^{158}Gd(n,n′γ) 2001Go36

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017

2001Go36: ^{158}Gd(n,n′γ) with reactor neutron on enriched target. γ(θ) measured at seven angles and linear polarization measured.
2007Le29, 2006LeZX: E=1.4-3.3 MeV. Enriched target. Neutrons produced in reaction ^{3}H(p,n). Measured Eγ, Iγ, γ(θ), excitation functions, level lifetimes by DSAM using a Compton-suppressed HPGe detector and four other HPGe detectors for γγ coincidence measurements. Studied 0^+ levels. 2006LeZX report $T_{1/2}$(1403).
2007Le29 found no evidence for a 1577, 0^+ state defined by earlier reported 388.5γ and 600.1γ (see ^{157}Gd(n,γ) E=th,res and 1978Gr14 and 1999Bo10).
Unless noted otherwise data are from 2001Go36.

^{158}Gd Levels

2001Go36 suggest that all levels below 1.7 MeV with J < 5 have been observed.

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]
0.0	0^+	
79.517 *13*	2^+	
261.462 *16*	4^+	
538.990 *22*	6^+	
904.09 *4*	8^+	
977.110 *15*	1^-	
1023.687 *20*	2^-	
1041.630 *18*	3^-	
1159.052 *25*	4^-	
1176.463 *18*	5^-	
1187.125 *18*	2^+	
1195.994 *24*	0^+	
1259.90 *3*	2^+	
1263.550 *24*	1^-	
1265.416 *22*	3^+	
1358.514 *22*	4^+	
1371.99 *5*	6^-	
1380.693 *22*	4^+	
1402.932 *20*	3^-	4.6[@] fs *+8−7*
1406.785 *23*	4^+	
1452.50 *4*	0^+	
1481.611 *25*	5^+	
1499.063 *25*	5^+	
1517.406 *21*	2^+	
1636.34 *3*	4^-	
1639.69 *9*	(5^-)	
1667.28 *4*	4^+	
1716.96 *5*	5^-	
1743.11 *5*	0^+	>0.75 ps
1791.67 *3*	2^+	
1793.59 *4*	2^-	
1814.19 *10*	6^-	
1847.84 *3*	1^+	
1856.49 *4*	1^-	
1861.55 *5*	3^-	
1894.529 *24*	(2^+)	
1894.71 *3*	2^-	
1901.53 *11*	4^+	

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^{158}Gd(n,n′γ) 2001Go36 (continued)

^{158}Gd Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	Comments
1917.01 *9*	$(4,5,6)^-$		
1920.27 *6*	4^+		
1930.21 *5*	1^+		
1941.70 *8*	3^+		
1952.29 *6*	$(0)^+$		
1954.14 *6*	4^-		
1957.29 *9*	0^+	118 fs *+35−24*	
1964.30 *6*	2^+		
1978.02 *10*	3^-		
2017.82 *14*	(5^+)		
2023.84 *8*	1		Jπ: from γ(θ) for 2023 γ, J^π is not 2^+.
2034.01 *8*	3^+		
2035.29 *6*	2^+		
2048.98 *6*	2^-		
2083.60 *6*	2^+		
2089.51 *5*	3^+		Jπ: from γ(θ) for 902 γ, J^π is not 2^+ or 4^+.
2095.20 *16*	4^+		
2120.23 *6*	2^+,3		Jπ: from γ(θ) for 2040 γ, J^π is not 2^- or 4^+.
2214.94 *11*	1		Jπ: from γ(θ) for 2215 γ, J^π is not 2^+.
2215.44 *10*	$(1,2)^+$		
2221.80 *9*	2^-,3^-		
2249.44 *9*			
2260.16 *9*	2^+		
2260.36? *4*			
2267.16 *11*	$(1,2)^+$		
2276.66& *21*	0^+&	49 fs *+14−10*	
2289.46 *12*	$1,2^+$		
2325.09 *7*			
2326.05 *8*			
2340.0& *2*	0^+&	0.17 ps *+18−7*	
2446.30 *13*			
2450.72 *12*	2^+		
2564.91 *17*	$1^{(+)}$		
2594.74 *20*			
2600.23 *22*	$1^{(+)}$		
2644.18& *24*	0^+&	13.2 fs *28*	
2674.55 *18*	$(1),2^+$		
2686.9 *4*	1		
2702.0 *3*	2^+		
2750.36 *19*	$1,(2^+)$		
2805.0 *3*	1		
2822.3 *6*	1^-		
2832.0 *3*	1		
2854.8 *4*	$1,2^+$		
2911.5& *6*	0^+&	33 fs *+44−18*	
2964.3 *5*	2^+		
3038.1 *4*	1		
3059.9 *5*	$1,2^+$		
3065.0 *4*	$1,2^+$		

† From least-squares fit to γ energies; uncertainties are somewhat smaller than values of authors.

‡ Assignments are from authors, but they take into consideration the assignments in the evaluation of 1996He06. Below 2.0 MeV,

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^{158}Gd(n,n′γ) 2001Go36 (continued)

^{158}Gd Levels (continued)

the assignments agree and above this specific arguments of the authors are noted.
[#] Based on DSAM measurements of 2007Le29 unless noted otherwise.
[@] Measured by 2006LeZX (DSAM).
[&] From 2007Le29 only.

γ(^{158}Gd)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
79.51 *2*		79.517	2^+	0.0	0^+		
135.25 *14*	0.26 *2*	1159.052	4^-	1023.687	2^-		
155.09[b] *18*	0.20 *2*	1636.34	4^-	1481.611	5^+		
181.94 *2*	100	261.462	4^+	79.517	2^+	E2	
212.98 *6*	0.62 *4*	1371.99	6^-	1159.052	4^-		
218.01 *7*	0.49 *4*	1716.96	5^-	1499.063	5^+		
230.14 *12*	0.21 *2*	1406.785	4^+	1176.463	5^-		
235.42 *9*	0.48 *4*	1716.96	5^-	1481.611	5^+		
255.65 *2*	3.18 *22*	1636.34	4^-	1380.693	4^+		
277.54 *2*	17.0 *12*	538.990	6^+	261.462	4^+		
282.75 *8*	0.38 *3*	1259.90	2^+	977.110	1^-		
301.1 *2*	<0.08	2017.82	(5^+)	1716.96	5^-		
314.9 *2*	<0.08	1814.19	6^-	1499.063	5^+		
332.65 *11*	0.115 *14*	1814.19	6^-	1481.611	5^+		
336.21 *5*	0.51 *4*	1716.96	5^-	1380.693	4^+		
339.14 *10*	0.20 *2*	1380.693	4^+	1041.630	3^-		
[x]341.75 *14*	0.104 *14*						
365.10[a] *3*	1.87[a] *16*	904.09	8^+	538.990	6^+		
365.10[a] *3*	1.87[a] *16*	1406.785	4^+	1041.630	3^-		
[x]408.63 *12*	0.32 *3*						
[x]410.75 *19*	0.20 *2*						
417.90 *11*	0.20 *2*	1917.01	$(4,5,6)^-$	1499.063	5^+		
435.48 *14*	0.30 *3*	1917.01	$(4,5,6)^-$	1481.611	5^+		
[x]439.21 *7*	0.45 *4*						
[x]444.87 *25*	0.080 *16*						
455.1[b] *3*	0.109 *13*	1954.14	4^-	1499.063	5^+		
466.65 *13*	0.19 *2*	2260.16	2^+	1793.59	2^-		E_γ: γ placed here in γ list (table 1), but not in decay scheme table (table 2).
475.64[ab] *15*	0.15[a] *2*	1452.50	0^+	977.110	1^-		
475.64[a] *15*	0.15[a] *2*	1517.406	2^+	1041.630	3^-		
479.71[&] *9*	0.22 *2*	1743.11	0^+	1263.550	1^-	D	
502.85 *12*	≈0.27	1861.55	3^-	1358.514	4^+		
518.55 *18*	≈0.30	2017.82	(5^+)	1499.063	5^+		
[x]524.77 *17*	0.116 *13*						
528.13[a] *4*	0.67[a] *5*	1791.67	2^+	1263.550	1^-		
528.13[a] *4*	0.67[a] *5*	1793.59	2^-	1265.416	3^+		
[x]537.05 *8*	0.51 *4*						
539.58 *5*	1.05 *8*	1920.27	4^+	1380.693	4^+	M1+E2	δ: δ(E2/M1) = −0.02 *9* or +1.08 *17*.
[x]546.4 *3*	0.057 *11*						
[x]558.20 *10*	0.28 *2*						
[x]587.43 *15*	0.26 *2*						
592.87 *17*		1856.49	1^-	1263.550	1^-		
606.52 *4*	1.40 *11*	1793.59	2^-	1187.125	2^+		
619.4 *2*	0.134 *16*	1978.02	3^-	1358.514	4^+		
[x]622.5 *3*	0.031 *10*						
631.31 *12*	0.16 *2*	1894.71	2^-	1263.550	1^-		

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^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
637.46 *3*	1.57 *12*	1176.463	5^-	538.990	6^+			
646.47 *11*	0.22 *2*	2048.98	2^-	1402.932	3^-			
x654.1 *2*	0.18 *2*							
670.0 *4*	0.099 *17*	1856.49	1^-	1187.125	2^+			
x672.30 *7*	0.72 *6*							
674.31 *8*	0.52 *4*	1861.55	3^-	1187.125	2^+			
676.3 *2*	0.162 *19*	1941.70	3^+	1265.416	3^+			E_γ,I_γ: includes a contribution from ^{159}Gd.
680.85 *11*	0.35 *3*	2083.60	2^+	1402.932	3^-			
688.74[a] *5*	1.07[a] *8*	1952.29	$(0)^+$	1263.550	1^-			
688.74[a] *5*	1.07[a] *8*	1954.14	4^-	1265.416	3^+			
698.88 *14*	0.33 *3*	1964.30	2^+	1265.416	3^+			
x701.2 *3*	0.19 *2*							
707.82 *7*	0.53 *4*	1894.71	2^-	1187.125	2^+			
x713.31 *10*	0.36 *3*							
725.3 *4*	0.068 *12*	1901.53	4^+	1176.463	5^-			
x735.36 *7*	0.61 *5*							
743.05 *5*	1.01 *8*	1930.21	1^+	1187.125	2^+	M1+E2	+0.17 *15*	
750.06 *4*	1.05 *8*	1791.67	2^+	1041.630	3^-			
768.60 *10*	0.58 *5*	2034.01	3^+	1265.416	3^+			
x771.9 *2*	0.18 *2*							
777.34 *17*	0.161 *15*	1964.30	2^+	1187.125	2^+			
780.16 *2*	7.0 *5*	1041.630	3^-	261.462	4^+	E1		
782.65 *8*	0.50 *4*	1941.70	3^+	1159.052	4^-			
785.66 *13*	0.21 *2*	2048.98	2^-	1263.550	1^-			
790.97 *12*	0.35 *3*	1978.02	3^-	1187.125	2^+			
795.0 *2*	0.27 *2*	1954.14	4^-	1159.052	4^-			
x800.1 *5*	0.054 *11*							
x808.9 *4*	<0.05							
814.69 *8*	0.43 *4*	1791.67	2^+	977.110	1^-			
816.45 *12*	0.31 *3*	1793.59	2^-	977.110	1^-			
820.01[a] *6*	0.67[a] *6*	1861.55	3^-	1041.630	3^-			
820.01[a] *6*	0.67[a] *6*	2083.60	2^+	1263.550	1^-			
824.10 *6*	0.73 *6*	1847.84	1^+	1023.687	2^-			
832.97[a] *5*	1.08[a] *9*	1371.99	6^-	538.990	6^+			
832.97[a] *5*	1.08[a] *9*	1856.49	1^-	1023.687	2^-			
x836.3 *3*	0.137 *20*							
x843.4 *3*	0.047 *10*							
847.13[b] *18*	0.23 *3*	2034.01	3^+	1187.125	2^+			
x851.15 *5*	0.89 *7*							
852.84 *5*	0.96 *8*	1894.529	(2^+)	1041.630	3^-			
x856.2 *3*	0.16 *2*							
859.83 *11*	0.45 *4*	1901.53	4^+	1041.630	3^-			
x865.94 *11*								
867.90 *4*	<1.45	1406.785	4^+	538.990	6^+			
870.74[a] *3*	2.41[a] *19*	1847.84	1^+	977.110	1^-			
870.74[a] *3*	2.41[a] *19*	1894.529	(2^+)	1023.687	2^-			
874.9 *2*	0.23 *2*	2034.01	3^+	1159.052	4^-			
879.28 *5*	0.80 *6*	1856.49	1^-	977.110	1^-			
884.7 *3*	0.138 *19*	1861.55	3^-	977.110	1^-			
887.51 *14*	0.22 *2*	2083.60	2^+	1195.994	0^+			
x891.9 *3*	0.030 *10*							
897.59[a] *2*	19.6[a] *8*	977.110	1^-	79.517	2^+			
897.59[a] *2*	19.6[a] *8*	1159.052	4^-	261.462	4^+			
902.38 *4*	0.88 *7*	2089.51	3^+	1187.125	2^+	M1+E2	+1.5 *7*	
906.64 *10*	0.25 *2*	1930.21	1^+	1023.687	2^-			

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^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
915.00 *2*	5.2 *4*	1176.463	5^-	261.462	4^+			
917.54[a] *3*	1.34[a] *11*	1894.529	(2^+)	977.110	1^-			
917.54[a] *3*	1.34[a] *11*	1894.71	2^-	977.110	1^-			
922.65 *8*	0.41 *4*	1964.30	2^+	1041.630	3^-			
925.52 *18*	0.178 *21*	1187.125	2^+	261.462	4^+			
[x]928.3 *2*	0.074 *16*							
[x]934.2 *5*	0.085 *18*							
936.1 *3*	0.057 *16*	1978.02	3^-	1041.630	3^-			
944.13 *2*	23.4 *18*	1023.687	2^-	79.517	2^+	E1		
[x]948.51 *18*	0.190 *18*							
[x]953.34 *9*	0.31 *3*							
[x]955.05 *16*	0.28 *3*							
962.08 *2*	14.9 *10*	1041.630	3^-	79.517	2^+	E1		
977.13 *2*	13.2 *8*	977.110	1^-	0.0	0^+	E1		
[x]982.50 *10*	0.29 *3*							
987.50[b] *8*	0.38 *3*	1964.30	2^+	977.110	1^-			E_γ: γ placed here in γ list (table 1), but not in decay scheme table (table 2).
[x]994.29 *11*	0.28 *2*							
998.47	4.7	1259.90	2^+	261.462	4^+	E2		E_γ: γ is shown in decay scheme table (table 2), but not in list of γ′s (table 1).
1003.95 *2*	2.61 *17*	1265.416	3^+	261.462	4^+	M1+E2	−23 *+19−7*	
1007.25 *9*	0.45 *4*	2048.98	2^-	1041.630	3^-			
1010.35 *14*	0.30 *3*	2034.01	3^+	1023.687	2^-			
1013.88[@&] *10*	2[@] *1*	2276.66	0^+	1263.550	1^-	D		
1018.9[b] *2*	0.17 *2*	2214.94	1	1195.994	0^+			
[x]1021.9 *2*	0.132 *19*							
1024.93 *10*	0.35 *3*	2048.98	2^-	1023.687	2^-			
1028.31 *9*	0.38 *3*	2215.44	$(1,2)^+$	1187.125	2^+			
1034.67[b] *8*	0.45 *4*	2221.80	$2^-,3^-$	1187.125	2^+			
[x]1046.07 *6*	0.62 *5*							
[x]1050.7 *2*	0.129 *19*							
1052.9[b] *2*	0.22 *2*	2095.20	4^+	1041.630	3^-			
1060.64 *9*	0.30 *3*	2326.05		1265.416	3^+			
1062.31[b] *9*	0.29 *3*	2249.44		1187.125	2^+			
[x]1072.08 *16*	0.23 *2*							
1076.6[@&] *1*	[@]	2340.0	0^+	1263.550	1^-	D		
[x]1077.32 *11*	0.41 *4*							
[x]1080.86 *9*	0.38 *3*							
1089.36[@&] *21*	2[@] *1*	2276.66	0^+	1187.125	2^+	E2		
[x]1090.75 *14*	0.19 *2*							
[x]1094.17 *4*	0.75 *6*							
1097.03 *2*	5.6 *4*	1358.514	4^+	261.462	4^+	M1+E2	+6.4 *+14−10*	
1100.74 *12*	0.22 *2*	1639.69	(5^-)	538.990	6^+			
1107.63 *2*	10.6 *8*	1187.125	2^+	79.517	2^+	M1+E2		δ: δ > +80 or < −25.
1116.47[&] *2*	4.7 *3*	1195.994	0^+	79.517	2^+	Q		
1119.20 *2*	9.4 *7*	1380.693	4^+	261.462	4^+	M1+E2	−4.5 *+20−17*	
[x]1126.06 *15*	0.171 *19*							
1128.91[b] *12*	0.20 *2*	1667.28	4^+	538.990	6^+			
[x]1130.59 *14*	0.162 *18*							
1141.45 *2*	3.6 *3*	1402.932	3^-	261.462	4^+	E1		δ: δ(M2/E1) = −0.04 *+4−2*.
1145.35 *5*	0.75 *6*	1406.785	4^+	261.462	4^+	M1+E2	+1.0 *2*	

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^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
1152.8[@&] *2*	[@]	2340.0	0^+	1187.125	2^+	Q		
[x]1153.7 *3*	0.058 *13*							
[x]1157.4 *3*	0.063 *14*							
[x]1159.8 *2*	0.089 *15*							
[x]1166.81 *12*	0.22 *2*							
[x]1173.26 *11*	0.113 *16*							
1180.38 *4*	1.99 *14*	1259.90	2^+	79.517	2^+	M1+E2	−0.70 *7*	δ: the E0 contribution is ρ(0) = 0.055 *23* (2001Go36).
1184.05 *4*	7.6 *5*	1263.550	1^-	79.517	2^+	E1(+M2)	+0.11 *8*	
1185.87 *4*	12.1 *9*	1265.416	3^+	79.517	2^+	M1+E2	+30 *+32−14*	
1187.13 *3*	5.8 *4*	1187.125	2^+	0.0	0^+	E2		
[x]1196.4 *2*	0.140 *15*							
[x]1204.68 *11*	0.30 *3*							
[x]1208.5 *3*	0.106 *15*							
[x]1215.55 *11*	0.18 *2*							
1218.77[b] *3*	0.47 *4*	2260.36?		1041.630	3^-			
1220.15 *2*	2.6 *2*	1481.611	5^+	261.462	4^+			
[x]1221.41 *3*	0.55 *4*							
[x]1234.8 *2*	0.149 *18*							
1237.60 *2*	2.8 *2*	1499.063	5^+	261.462	4^+	M1+E2	>1	
[x]1244.3 *3*	0.191 *17*							
[x]1250.21 *18*	0.20 *2*							
1256.00 *4*	0.89 *7*	1517.406	2^+	261.462	4^+	E2		
1259.90 *4*	3.6 *3*	1259.90	2^+	0.0	0^+	E2		
1263.58 *4*	4.6 *3*	1263.550	1^-	0.0	0^+	E1		
[x]1271.85 *8*	0.27 *2*							
[x]1275.84 *16*	0.159 *18*							
1279.01 *3*	1.77 *13*	1358.514	4^+	79.517	2^+	E2		
[x]1284.6 *2*	0.122 *13*							
1301.20 *3*	2.12 *17*	1380.693	4^+	79.517	2^+	E2		
[x]1312.23 *14*	0.173 *17*							
[x]1314.81 *16*	0.110 *15*							
1323.44 *2*	4.1 *3*	1402.932	3^-	79.517	2^+	E1		δ: δ(M2/E1) = −0.02 *3*.
1327.26 *3*	2.5 *2*	1406.785	4^+	79.517	2^+	E2		
1347.98 *6*	0.45 *4*	2325.09		977.110	1^-			
[x]1353.97 *5*	0.76 *6*							
[x]1360.67 *15*	0.26 *3*							
1362.29[@&] *16*	[@]	2340.0	0^+	977.110	1^-	D		
[x]1371.38 *3*	1.09 *9*							
1372.98[&] *3*	2.29 *16*	1452.50	0^+	79.517	2^+	Q		
1378.19 *11*	0.36 *3*	1639.69	(5^-)	261.462	4^+			
[x]1386.3 *3*	0.068 *14*							
[x]1389.39 *9*	0.30 *3*							
[x]1392.62 *8*	0.48 *4*							
[x]1401.8 *2*	0.119 *16*							
1405.84 *4*	0.87 *7*	1667.28	4^+	261.462	4^+	M1+E2		δ: δ(E2/M1) = +6 *2* or −0.76 *11*.
[x]1419.6 *2*	0.117 *14*							
[x]1428.48 *14*	0.155 *16*							
1437.89 *3*	2.6 *2*	1517.406	2^+	79.517	2^+	M1+E2	−1.5 *4*	δ: the E0 contribution is ρ(0) = 0.44 *6* (2001Go36).
[x]1455.10 *17*	0.25 *3*							
[x]1460.0 *4*	0.126 *19*							
[x]1483.2 *4*	0.045 *11*							
[x]1499.5 *4*	0.055 *12*							
[x]1504.7 *3*	0.036 *9*							

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^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
[x]1509.04 *19*	0.150 *16*						
1517.36 *3*	1.85 *15*	1517.406	2^+	0.0	0^+	E2	
[x]1522.3 *4*	0.122 *13*						E_γ,I_γ: γ may be from ^{159}Gd.
1530.09 *6*	0.55 *5*	1791.67	2^+	261.462	4^+	E2	
[x]1540.3 *3*	0.104 *12*						
[x]1564.05 *17*	0.125 *14*						
[x]1570.7 *7*	0.058 *11*						
[x]1577.2 *7*	0.073 *12*						
1587.71 *5*	0.97 *7*	1667.28	4^+	79.517	2^+	E2	
1617.6 *6*	0.043 *14*	2805.0	1	1187.125	2^+		
[x]1622.2 *3*	0.098 *17*						
[x]1625.8 *3*	0.110 *16*						
1632.8 *7*	0.048 *11*	1894.529	(2^+)	261.462	4^+		
[x]1637.5 *2*	0.172 *19*						
1640.4 *3*	0.113 *17*	1901.53	4^+	261.462	4^+		
[x]1644.2 *2*	0.163 *18*						
1650.8 *2*	0.149 *17*	2674.55	$(1),2^+$	1023.687	2^-		
[x]1657.5 *3*	0.040 *9*						
1663.54[&] *5*	0.69 *6*	1743.11	0^+	79.517	2^+	E2	A_2=−0.07 *4* (2007Le29)
[x]1674.0 *2*	0.138 *15*						
[x]1682.39 *18*	0.156 *16*						
1692.46 *18*	0.26 *2*	1954.14	4^-	261.462	4^+		
1697.3 *6*	0.030 *9*	2674.55	$(1),2^+$	977.110	1^-		
1703.0 *3*	0.100 *17*	1964.30	2^+	261.462	4^+		
[x]1707.4 *3*	0.138 *19*						
[x]1721.7 *3*	0.119 *18*						
[x]1725.9 *5*	0.135 *18*						
[x]1735.5 *5*	0.060 *15*						
[x]1739.1 *4*	0.087 *16*						
[x]1749.9 *2*	0.20 *2*						
[x]1756.5 *4*	0.15 *2*						
1774.44[b] *17*	0.49 *4*	2035.29	2^+	261.462	4^+		
1782.03 *12*	0.30 *3*	1861.55	3^-	79.517	2^+		
[x]1786.2 *2*	0.17 *2*						
[x]1799.2 *5*	0.096 *13*						
1815.30 *18*	0.32 *3*	1894.71	2^-	79.517	2^+		
1833.73 *16*	0.30 *2*	2095.20	4^+	261.462	4^+	M1+E2	δ: δ(E2/M1) = −0.25 *13* or +1.8 *6*.
[x]1838.9 *3*	0.073 *11*						
1856.38 *6*	0.49 *4*	1856.49	1^-	0.0	0^+		
1858.83 *8*	0.31 *3*	2120.23	2^+,3	261.462	4^+		
[x]1864.81 *7*	0.35 *3*						
1877.76[&] *9*	0.40 *3*	1957.29	0^+	79.517	2^+	E2	A_2=−0.02 *4* (2007Le29)
1884.64 *14*	0.31 *3*	1964.30	2^+	79.517	2^+	M1+E2	δ: δ(E2/M1) = −0.08 *12* or +2.9 *+18−9*.
[x]1891.4 *3*	0.076 *17*						
1930.9[b] *3*	0.137 *15*	1930.21	1^+	0.0	0^+		
[x]1940.78 *10*	0.52 *4*						
1944.35 *9*	0.45 *4*	2023.84	1	79.517	2^+		
1955.76 *6*	0.84 *7*	2035.29	2^+	79.517	2^+	M1+E2	δ: δ(E2/M1) = +0.06 *6* or +2.9 *3*.
[x]1971.0 *2*	0.23 *2*						
[x]1977.8 *3*	0.25 *2*						
[x]1988.6 *6*	0.071 *17*						
[x]1998.5 *3*	0.074 *13*						
2009.9[b] *3*	0.24 *2*	2089.51	3^+	79.517	2^+	M1+E2	δ: δ(E2/M1) = +0.45 *20* or +7 *+70−4*.
2014.8[b] *3*	0.20 *2*	2095.20	4^+	79.517	2^+	E2	
2023.77 *12*	0.33 *3*	2023.84	1	0.0	0^+		Mult.: assigned M1 or E1.

Continued on next page (footnotes at end of table)

^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
x2028.0 *4*	0.089 *16*						
2035.6 *6*	0.076 *15*	2035.29	2^+	0.0	0^+		
2040.63 *8*	0.34 *3*	2120.23	2^+,3	79.517	2^+		
x2060.40 *14*	0.21 *2*						
x2068.3 *2*	0.21 *2*						
x2071.51 *14*	0.30 *3*						
x2073.88 *16*	0.151 *18*						
x2102.3 *5*	0.056 *16*						
x2107.3 *2*	0.19 *2*						
x2122.48 *15*	0.29 *2*						
2135.26 *13*	0.31 *3*	2214.94	1	79.517	2^+		
x2138.51 *8*	0.63 *5*						
x2148.80 *13*	0.27 *2*						
x2154.48 *14*	0.22 *2*						
x2163.07 *13*	0.24 *2*						
x2170.90 *19*	0.126 *14*						
2180.52 *14*	0.45 *4*	2260.16	2^+	79.517	2^+		
2187.9 *2*	0.20 *2*	2267.16	$(1,2)^+$	79.517	2^+		
x2196.26 *17*	0.29 *3*						
2197.08[@&] *5*	100[@] *1*	2276.66	0^+	79.517	2^+	E2	A_2=+0.04 *16* (2007Le29)
x2202.83 *10*	0.59 *4*						
2210.2[b] *3*	0.161 *15*	2289.46	$1,2^+$	79.517	2^+		
2215.18 *17*	0.33 *3*	2214.94	1	0.0	0^+		
x2233.3 *2*	0.153 *16*						
x2242.20 *17*	0.23 *2*						
2246.48 *12*	0.33 *3*	2326.05		79.517	2^+		
x2250.5 *4*	0.121 *16*						
2260.16 *16*	0.31 *3*	2260.16	2^+	0.0	0^+	E2	
2260.54[@&b] *5*	[@]	2340.0	0^+	79.517	2^+		E_γ: this γ ray is a triplet.
2267.04 *12*	0.37 *3*	2267.16	$(1,2)^+$	0.0	0^+		
x2273.29 *17*	0.25 *2*						
x2276.3 *2*	0.155 *18*						
2289.44[b] *12*	0.33 *3*	2289.46	$1,2^+$	0.0	0^+		E_γ,I_γ: possibly a multiplet, but only one placement given.
x2304.42 *13*	0.30 *3*						
x2314.01 *9*	0.27 *2*						
x2327.4 *2*	0.19 *2*						
x2337.4 *2*	0.117 *13*						
x2344.6 *5*	0.058 *10*						
2366.8 *2*	0.20 *2*	2446.30		79.517	2^+		
x2369.7 *2*	0.19 *2*						
x2389.6 *5*	0.17 *2*						
x2395.2 *3*	0.134 *19*						
x2401.3 *3*	0.171 *19*						
x2412.3 *2*	0.145 *18*						
x2418.30 *17*	0.27 *3*						
x2434.8 *3*	0.119 *16*						
x2437.8 *3*	0.100 *16*						
2446.26 *16*	0.26 *2*	2446.30		0.0	0^+		
2450.72 *12*	0.37 *3*	2450.72	2^+	0.0	0^+	E2	
x2458.51 *12*	0.20 *2*						
x2474.4 *5*	0.064 *11*						
2485.7 *4*	0.057 *11*	2564.91	$1^{(+)}$	79.517	2^+		
x2498.8 *2*	0.125 *14*						
x2505.5 *3*	0.048 *11*						

Continued on next page (footnotes at end of table)

^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
2515.2 *2*	0.29 *3*	2594.74		79.517	2^+		
2520.8 *3*	0.18 *2*	2600.23	$1^{(+)}$	79.517	2^+		
x2550.8 *4*	0.071 *11*						
2564.73[@&] *5*	100[@]	2644.18	0^+	79.517	2^+	E2	A_2=+0.16 *12* (2007Le29)
2564.82 *18*	0.24 *2*	2564.91	$1^{(+)}$	0.0	0^+		Mult.: data are consistent with E1 or M1.
x2577.04 *16*	0.21 *2*						
2600.1 *3*	0.25 *2*	2600.23	$1^{(+)}$	0.0	0^+		Mult.: data are consistent with E1 or M1.
2607.5 *4*	0.103 *13*	2686.9	1	79.517	2^+		
x2626.5 *6*	0.113 *14*						
x2641.5 *5*	0.094 *17*						
x2646.8 *5*	0.14 *2*						
x2654.0 *4*	0.119 *17*						
x2663.7 *5*	0.117 *16*						
2670.2 *6*	0.122 *17*	2750.36	$1,(2^+)$	79.517	2^+		
2674.8 *4*	0.17 *2*	2674.55	$(1),2^+$	0.0	0^+	(E2)	
x2678.2 *6*	0.096 *16*						
2686.3 *8*	0.16 *2*	2686.9	1	0.0	0^+		Mult.: data are consistent with E1 or M1.
2702.0 *3*	0.31 *3*	2702.0	2^+	0.0	0^+	E2	
x2720.4 *7*	0.071 *16*						
x2727.8 *5*	0.120 *18*						
2742.0 *8*	0.147 *17*	2822.3	1^-	79.517	2^+		
2750.4 *2*	0.141 *17*	2750.36	$1,(2^+)$	0.0	0^+		
x2767.1 *7*	0.068 *14*						
2775.4 *5*	0.095 *16*	2854.8	$1,2^+$	79.517	2^+		
x2783.1 *6*	0.085 *16*						
x2791.2 *7*	0.051 *10*						
x2798.9 *6*	0.093 *16*						
2805.1 *3*	0.14 *2*	2805.0	1	0.0	0^+		
x2816.4 *6*	0.118 *16*						
2822.8 *7*	0.063 *16*	2822.3	1^-	0.0	0^+		
2832.0 *3*	0.21 *2*	2832.0	1	0.0	0^+		Mult.: data are consistent with E1 or M1.
2832.02[@&b] *14*	100[@]	2911.5	0^+	79.517	2^+	E2	
x2839.4 *6*	0.095 *17*						
x2850.0 *10*	0.059 *14*						
2854.6 *5*	0.125 *16*	2854.8	$1,2^+$	0.0	0^+		
x2869.0 *11*	0.056 *16*						
x2879.6 *7*	0.082 *16*						
2885.1 *10*	0.077 *16*	2964.3	2^+	79.517	2^+		
x2895.9 *7*	0.062 *15*						
x2904.7 *6*	0.090 *15*						
x2916.1 *7*	0.062 *13*						
x2920.6 *6*	0.061 *14*						
x2932.5 *5*	0.119 *16*						
x2946.6 *12*	0.041 *15*						
x2952.2 *11*	0.039 *14*						
2964.2 *5*	0.137 *15*	2964.3	2^+	0.0	0^+		
2980.4 *6*	0.077 *16*	3059.9	$1,2^+$	79.517	2^+		
2986.0 *7*	0.074 *15*	3065.0	$1,2^+$	79.517	2^+		
x3006.4 *5*	0.101 *16*						
x3026.9 *4*	0.078 *12*						
3038.1 *4*	0.109 *13*	3038.1	1	0.0	0^+		
3059.8 *9*	0.053 *12*	3059.9	$1,2^+$	0.0	0^+		
3064.7 *5*	0.093 *14*	3065.0	$1,2^+$	0.0	0^+		
x3083.2 *4*	0.072 *13*						
x3097.9 *8*	0.027 *11*						

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^{158}Gd(n,n′γ) 2001Go36 (continued)

γ(^{158}Gd) (continued)

E_γ	I_γ[†]	E_i(level)	E_γ	I_γ[†]	E_i(level)	E_γ	I_γ[†]	E_i(level)
[x]3109.9 *14*	0.022 *12*		[x]3188.1 *9*	0.048 *9*		[x]3318.1 *6*	0.053 *11*	
[x]3119.3 *8*	0.064 *14*		[x]3227.6 *11*	0.047 *10*		[x]3341.8 *8*	0.056 *11*	
[x]3135.2 *6*	0.035 *8*		[x]3237.1 *5*	0.072 *11*				
[x]3175.5 *8*	0.077 *11*		[x]3299.2 *6*	0.050 *9*				

[†] Relative intensities measured at 125° with respect to neutron beam.
[‡] From γ(θ) and linear polarization data.
[#] From γ(θ) and, in some cases, earlier conversion coefficient measurements used to eliminate one solution. For a possible M2 mixture in an E1 transition, the δ value is given in a comment, unless it is different from 0 at the 2 σ level.
[@] From 2007Le29 only. When given, the intensities are branching ratios.
[&] Determined by angular distributions (only a small number of A_2 coefficients are given by 2007Le29) and RUL arguments when available.
[a] Multiply placed with undivided intensity.
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{158}Gd(n,n′γ) 2001Go36

Level Scheme

Intensities: Relative I_γ

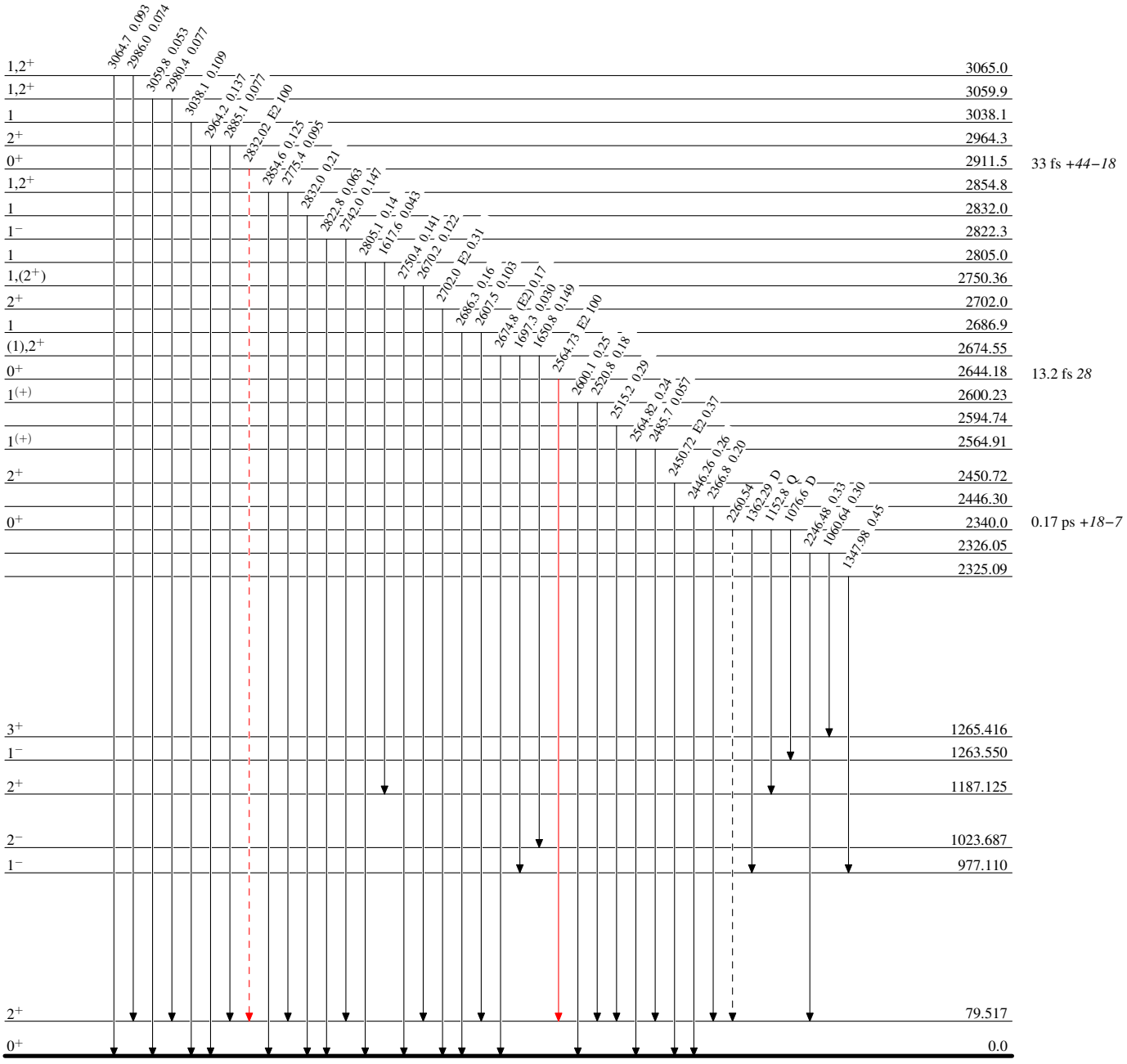
Legend

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

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

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

γ Decay (Uncertain)



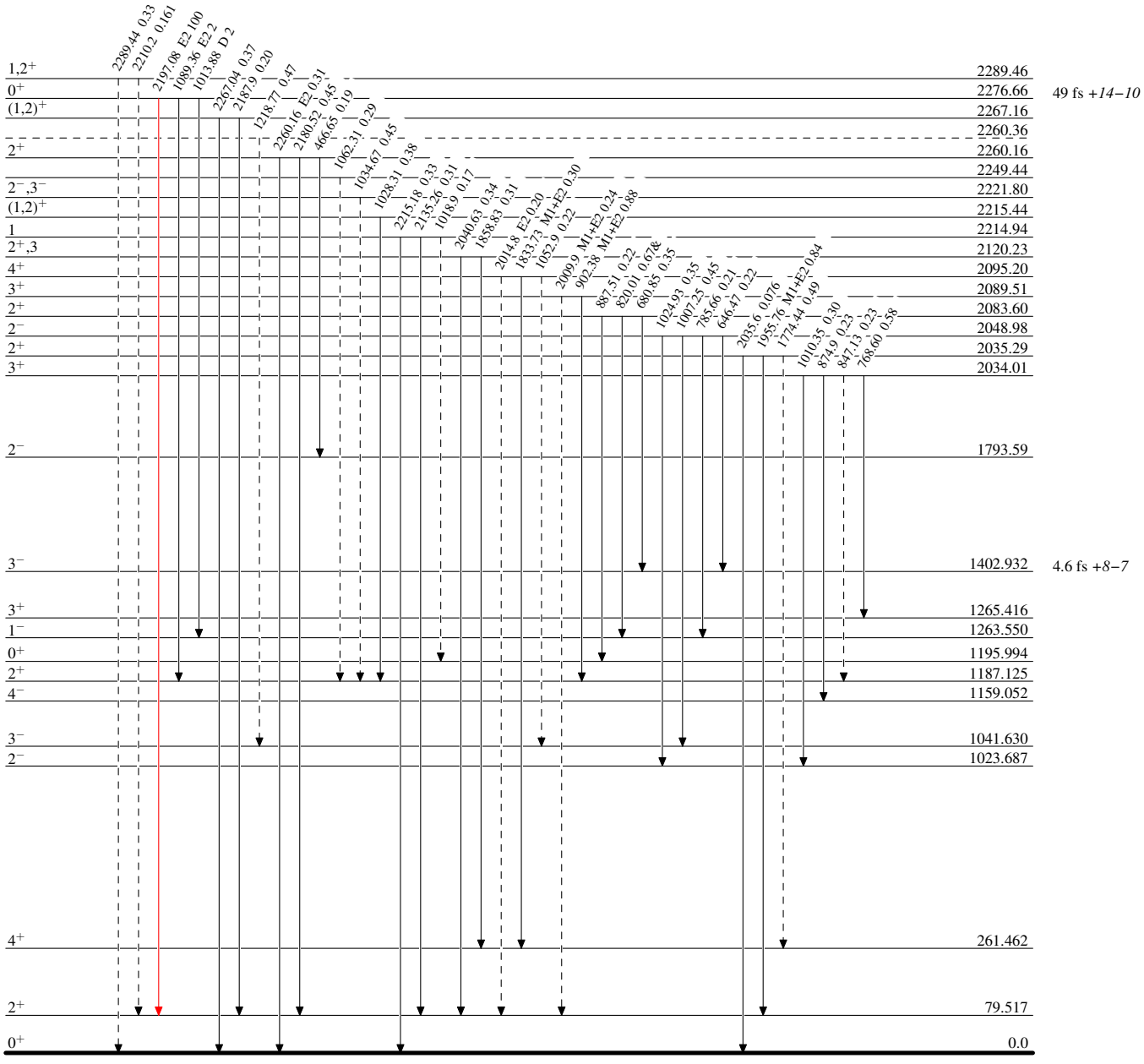
$^{158}_{64}Gd_{94}$

^{158}Gd(n,n′γ) 2001Go36

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



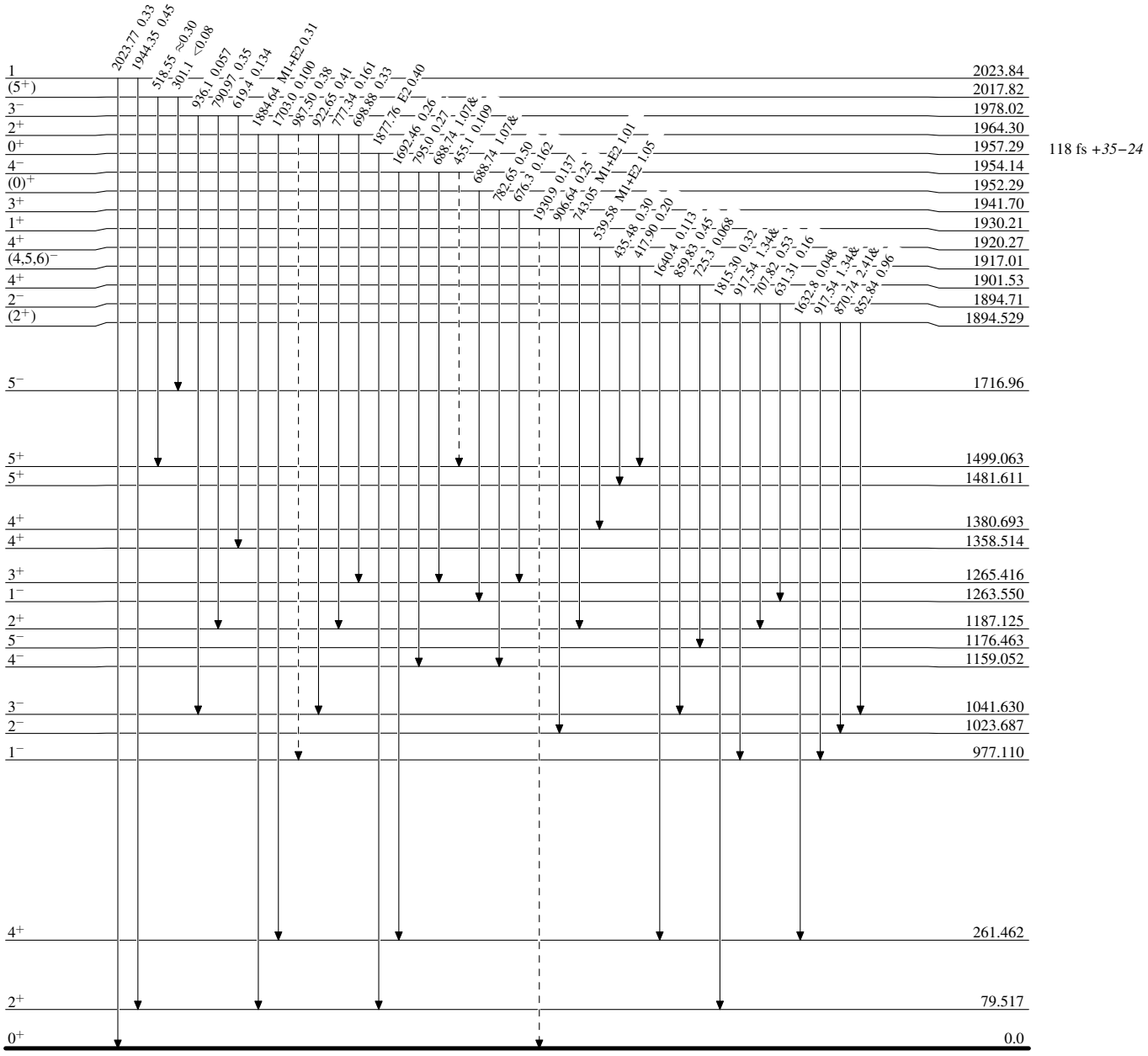
$^{158}_{64}Gd_{94}$

^{158}Gd(n,n′γ) 2001Go36

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)

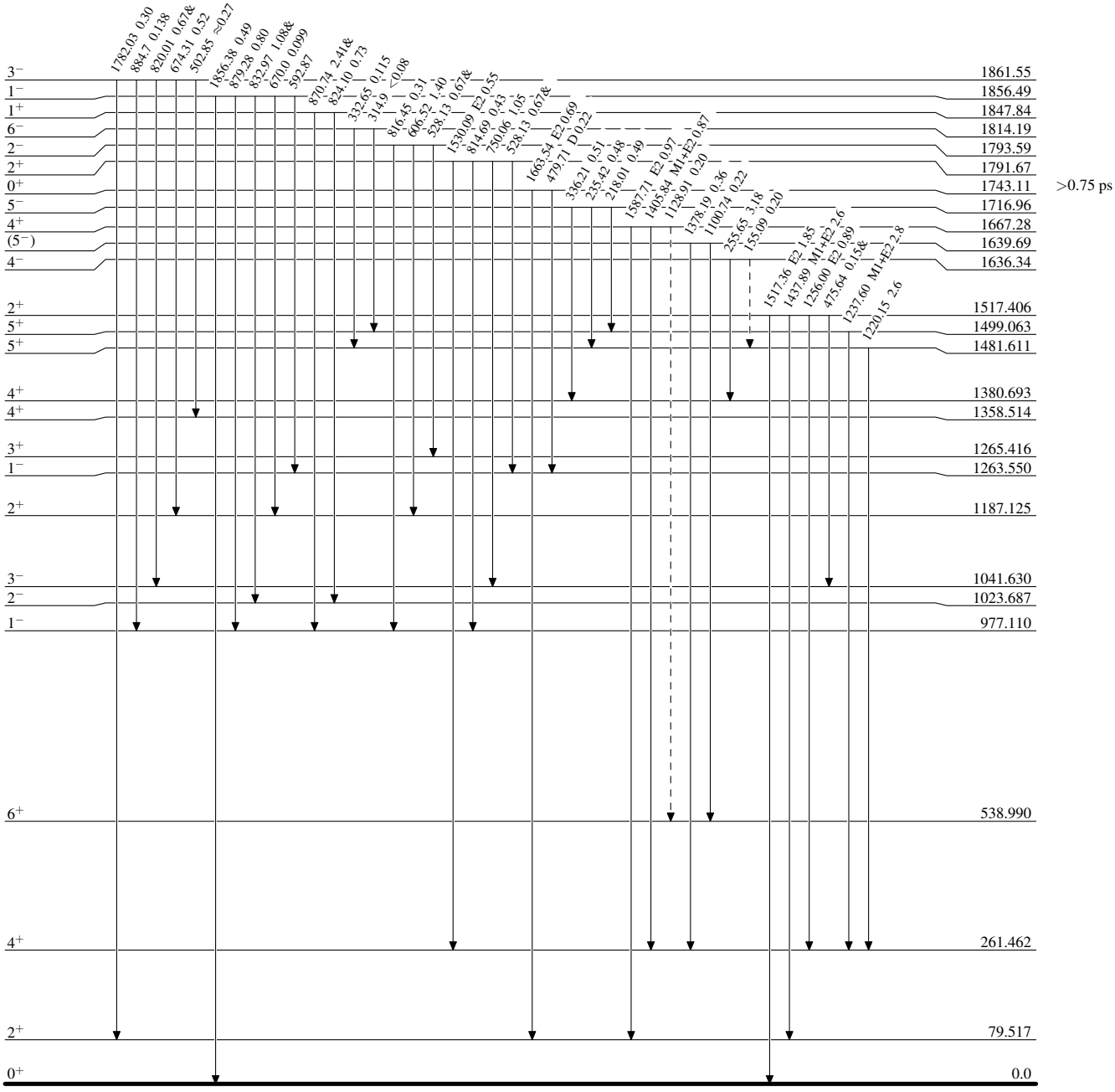


^{158}Gd(n,n′γ) 2001Go36

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



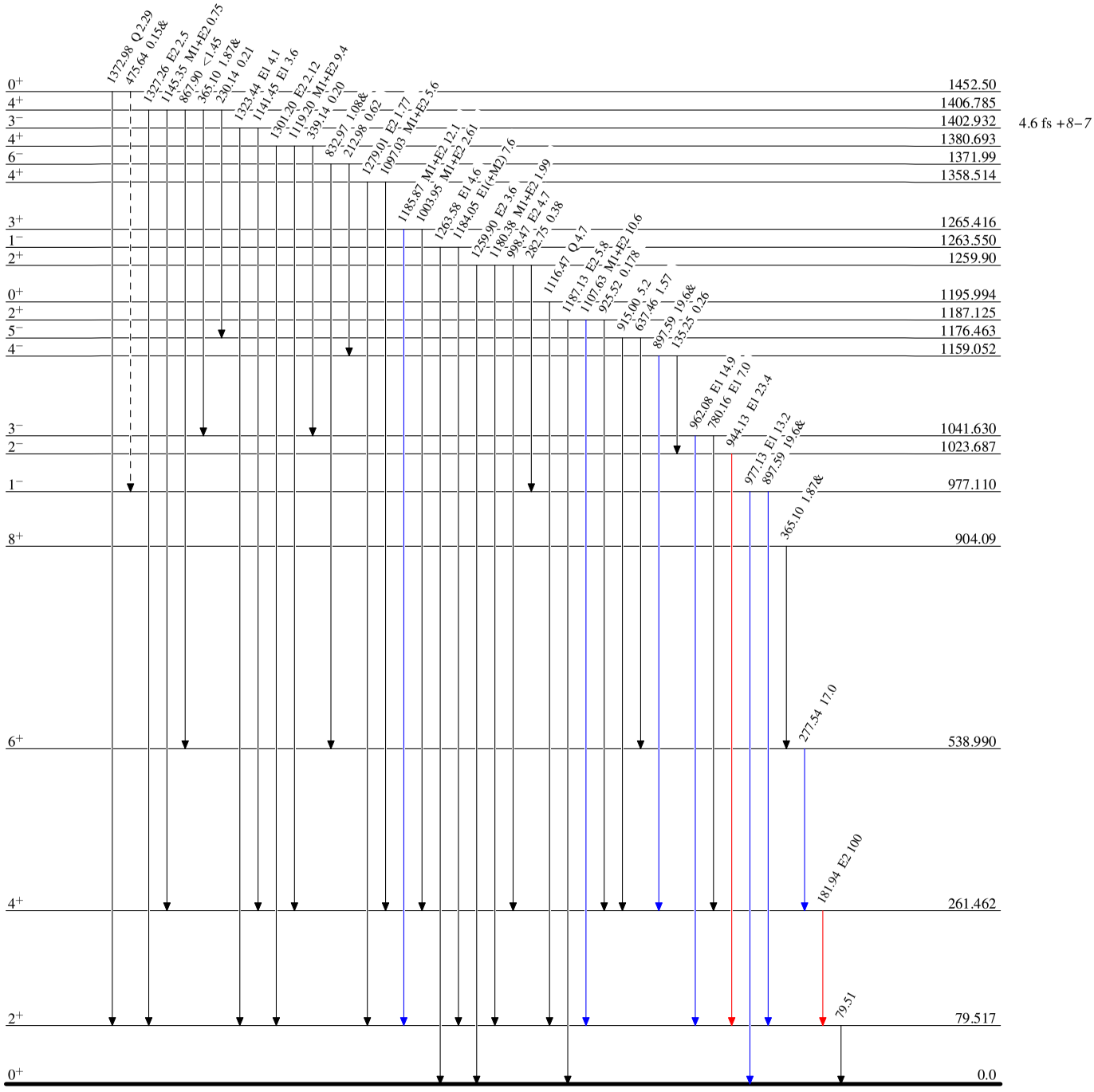
$^{158}_{64}Gd_{94}$

^{158}Gd(n,n′γ) 2001Go36

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{158}_{64}Gd_{94}$