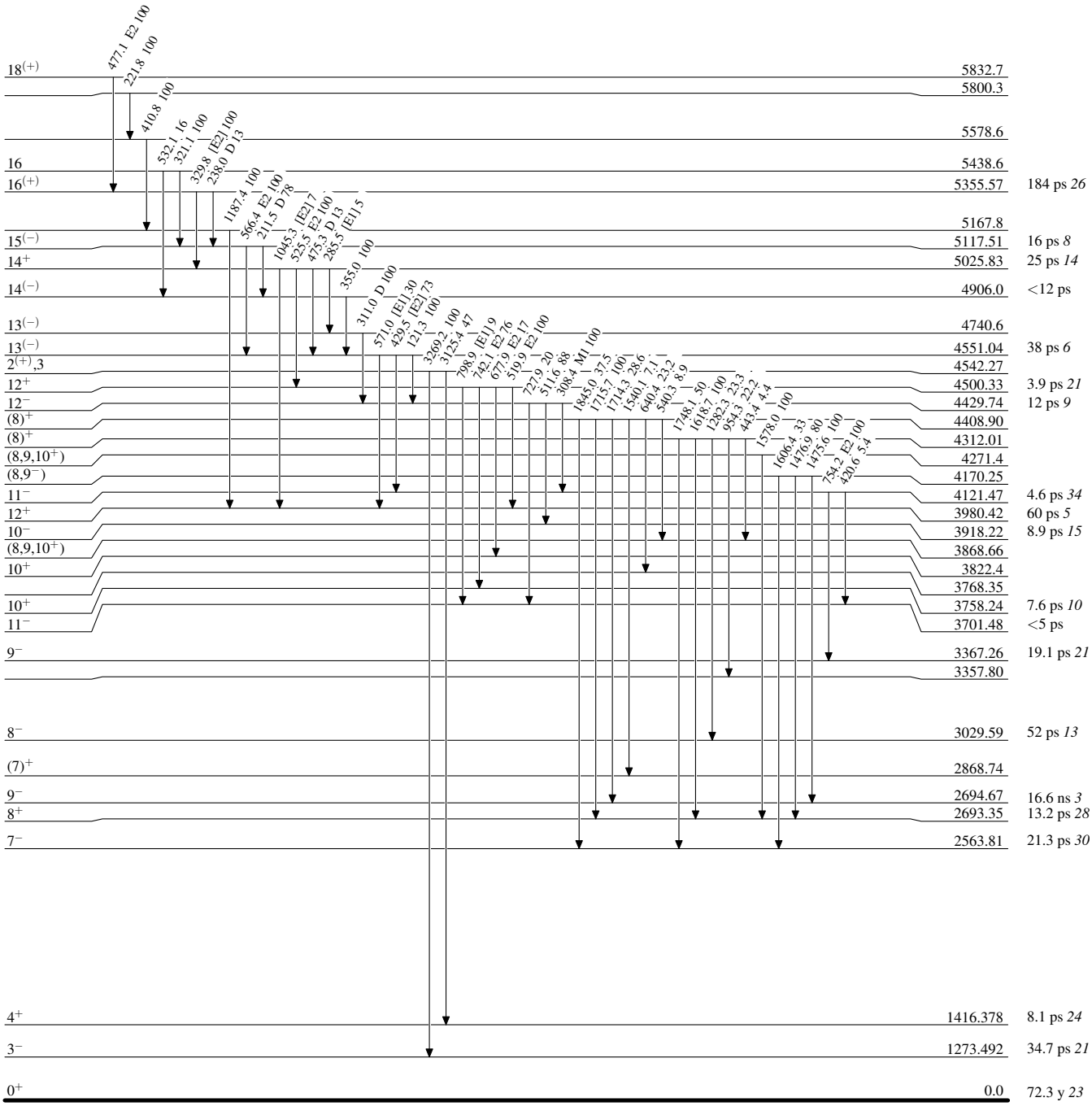


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

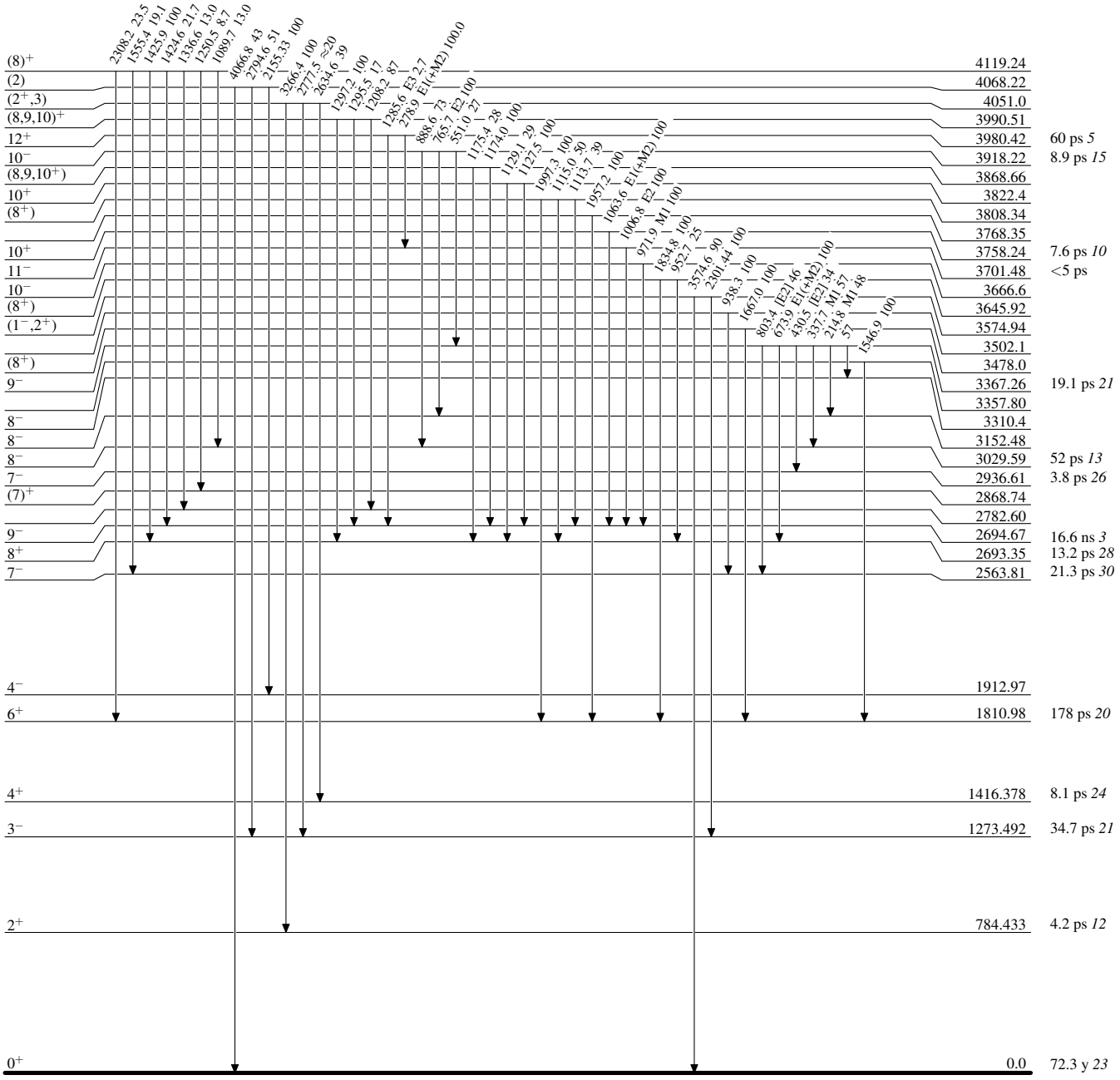


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{148}_{64}Gd_{84}$

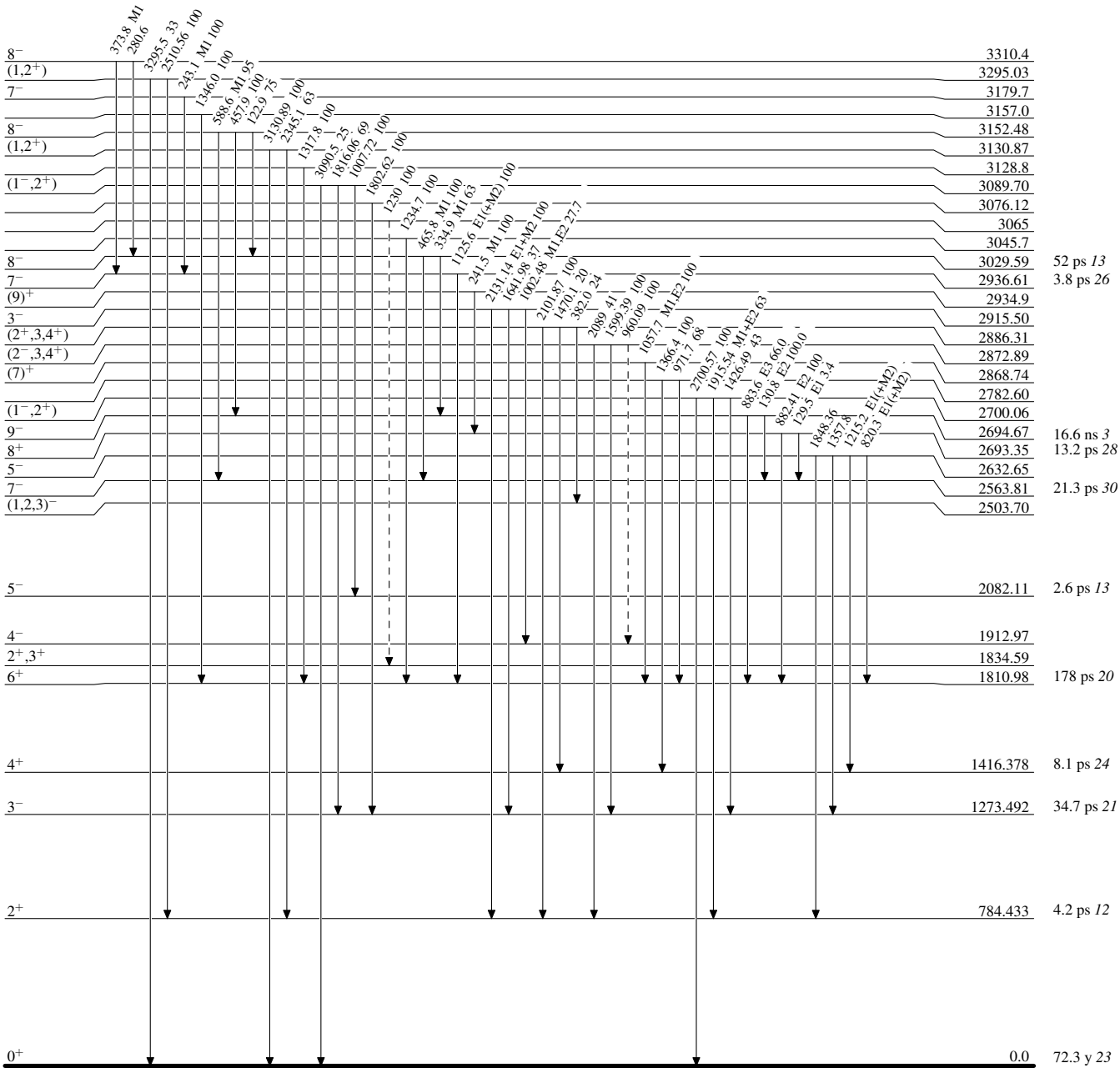
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

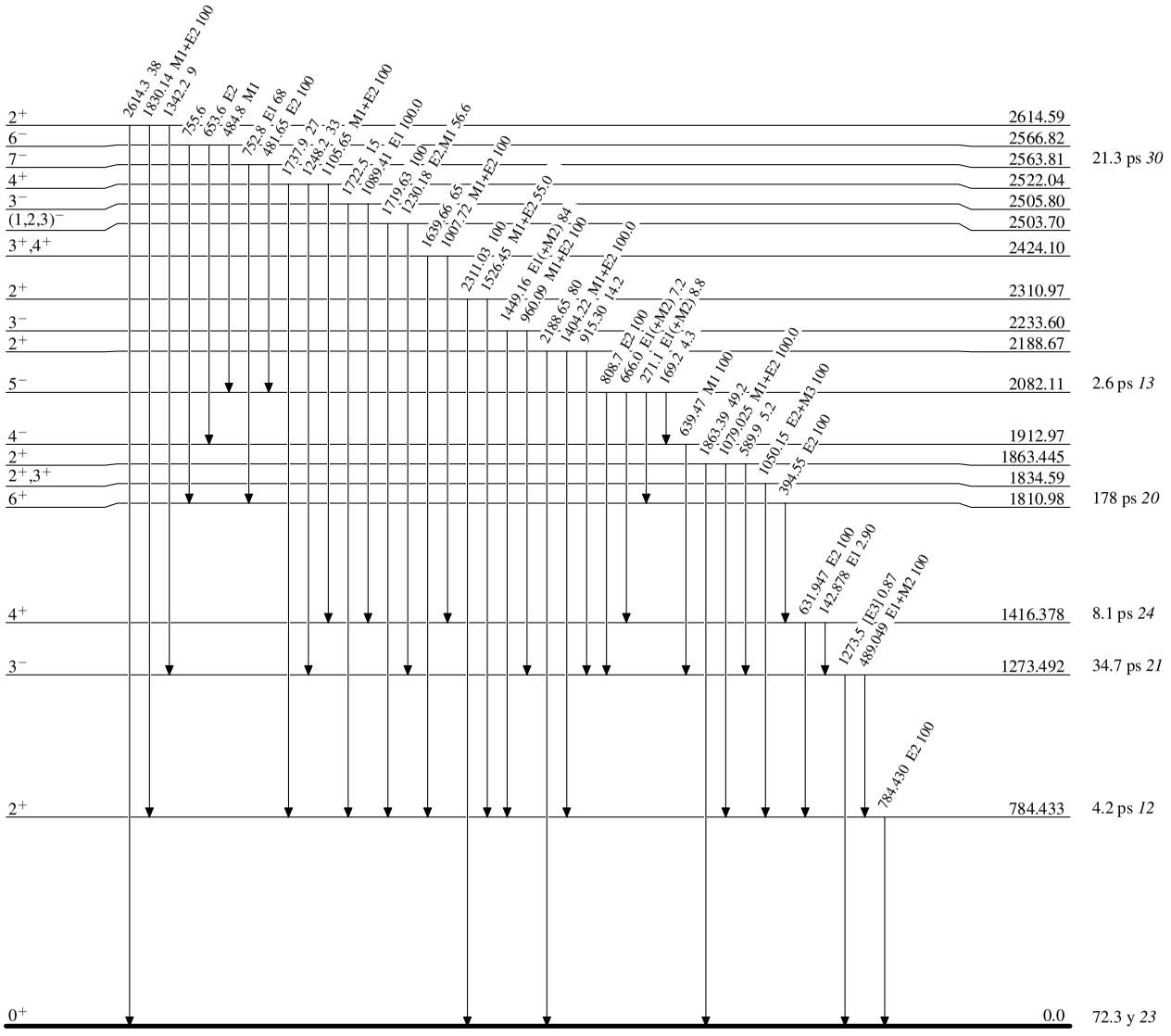


$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

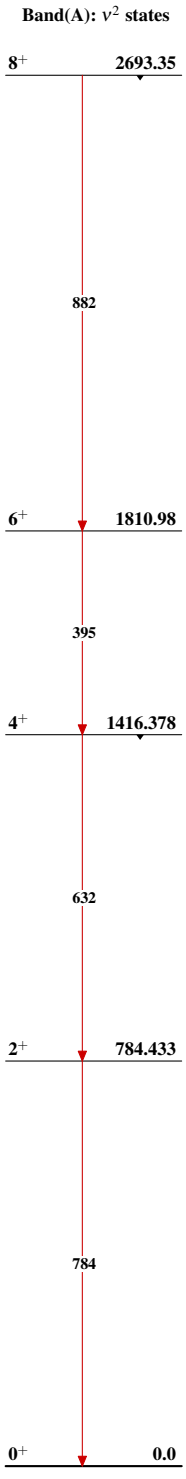
Level Scheme (continued)

Intensities: Relative photon branching from each level



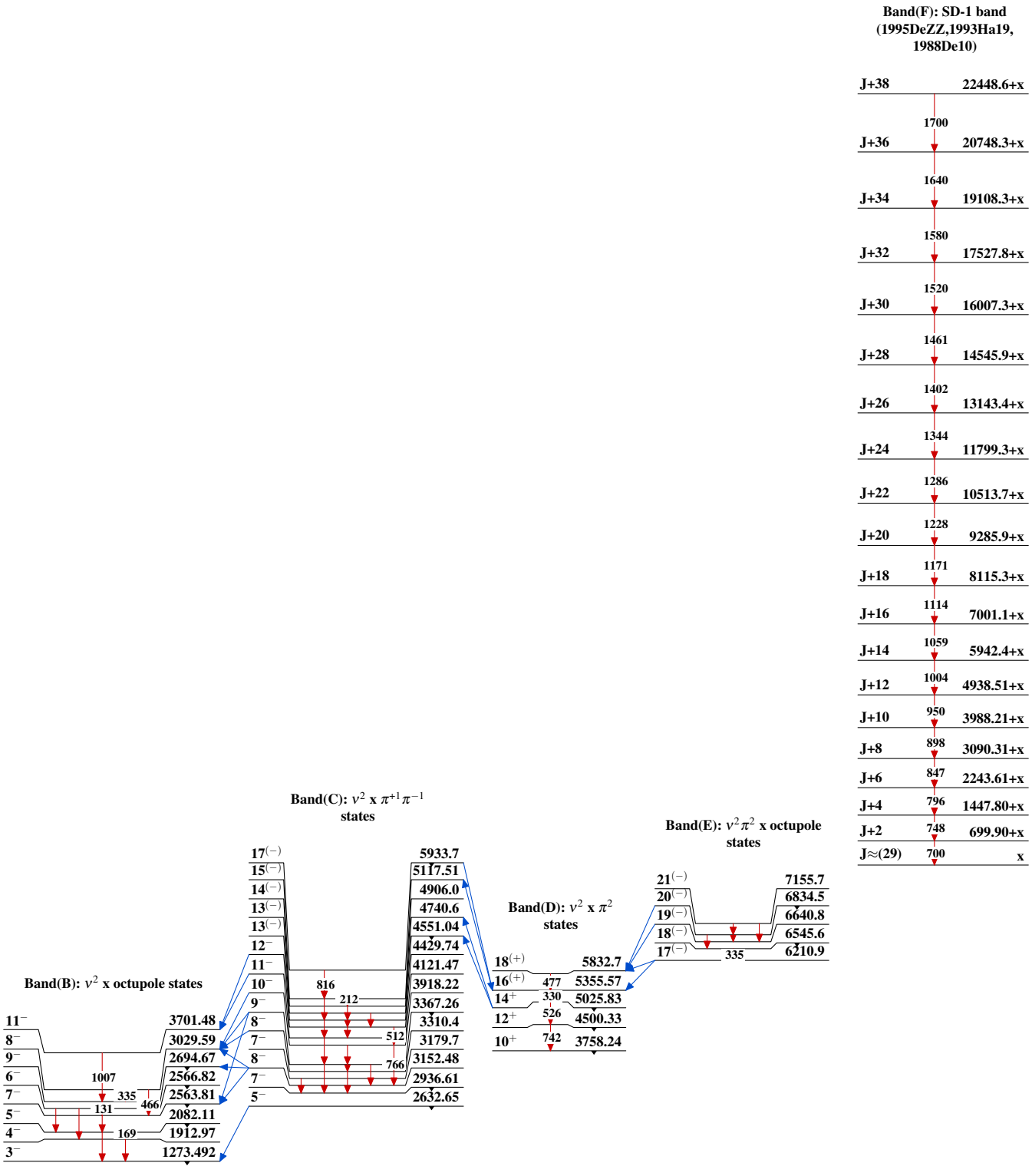
$^{148}_{64}Gd_{84}$

Adopted Levels, Gammas

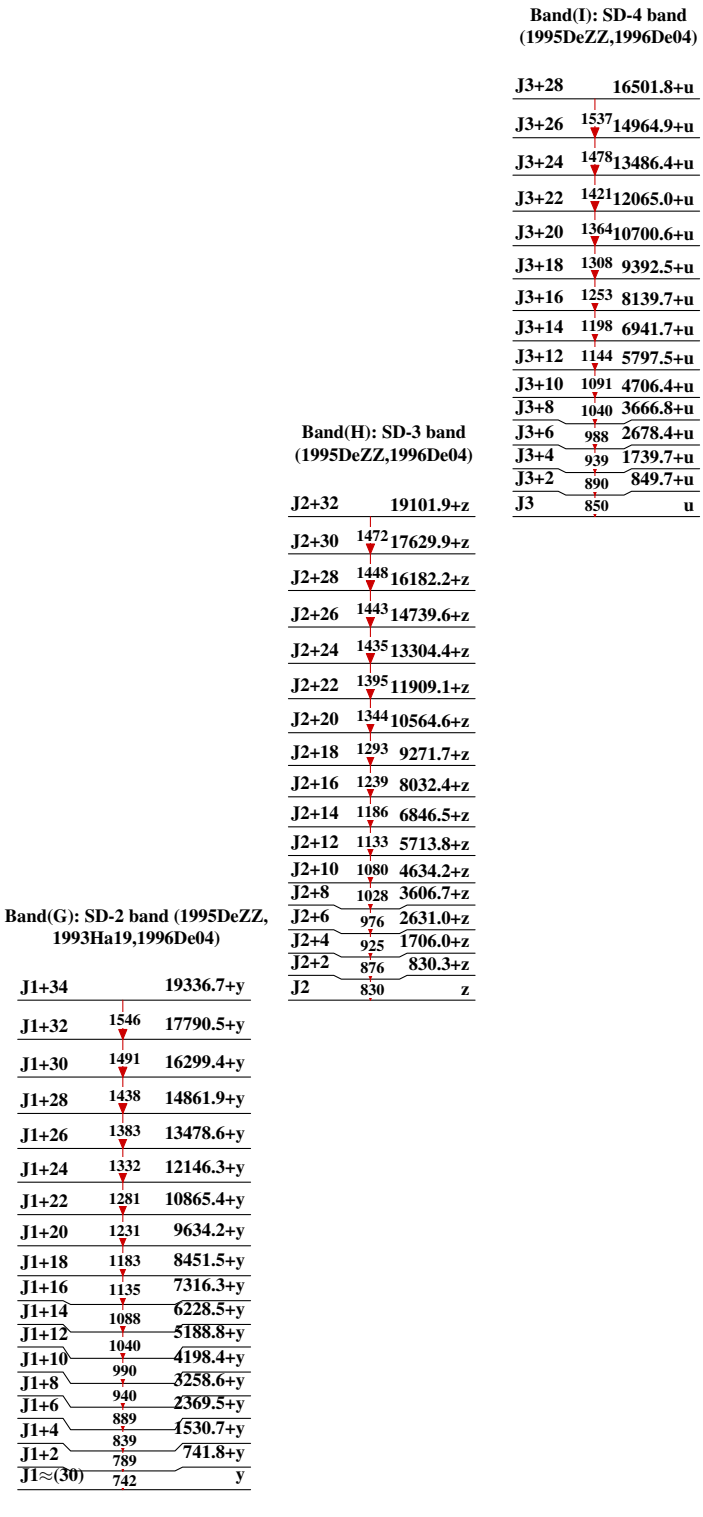


$^{148}_{64}Gd_{84}$

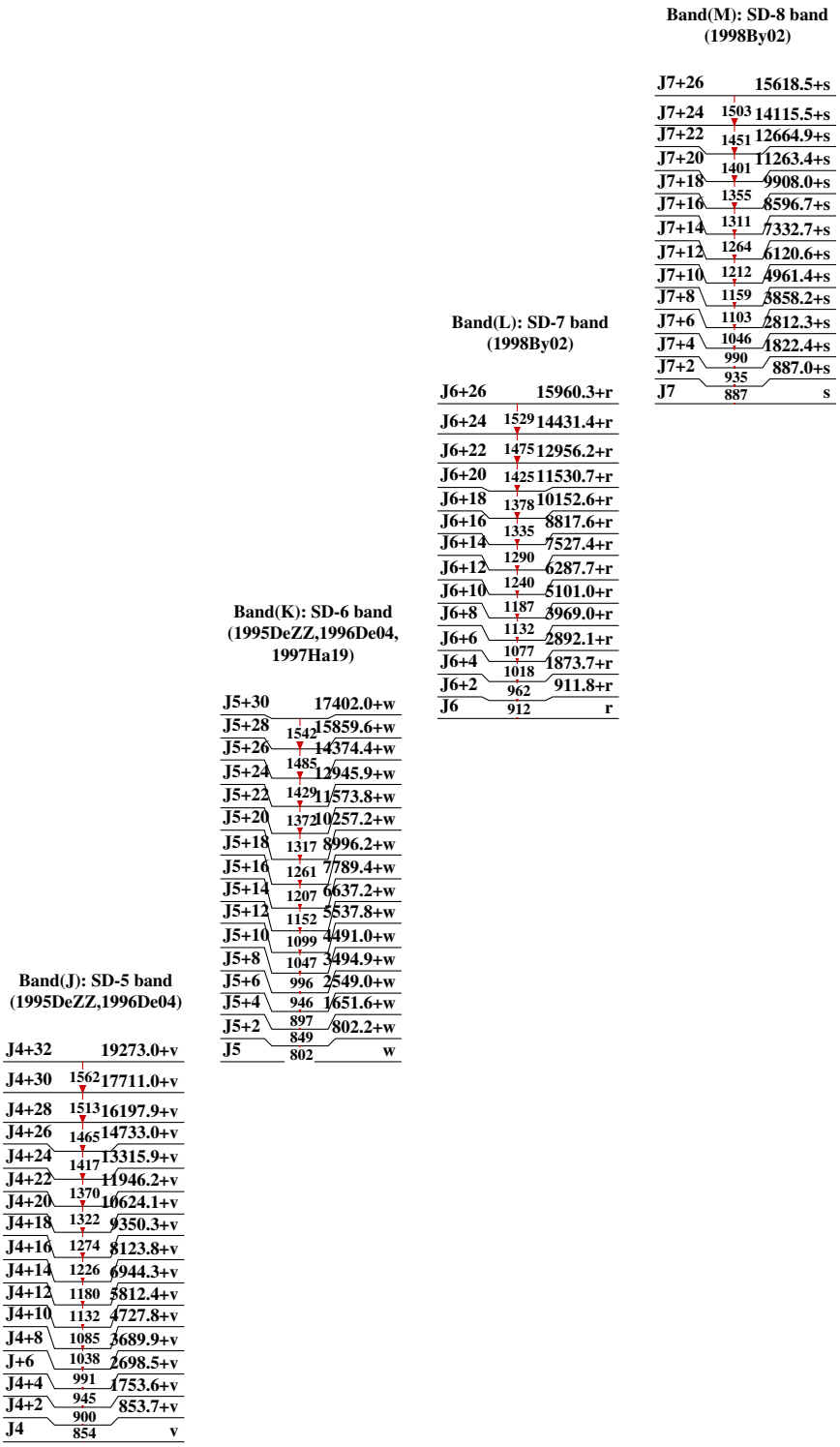
Adopted Levels, Gammas (continued)



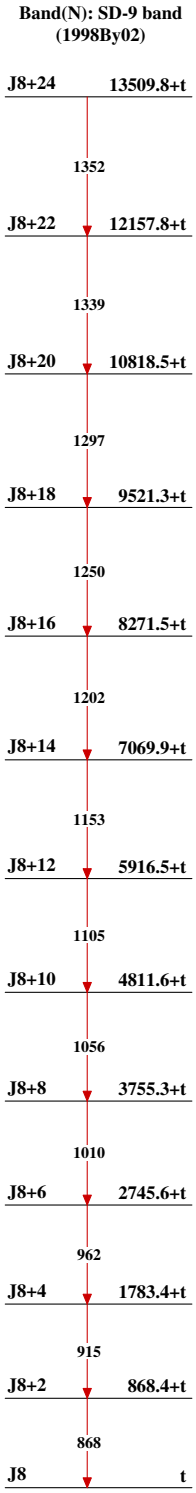
Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{148}_{64}Gd_{84}$