^{155}Gd(n,γ) E=1.9 keV 1999GrZN

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$J^\pi(^{155}Gd)=3/2^-$. Conf=ν3/2[521].

Measured primary capture γ-ray transitions from 1.9-keV neutron capture in ^{155}Gd. The energy spread of the incident neutron beam produces an averaging over many compound-nucleus states, which greatly reduces the statistical (e.g., Porter-Thomas) fluctuations commonly observed in the intensities of the primary transitions from thermal-neutron capture. These averaged γ-ray intensities provide useful information for determining J^π values for the nuclear levels directly populated by these primary transitions.

1999GrZN give no experimental details. Such details are given in 1993Kl03 (thermal-neutron capture). They include the following. target is 60 g of Gd oxide, enriched to 91.9% in ^{155}Gd. Neutron beams formed using "filters" of ^{46}Sc, ^{60}Ni and ^{56}Fe (these authors report ^{54}Fe, but the evaluator assumes that that is a misprint). γ radiation measured using three pair spectrometers having FWHM≈10 keV at 8 MeV.

1982Ba28 also present data on primary γ-ray transitions from 2-keV n capture. These data are generally consistent with those of 1999GrZN, but are less detailed. Consequently, these data are not listed here.

The following tabular information summarizes the data given by 1999GrZN for both 1.9- and 58-keV n capture.

1999GrZN give a set of calculated relative reduced transition probabilities for the primary γ-ray transitions feeding final states of various J^π values. Since these intensities from resonance-averaged n capture can provide useful information about the final-state J^π values, they are summarized in the following table.

Reduced Transition Probabilities Of Primary Transitions from 1.9- And 58-keV Neutron Capture In ^{155}Gd

Final Level		$(I_\gamma/(E_g)^5)$[a]	
E_L	J^π [c]	1.9 keV	58 keV
0	0^+	58	59
89.0	2^+	114	116
288.2	4^+	-	3.2
1049.5	0^+	42	45
1129.4	2^+	99	93
1154.1	2^+	102	105
1168.2	0^+	45	51
1242.5	1^-	13.3	45.5
1248.0	3^+	49	61
1258.1	2^+	86	94
1276.1	3^-	7.6	37
1319.7	2^-	13.4	55
1366.5	1^-	14.9	51
1468.5	4^-	2.1	19
1538.9	3^-	8.5	46
1715.2	0^+	48	37
1771.1	2^+	96	104
1780.5	2^-	14	73
1827.8	2^+	90	107
1851.2	0^+	56[b]	74[b]
1851.8	3^-	[b]	[b]
1914.8	2^+	147[b]	141[b]
1916.5	3^+	[b]	[b]
1934.1	2^-	21.3[b]	91[b]
1934.4	3^-	[b]	[b]
1946.4	1^-	15	52
1952.4	4^-	8.6[b]	54[b]
1952.4	0^-	[b]	[b]
1962.0	1^-	105[b]	203[b]
1962.1	5^+	[b]	[b]

1965.1	4^-	b	b
1965.9	1^+	b	b
1988.2	0^+	41	40
2003.7	2^+	86	87
2011.9	3^-	6	38
2024.9	3^-	b	b
2026.7	1^+	105[b]	139[b]
2029.8	4^-	b	b
2044.9	4^-	93[b]	116[b]
2047.8	2^+	b	b
2054.1	2^+	94[b]	85[b]
2055.9	4^+	b	b
2070.3	3^+	55	52
2082.0	0^+	45	43
2103.4	3^-	62[b]	98[b]
2106.7	3^+	b	b
2121.4	2^-	14	47
2139.8	3^+	45	55
2147.4	2^+	91	88
2155.6	4^-	54[b]	50[b]
2160.7	(3^+)	b	b
2170.8	1^-	b	b
2174.3	2^+	b	b
2175.1	4^-	110[b]	114[b]
2176.3	4^+	b	b
2186.8	1^+	95[b]	214[b]
2190.6	2^+	100[b]	-[b]
2190.9	4^+	b	b
2199.8	2^-	b	b
2203.3	$1^-,2^-$	26[b]	-[b]
2205.6	1^-	b	b
2216.6	2^+	81	84
2227.6	3^-	b	b
2231.5	3^+	45[b]	71[b]
2232.5	4^-	b	b
2240.4	3^-	11[b]	38[b]
2256.7	3^+	56[b]	90[b]
2259.7	1^-	b	b
2269.9	1^+	101	109
2293.2	1^-	32	83
2300.8	1^+	221[b]	189[b]
2302.6	2^+	b	b
2316.6	$1^-,2^-$	15	43
2321.9	3^+	136[b]	154[b]
2323.3	2^+	b	b
2340.2	(2^-)	b	b
2343.9	1^-	21[b]	86[b]
2349.6	3^+	57[b]	23[b]
2360.8	1^+	112	96
2367.5	2^+	101	158
2382.3	2^+	73	110
2391.7	(2^-)	-	45
2402.7	1^+	98[b]	143[b]
2406.1	$1^-,3^-$	b	b
2416.2	3^+	43	49
2423.0	$0^+,3^+$	150[b]	163[b]
2428.0	2^+	b	b
2434.7	$1^+,2^+$	126[b]	145[b]
2436.7	(2^+)	b	b
2446.2	2^+	87	110
2449.7	1^-	b	b
2451.5	(2^+)	86[b]	139[b]
2462		48	100
2467.6	3^+	50	-
2478.6	3^+	49	-

2494.1	(1$^-$)	26	-
2502.0	3$^+$	67	-
2506.2	2$^+$	114	115
2517.8	0$^+$,3$^+$	54	33
2528.9	(3$^+$)	64	67
2534.7	(3$^+$)	68	28
2554.4	(1$^-$)	21	68
2571.9	1$^+$,2$^+$	88	-
2581	1$^-$,2$^-$	23	115
2588.9	1$^+$,2$^+$	88	107
2598	1$^+$,2$^+$	78	120
2607.9	(1$^-$)	-	75
2617.2	1$^+$,2$^+$	106	223
2622.1	1$^-$ - 3$^-$	-	48
2640.5	(3$^+$)	35	-
2647.5	1$^+$,2$^+$	101	-
2650.7	3$^+$	76[b]	-
2652.0		[b]	-
2665.3	0$^+$,3$^+$	41	-
2676.6		68	-
2684	1$^+$,2$^+$	94	-
2689.5	3$^+$	50	-
2701.0	(2$^+$)	114	-
2718.4	1$^+$,2$^+$	82	-
2722.9	3$^+$	56	-
2738.0	(3$^+$)	40	-
2750.6	1$^+$,2$^+$	120	-
2761.7	1$^+$,2$^+$	94	-
2770.5	0$^+$,3$^+$	60	-
2776.8	1$^+$,2$^+$	100	-
2784.7	1$^+$,2$^+$	162[b]	-
2787.8	3$^+$	[b]	-
2794.7	1$^+$,2$^+$	115	-
2804.5	(2$^+$)	104	-
2816.3	3$^-$	78	-
2826.7	3$^+$	84	-
2831.3	2$^+$	219	-
2839.6	2$^+$	122	-
2846.8	2$^+$,3$^+$	148	-
2853.9	1$^+$,2$^+$	93	-
2873.8	(2$^+$)	86	-
2878.9	1$^+$,2$^+$	133	-
2894.0	0$^+$,3$^+$	36	-
2900	0$^+$ - 3$^+$	72	-
2907.4	1$^+$,2$^+$	129	-
2918.5	1$^+$,2$^+$	64	-
2928.4		104	-
2931.8	1$^+$,2$^+$	105	-
2943.2	1$^-$ - 3$^-$	[b]	-
2946.7	3$^+$	76[b]	-

[a]. Relative Units.
[b]. Unresolved Multiplet. Intensity Is That Of The Composite peak.
[c]. Values Given By 1999GrZN.

Calculated Relative Population Of Final States Of ^{156}Gd By primary γ Transitions Following 1.9- And 58$^-$ keV n Capture

Final-state J^π Value	Relative Population[a] $[I_\gamma/(E_\gamma)^5]$	
	1.9 keV	58 keV

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0^+	45(4)	41(3)
$1^+,2^+$	100(5)	100(5)
3^+	55(4)	60(4)
4^+	-	3.0(1)
0^-	6.6(5)	14(1)
1^-	15(1)	59(3)
2^-	15(1)	65(2)
3^-	8.1(5)	43(2)
4^-	1.8(1)	18(1)

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[a] Quantities in parentheses represent the uncertainty in the least significant digit(s) of the corresponding value.

^{156}Gd Levels

E(level)	J^π†	E(level)	J^π†	E(level)	J^π†	E(level)	J^π†
0[b]	0^+	2029.8	4^-	2340.2	(2^-)	2665.3	$0^+,3^+$
89.0[b]	2^+	2044.9[n]	4^-	2343.9	1^-	2676.6	
1049.5[c]	0^+	2047.8[q]	2^+	2349.6[t]	3^+	2684	$1^+,2^+$
1129.4[c]	2^+	2054.1[m]	2^+	2360.8[v]	1^+	2689.5	3^+
1154.1[d]	2^+	2070.3[l]	3^+	2367.5	2^+	2701.0	(2^+)
1168.2[e]	0^+	2082.0[r]	0^+	2382.3[v]	2^+	2718.4	$1^+,2^+$
1242.5[f]	1^-	2103.4	3^-	2402.7[w]	1^+	2722.9	3^+
1248.0[d]	3^+	2106.7[m]	3^+	2406.1	$1^-,3^-$	2738.0	(3^+)
1258.1[e]	2^+	2121.4	2^-	2416.2[v]	3^+	2750.6	$1^+,2^+$
1276.1[f]	3^-	2139.8[s]	3^+	2423.0	$0^+,3^+$	2761.7	$1^+,2^+$
1319.7[f]	2^-	2147.4[r]	2^+	2428.0[w]	2^+	2770.5	$0^+,3^+$
1366.5[g]	1^-	2155.6[p]	4^-	2434.7	$1^+,2^+$	2776.8	$1^+,2^+$
1468.5[f]	4^-	2160.7	(3^+)	2436.7	(2^+)	2784.7	$1^+,2^+$[#]
1538.9[g]	3^-	2170.8	1^-	2446.2	2^+	2787.8	3^+
1715.2[h]	0^+	2174.3[y]	2^+	2449.7	1^-	2794.7	$1^+,2^+$
1771.1[h]	2^+	2175.1	4^-	2451.5	(2^+)	2804.5	(2^+)
1780.5[i]	2^-	2186.8[o]	1^+	2462[@]		2816.3	3^-
1827.8[j]	2^+	2190.6	2^+	2467.6[w]	3^+	2826.7	3^+
1851.2[k]	0^+	2199.8[x]	2^-	2478.6	3^+	2831.3	2^+
1851.8[i]	3^-	2203.3	$1^-,2^-$	2494.1	(1^-)	2839.6	2^+
1914.8[k]	2^+	2205.6	1^-	2502.0	3^+	2846.8	$2^+,3^+$
1916.5[j]	3^+	2216.6[o]	2^+	2506.2	2^+	2853.9	$1^+,2^+$
1934.1[p]	2^-	2227.6	3^-	2517.8	$0^+,3^+$	2873.8	(2^+)
1934.4	3^-	2231.5[y]	3^+	2528.9	(3^+)	2878.9	$1^+,2^+$
1946.4	1^-	2232.5	4^-	2534.7	(3^+)	2894.0	$0^+,3^+$
1952.4[i]	4^-	2240.4	3^-‡	2554.4	(1^-)	2900	0^+ to 3^+
1952.4	0^-	2256.7[o]	3^+	2571.9	$1^+,2^+$	2907.4	$1^+,2^+$
1962.0	1^-	2259.7	1^-	2581	$1^-,2^-$	2918.5	$1^+,2^+$
1965.1	4^-	2269.9[t]	1^+	2588.9	$1^+,2^+$	2928.4	
1965.9[l]	1^+	2293.2	1^-	2598	$1^+,2^+$	2931.8	$1^+,2^+$
1988.2[q]	0^+	2300.8[u]	1^+	2617.2	$1^+,2^+$	2943.2	1^- to 3^-
2003.7[l]	2^+	2302.6[t]	2^+	2640.5	(3^+)	2946.7	3^+
2011.9	3^-	2316.6	$1^-,2^-$	2647.5	$1^+,2^+$	8538.3[&]	$1^-,2^-$[a]
2024.9[p]	3^-	2321.9	3^+	2650.7	3^+		
2026.7[m]	1^+	2323.3[u]	2^+	2652.0			

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^{155}Gd(n,γ) E=1.9 keV 1999GrZN (continued)

^{156}Gd Levels (continued)

† Values reported by 1999GrZN. These generally agree with the adopted values.
‡ $J^\pi=2^+,3^+$ is ADOPTED.
# $J^\pi=1^+$ is ADOPTED.
@ Multiplet according to 1999GrZN.
& Neutron-capture "state". Energy is the sum of S(n) and the 1.9-keV average energy of the neutron beam.
a From s-wave capture in ^{155}Gd ($J^\pi=3/2^-$). Due to the energy spread in the n beam, many states, having $J^\pi=1^-$ or 2^-, are populated in the capture reaction.
b Band(A): $K^\pi=0^+$ g.s. band.
c Band(B): First excited $K^\pi=0^+$ band.
d Band(C): $K^\pi=2^+$ γ-vibrational band.
e Band(D): $K^\pi=0^+$ band.
f Band(E): $K^\pi=1^-$ octupole-vibrational band.
g Band(F): $K^\pi=0^-$ octupole-vibrational band.
h Band(G): $K^\pi=0^+$ band.
i Band(H): $K^\pi=2^-$ octupole-vibrational band.
j Band(I): $K^\pi=2^+$ band.
k Band(J): $K^\pi=0^+$ band.
l Band(K): $K^\pi=1^+$ band.
m Band(L): $K^\pi=1^+$ band.
n Band(M): $K^\pi=4^-$ band. Dominant conf=ν3/2[521]+ν5/2[642].
o Band(N): $K^\pi=1^+$ band.
p Band(O): $K^\pi=2^-$ band.
q Band(P): $K^\pi=0^+$ band.
r Band(Q): $K^\pi=0^+$ band.
s Band(R): Probable bandhead of a $K^\pi=3^+$ band.
t Band(S): $K^\pi=1^+$ band.
u Band(T): $K^\pi=1^+$ band.
v Band(U): $K^\pi=1^+$ band.
w Band(V): $K^\pi=1^+$ band.
x Band(W): Probable $K^\pi=2^-$ bandhead. Conf=ν3/2[521]+ν1/2[400].
y Band(X): $K^\pi=2^+$ band.

γ(^{156}Gd)

E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π
5591.6	30 *2*	8538.3	$1^-,2^-$	2946.7	3^+	5733.8	47 *2*	8538.3	$1^-,2^-$	2804.5	(2^+)
5606.5	42 *4*	8538.3	$1^-,2^-$	2931.8	$1^+,2^+$	5743.6	52 *2*	8538.3	$1^-,2^-$	2794.7	$1^+,2^+$
5609.9	42 *4*	8538.3	$1^-,2^-$	2928.4		5752‡	74 *2*	8538.3	$1^-,2^-$	2784.7	$1^+,2^+$
5619.8	26 *2*	8538.3	$1^-,2^-$	2918.5	$1^+,2^+$	5761.5	46 *3*	8538.3	$1^-,2^-$	2776.8	$1^+,2^+$
5630.9	53 *2*	8538.3	$1^-,2^-$	2907.4	$1^+,2^+$	5767.8	28 *2*	8538.3	$1^-,2^-$	2770.5	$0^+,3^+$
5638	30 *3*	8538.3	$1^-,2^-$	2900	0^+ to 3^+	5776.6	44 *4*	8538.3	$1^-,2^-$	2761.7	$1^+,2^+$
5644.3	16 *2*	8538.3	$1^-,2^-$	2894.0	$0^+,3^+$	5787.7	57 *2*	8538.3	$1^-,2^-$	2750.6	$1^+,2^+$
5659.4	56 *2*	8538.3	$1^-,2^-$	2878.9	$1^+,2^+$	5800.3	19 *2*	8538.3	$1^-,2^-$	2738.0	(3^+)
5664.5	37 *2*	8538.3	$1^-,2^-$	2873.8	(2^+)	5815.4	27 *4*	8538.3	$1^-,2^-$	2722.9	3^+
5684.4	42 *4*	8538.3	$1^-,2^-$	2853.9	$1^+,2^+$	5819.9	40 *4*	8538.3	$1^-,2^-$	2718.4	$1^+,2^+$
5691.5	67 *4*	8538.3	$1^-,2^-$	2846.8	$2^+,3^+$	5837.3	56 *2*	8538.3	$1^-,2^-$	2701.0	(2^+)
5698.7	53 *3*	8538.3	$1^-,2^-$	2839.6	2^+	5848.8	25 *6*	8538.3	$1^-,2^-$	2689.5	3^+
5707.0	96 *4*	8538.3	$1^-,2^-$	2831.3	2^+	5854	47 *5*	8538.3	$1^-,2^-$	2684	$1^+,2^+$
5711.6	37 *3*	8538.3	$1^-,2^-$	2826.7	3^+	5861.7	34 *2*	8538.3	$1^-,2^-$	2676.6	
5722.0	35 *2*	8538.3	$1^-,2^-$	2816.3	3^-	5873.0	21 *2*	8538.3	$1^-,2^-$	2665.3	$0^+,3^+$

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^{155}Gd(n,γ) E=1.9 keV 1999GrZN (continued)

$\gamma(^{156}Gd)$ (continued)

E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π
5887‡	39 *4*	8538.3	$1^-,2^-$	2650.7	3^+	6351.5‡	71 *6*	8538.3	$1^-,2^-$	2186.8	1^+
5890.8	52 *3*	8538.3	$1^-,2^-$	2647.5	$1^+,2^+$	6363‡	83 *2*	8538.3	$1^-,2^-$	2175.1	4^-
5897.8	18 *3*	8538.3	$1^-,2^-$	2640.5	(3^+)	6380‡	41 *2*	8538.3	$1^-,2^-$	2160.7	(3^+)
5921.1	58 *2*	8538.3	$1^-,2^-$	2617.2	$1^+,2^+$	6390.9	70 *4*	8538.3	$1^-,2^-$	2147.4	2^+
5940	44 *2*	8538.3	$1^-,2^-$	2598	$1^+,2^+$	6398.5	35 *4*	8538.3	$1^-,2^-$	2139.8	3^+
5949.4	48 *2*	8538.3	$1^-,2^-$	2588.9	$1^+,2^+$	6416.9	10.9 *14*	8538.3	$1^-,2^-$	2121.4	2^-
5957	13 *1*	8538.3	$1^-,2^-$	2581	$1^-,2^-$	6434‡	50.2 *9*	8538.3	$1^-,2^-$	2103.4	3^-
5966.4	50 *1*	8538.3	$1^-,2^-$	2571.9	$1^+,2^+$	6456.3	36.4 *8*	8538.3	$1^-,2^-$	2082.0	0^+
5983.9	12 *1*	8538.3	$1^-,2^-$	2554.4	(1^-)	6468.0	43.4 *10*	8538.3	$1^-,2^-$	2070.3	3^+
6003.6	38 *6*	8538.3	$1^-,2^-$	2534.7	(3^+)	6483‡	78.1 *15*	8538.3	$1^-,2^-$	2054.1	2^+
6009.4	36 *3*	8538.3	$1^-,2^-$	2528.9	(3^+)	6492‡	77.8 *16*	8538.3	$1^-,2^-$	2044.9	4^-
6020.5	31 *2*	8538.3	$1^-,2^-$	2517.8	$0^+,3^+$	6511‡	89.0 *10*	8538.3	$1^-,2^-$	2026.7	1^+
6032.1	66 *2*	8538.3	$1^-,2^-$	2506.2	2^+	6526.4	5.5 *20*	8538.3	$1^-,2^-$	2011.9	3^-
6036.3	39 *5*	8538.3	$1^-,2^-$	2502.0	3^+	6534.6	75.3 *15*	8538.3	$1^-,2^-$	2003.7	2^+
6044.2	15 *4*	8538.3	$1^-,2^-$	2494.1	(1^-)	6550.1	35.4 *9*	8538.3	$1^-,2^-$	1988.2	0^+
6059.7	29 *1*	8538.3	$1^-,2^-$	2478.6	3^+	6574‡	91 *2*	8538.3	$1^-,2^-$	1965.1	4^-
6070.7	30 *3*	8538.3	$1^-,2^-$	2467.6	3^+	6585.9‡	7.7 *10*	8538.3	$1^-,2^-$	1952.4	4^-
6076	29 *3*	8538.3	$1^-,2^-$	2462		6591.9	13.3 *10*	8538.3	$1^-,2^-$	1946.4	1^-
6088‡	52 *3*	8538.3	$1^-,2^-$	2449.7	1^-	6604.1	19.4 *6*	8538.3	$1^-,2^-$	1934.1	2^-
6092.1	53 *3*	8538.3	$1^-,2^-$	2446.2	2^+	6622.7‡	136.3 *6*	8538.3	$1^-,2^-$	1914.8	2^+
6102‡	77 *3*	8538.3	$1^-,2^-$	2436.7	(2^+)	6686.8‡	54.6 *10*	8538.3	$1^-,2^-$	1851.2	0^+
6113‡	93 *2*	8538.3	$1^-,2^-$	2423.0	$0^+,3^+$	6710.5	88.6 *6*	8538.3	$1^-,2^-$	1827.8	2^+
6122.1	27 *2*	8538.3	$1^-,2^-$	2416.2	3^+	6757.8	14.2 *6*	8538.3	$1^-,2^-$	1780.5	2^-
6134‡	62 *2*	8538.3	$1^-,2^-$	2402.7	1^+	6767.2	98.1 *7*	8538.3	$1^-,2^-$	1771.1	2^+
6156.0	48 *1*	8538.3	$1^-,2^-$	2382.3	2^+	6823.1	51.9 *5*	8538.3	$1^-,2^-$	1715.2	0^+
6170.8	66 *2*	8538.3	$1^-,2^-$	2367.5	2^+	6999.4	10.3 *3*	8538.3	$1^-,2^-$	1538.9	3^-
6177.5	73 *2*	8538.3	$1^-,2^-$	2360.8	1^+	7069.8	2.7 *3*	8538.3	$1^-,2^-$	1468.5	4^-
6188.7‡	38 *1*	8538.3	$1^-,2^-$	2349.6	3^+	7171.8	20.4 *4*	8538.3	$1^-,2^-$	1366.5	1^-
6196‡	14 *1*	8538.3	$1^-,2^-$	2343.9	1^-	7218.6	119.0 *4*	8538.3	$1^-,2^-$	1319.7	2^-
6215.7‡	92 *2*	8538.3	$1^-,2^-$	2321.9	3^+	7262.2	11.2 *4*	8538.3	$1^-,2^-$	1276.1	3^-
6221.7	11 *2*	8538.3	$1^-,2^-$	2316.6	$1^-,2^-$	7280.2	128.0 *11*	8538.3	$1^-,2^-$	1258.1	2^+
6236.6‡	153 *3*	8538.3	$1^-,2^-$	2300.8	1^+	7290.3	73.6 *13*	8538.3	$1^-,2^-$	1248.0	3^+
6245.1	22 *2*	8538.3	$1^-,2^-$	2293.2	1^-	7295.8	20.0 *15*	8538.3	$1^-,2^-$	1242.5	1^-
6268.4	71.4 *9*	8538.3	$1^-,2^-$	2269.9	1^+	7370.1	71.8 *4*	8538.3	$1^-,2^-$	1168.2	0^+
6280	40.0 *9*	8538.3	$1^-,2^-$	2256.7	3^+	7384.2	153.0 *6*	8538.3	$1^-,2^-$	1154.1	2^+
6297.9‡	7.7 *2*	8538.3	$1^-,2^-$	2240.4	3^-	7408.9	159.2 *9*	8538.3	$1^-,2^-$	1129.4	2^+
6307‡	33 *2*	8538.3	$1^-,2^-$	2231.5	3^+	7488.8	71.8 *4*	8538.3	$1^-,2^-$	1049.5	0^+
6321.7	60 *2*	8538.3	$1^-,2^-$	2216.6	2^+	8449.3	355.6 *9*	8538.3	$1^-,2^-$	89.0	2^+
6335‡	19 *1*	8538.3	$1^-,2^-$	2203.3	$1^-,2^-$	8538.3	182.6 *7*	8538.3	$1^-,2^-$	0	0^+
6347.6‡	74 *6*	8538.3	$1^-,2^-$	2190.6	2^+						

† Computed from the energy difference of the n-capture state and the final state. Recoil effects are not taken into account, since they are smaller than, or comparable to, the uncertainties involved.

‡ Peak consists of more than one transition.

Relative values from 1999GrZN.

^{155}Gd(n,γ) E=1.9 keV 1999GrZN

Level Scheme

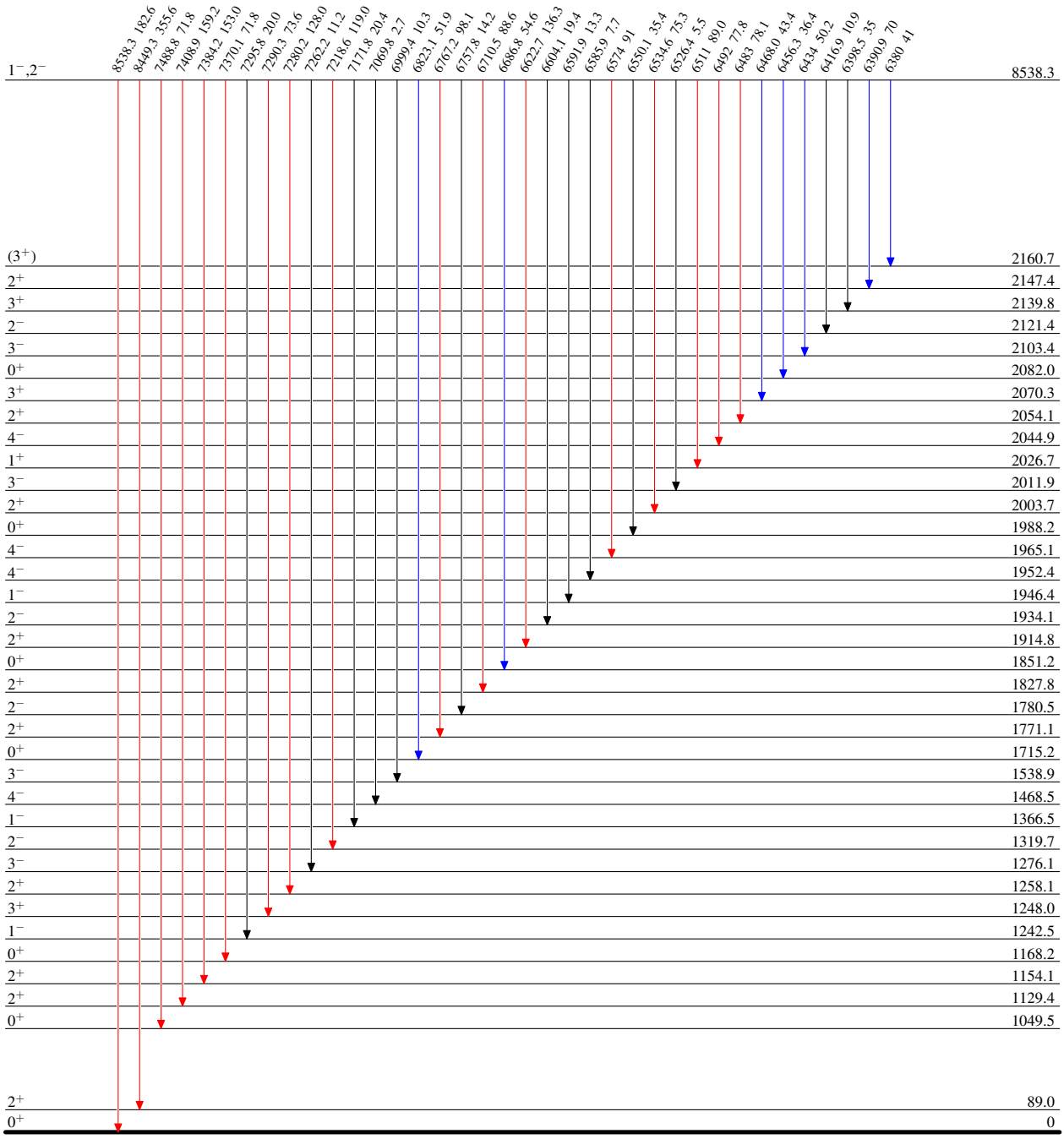
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{156}_{64}Gd_{92}$

^{155}Gd(n,γ) E=1.9 keV 1999GrZN

Level Scheme (continued)

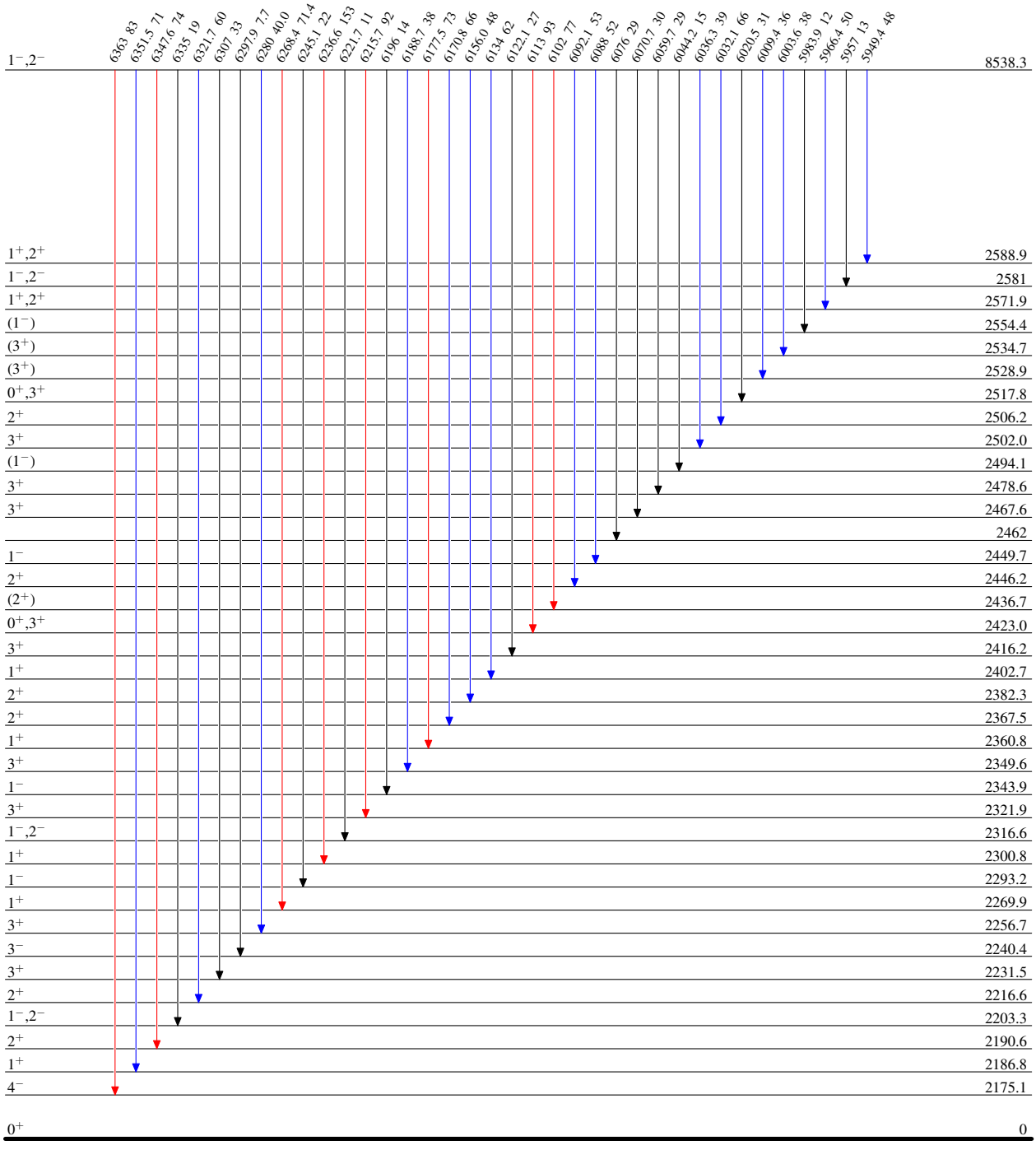
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{156}_{64}Gd_{92}$

^{155}Gd(n,γ) E=1.9 keV 1999GrZN

Level Scheme (continued)

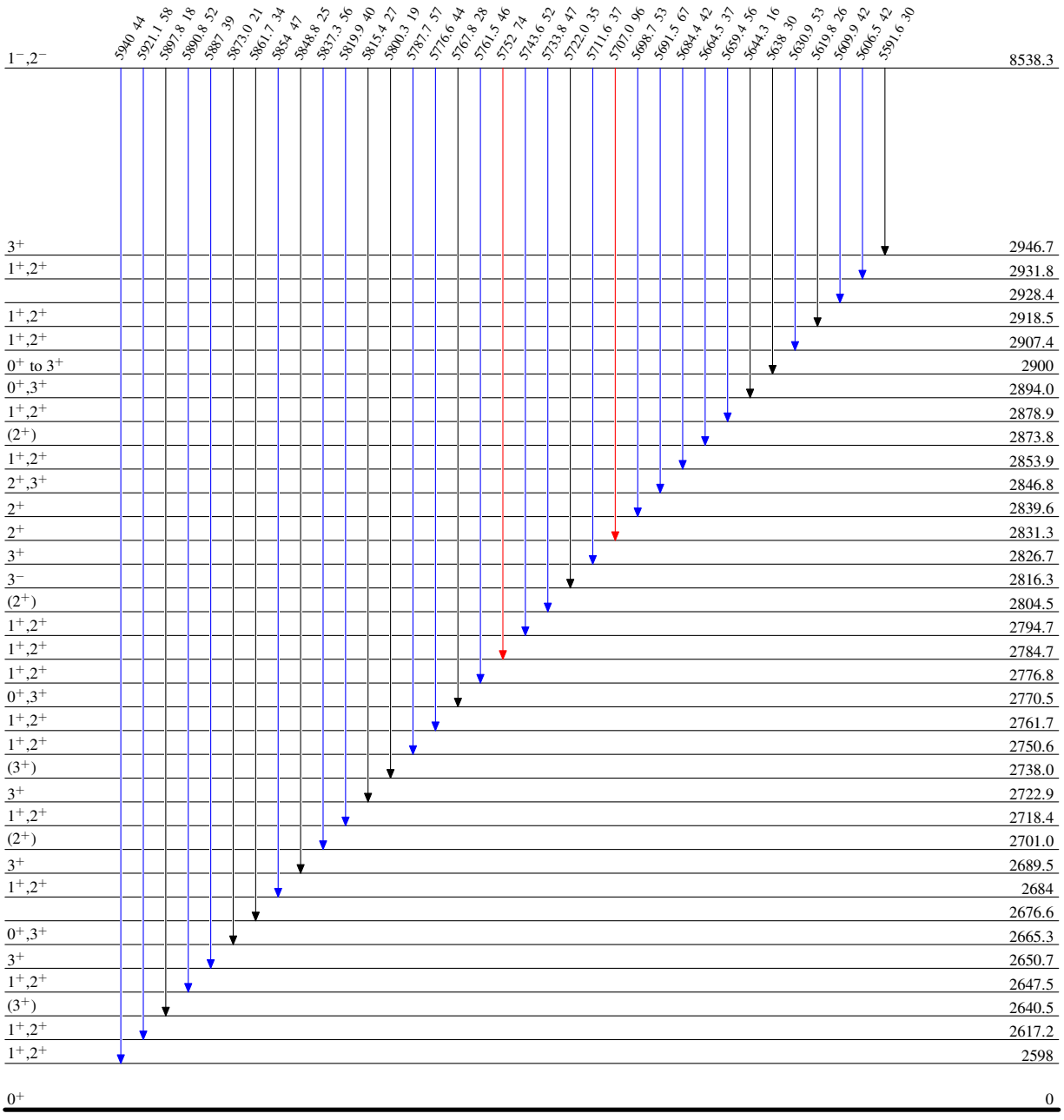
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{156}_{64}Gd_{92}$

^{155}Gd(n,γ) E=1.9 keV 1999GrZN

Band(F): $K^{\pi}=0^{-}$ octupole-vibrational band

3^{-} 1538.9

Band(E): $K^{\pi}=1^{-}$ octupole-vibrational band

4^{-} 1468.5

1^{-} 1366.5

2^{-} 1319.7

Band(C): $K^{\pi}=2^{+}$ γ-vibrational band

Band(D): $K^{\pi}=0^{+}$ band

3^{-} 1276.1

2^{+} 1258.1

3^{+} 1248.0

1^{-} 1242.5

0^{+} 1168.2

Band(B): First excited $K^{\pi}=0^{+}$ band

2^{+} 1154.1

2^{+} 1129.4

0^{+} 1049.5

Band(A): $K^{\pi}=0^{+}$ g.s. band

2^{+} 89.0

0^{+} 0

$^{156}_{64}Gd_{92}$

^{155}Gd(n,γ) E=1.9 keV 1999GrZN (continued)

Band(L): $K^{\pi}=1^{+}$ band

3^{+} 2106.7

Band(K): $K^{\pi}=1^{+}$ band

3^{+} 2070.3

2^{+} 2054.1

1^{+} 2026.7

2^{+} 2003.7

Band(H): $K^{\pi}=2^{-}$ octupole-vibrational band

1^{+} 1965.9

4^{-} 1952.4

Band(I): $K^{\pi}=2^{+}$ band

Band(J): $K^{\pi}=0^{+}$ band

3^{+} 1916.5

2^{+} 1914.8

3^{-} 1851.8

0^{+} 1851.2

2^{+} 1827.8

Band(G): $K^{\pi}=0^{+}$ band

2^{-} 1780.5

2^{+} 1771.1

0^{+} 1715.2

$^{156}_{64}Gd_{92}$

^{155}Gd(n,γ) E=1.9 keV 1999GrZN (continued)

Band(N): $K^{\pi}=1^{+}$ band

3^{+} 2256.7

2^{+} 2216.6

1^{+} 2186.8

Band(O): $K^{\pi}=2^{-}$ band

4^{-} 2155.6

Band(Q): $K^{\pi}=0^{+}$ band

2^{+} 2147.4

Band(R): Probable bandhead of a $K^{\pi}=3^{+}$ band

3^{+} 2139.8

0^{+} 2082.0

Band(M): $K^{\pi}=4^{-}$ band

4^{-} 2044.9

Band(P): $K^{\pi}=0^{+}$ band

2^{+} 2047.8

3^{-} 2024.9

0^{+} 1988.2

2^{-} 1934.1

$^{156}_{64}Gd_{92}$

^{155}Gd(n,γ) E=1.9 keV 1999GrZN (continued)

Band(V): $K^{\pi}=1^{+}$ band

3^{+} 2467.6

2^{+} 2428.0

Band(U): $K^{\pi}=1^{+}$ band

3^{+} 2416.2

1^{+} 2402.7

2^{+} 2382.3

1^{+} 2360.8

Band(S): $K^{\pi}=1^{+}$ band

3^{+} 2349.6

Band(T): $K^{\pi}=1^{+}$ band

2^{+} 2323.3

2^{+} 2302.6

1^{+} 2300.8

1^{+} 2269.9

Band(X): $K^{\pi}=2^{+}$ band

3^{+} 2231.5

Band(W): Probable $K^{\pi}=2^{-}$ bandhead

2^{-} 2199.8

2^{+} 2174.3

$^{156}_{64}Gd_{92}$