^{162}Dy(n,n′γ) 2002Go15

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 195,1 (2024)	19-Sep-2023

Additional information 1.

Unless noted otherwise, the level scheme and γ-ray data are from 2002Go15. For levels above 1.9 MeV, the placement of the deexciting γ′s was aided by knowledge of the levels whose existence was established from (d,p) and (d,t) reactions. In those instances where the proposed (n,n′γ) level is proposed on the basis of only one deexciting γ, the level is not listed in the Adopted Levels, although it is listed here.

For levels below 1.9 MeV, the data of 2002Go15 are in reasonable agreement with those of 1995Be02. Above this, there are a number of disagreements. Some of reasons for the discrepancies are discussed by 2002Go15.

2002Go15: ^{162}Dy(n,n′γ) on enriched (95.2%) target of mass=10 g. Beam of fast neutrons from a nuclear reactor. γ′s measured using a Ge detector having a resolution of 2.1 keV at Eγ=1.3 MeV. Measured Eγ, Iγ, and γ(θ) (at 90°, 105°, 115°, 125°, 142° and 150°). Report Eγ, Iγ, mult, δ and angular distribution coefficients A_2 and A_4. For related reports from this same group, see 1999De37, 2000De59, 2001DeZV.

1995Be02: Neutron spectrum from reactor on enriched (95.1%) target and γ measured with a Ge detector. Energy calibration was done with values from ^{161}Dy(n,γ) in same paper.

1995Jo20: Used (n,n′) reaction to populate 1^+ states that have been studied by (γ,γ′). 2.2- to 3.6-MeV neutrons from ^{3}H(p,n)^{3}He reaction on enriched (96.2%) target and γ′s measured in Compton-suppressed Ge detector with time-of-flight to select prompt γ′s and neutron energy selection. $T_{1/2}$ from Doppler-shift attenuation method. See also 1993BeZL.

1977Ho11: ^{162}Dy(n,n′γ) on enriched (>96%) target with neutron spectra with maximum energies from 1.5 to 2.4 MeV from ^{3}H(p,n)^{3}He reaction. γ(θ) measured with Ge detectors; no Eγ or Iγ data.

1976Ba33: ^{162}Dy(n,n′γ) on enriched (98%) target with filtered (Pb, B, C, Cd) reactor neutron spectrum. γ′s measured with Ge detector. 60 γ′s reported. See also 1975AvZN.

^{162}Dy Levels

See ^{162}Dy Adopted Levels for the proposed band assignments.

E(level)†	Jπ‡	Comments
0.0	0^+	
80.66 *2*	2^+	
120.7?		E(level): resulting from the decay of 2961 level by the 2840.2γ transition but unobserved in other datasets, therefore tentatively adopted here.
265.65 *2*	4^+	
548.52 *2*	6^+	
888.22 *1*	2^+	
920.72 *10*	8^+	
962.92 *1*	3^+	
1060.98 *1*	4^+	
1148.29 *2*	2^-	
1182.73 *2*	5^+	
1210.15 *1*	3^-	
1275.76 *2*	1^-	
1297.00 *2*	4^-	
1324.40 *6*	6^+	
1357.57 *1*	3^-	
1390.63 *3*	5^-	
1400.32 *4*	0^+	
1408.48? *5*		E(level): ^{162}Ho (67.0 min) ε decay no longer supports the existence of this level. It is not included in the Adopted Levels.
1453.43 *3*	2^+	
1485.61 *4*	5^-	
1490.64 *12*	7^+	

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^{162}Dy(n,n′γ) 2002Go15 (continued)

^{162}Dy Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	Comments
1518.40 *6*	5^-		
1530.22 *12*	6^-		
1535.80 *2*	4^+		
1570.76 *3*	3^-		
1574.21 *6*	4^+		
1634.02 *4*	5^+		
1636.93 *19*	7^-		
1637.36 *7*	1^-		
1666.29 *10*	0^+		
1668.81 *6*	4^-		
1691.64 *7*	2^-		
1728.57 *8*	2^+		
1738.87 *2*	3^-		
1745.82 *6*	1^+		
1766.53 *7*	3^-		
1782.68 *9*	2^+		
1826.44 *8*	4^-		
1837.09 *13*			E(level): level not included in the level-scheme table of 2002Go15.
1840.85 *6*	3^+		
1851.28 *10*	4^-		
1863.83 *6*	2^-		Jπ: 2002Go15 report $J^\pi=3^-$.
1886.81 *9*	4^+		
1895.54 *6*	2^+		
1910.32 *9*	3^-		
1951.94 *18*			
1974.10 *10*	4^-		
1982.76 *9*	2^+		
1999.68 *10*	2^+		
2008.84 *11*			Jπ: 1995Be02 propose $J^\pi=5^+$.
2022.1 *3*			
2053.41 *18*	5^-		
2071.56 *14*	4^+		
2080.60 *8*	(2,3)		
2128.46 *19*	1^-		
2128.53 *22*	(2^+)		
2192.0 *4*			
2216.5 *4*			
2240.4 *4*			
2290.4 *7*			
2310.4 *4*			
2314.1 *5*			
2323.8 *8*			
2339.6 *8*			
2345.7 *7*			
2349.7 *7*			
2355.4 *12*			
2361.7 *8*			
2369.4 *6*			
2382.2 *10*			
2386.6 *8*			
2395.2 *8*	1^+	8 fs *4*	
2404.5 *8*			
2438.4 *6*			
2458.9 *9*			
2480.1 *6*			
2487.5 *7*			

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^{162}Dy(n,n′γ) 2002Go15 (continued)

^{162}Dy Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
2510.3 *10*			
2519.7 *5*			
2523.1 *10*			
2529.1 *6*			
2536.8 *7*			It is tempting to associate this level with the 2525.6 level in (γ,γ′), but the pattern of deexciting γ′s from these two is different.
2550.6 *11*			
2554.3 *6*			
2569.3 *12*			
2571.6 *6*			
2643.4 *13*			
2663.0 *8*			
2709.6 *10*			
2750.1 *15*			
2778.1 *11*			
2788.6 *8*			
2802.7 *6*			
2902.1 *6*	1^{+}	<4 fs	
2909.7 *13*			
2929.2 *10*			
2960.9 *10*			
2990.6 *7*			
3014.0 *9*			
3061.2 *3*	1^{+}	6 fs *3*	From 1995Jo20. Level not reported by 2002Go15.
3071.3 *7*			

[†] From least-squares fit to γ energies with questionable γ′s and some multiply placed γ′s omitted.
[‡] From the Adopted Values. Cases where these differ from those of 2002Go15 are noted. Note that 2002Go15 do not report J^{π} values for levels above 1.9 MeV.
[#] From 1995Jo20 using Doppler-shift attenuation method. See 1993BeZL for earlier results of same group.

γ(^{162}Dy)

E$_{\gamma}$[†]	I$_{\gamma}$[‡]	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.[#]	δ[#]	Comments
80.66 *2*	62 *3*	80.66	2^{+}	0.0	0^{+}			E$_{\gamma}$: nominal value from the adopted values.
114.0 *4*	<0.59	1297.00	4^{-}	1182.73	5^{+}			
149.26 *3*	<0.90	1210.15	3^{-}	1060.98	4^{+}			
185.001 *4*	100 *5*	265.65	4^{+}	80.66	2^{+}	E2		
185.3 *5*	3.7 *8*	1148.29	2^{-}	962.92	3^{+}			E$_{\gamma}$: from 1995Be02. 2002Go15 do not show this placement. I$_{\gamma}$: from Iγ(185.3γ)/Iγ(260.08γ) from 1995Be02 and Iγ(260.08γ).
212.96 *6*	1.66 *10*	1570.76	3^{-}	1357.57	3^{-}			
[x]220.08 *24*	0.26 *4*							
233.00[a] *5*	0.18 *6*	1530.22	6^{-}	1297.00	4^{-}			
235.98 *8*	1.41 *9*	1297.00	4^{-}	1060.98	4^{+}			
247.43 *8*	0.60 *10*	1210.15	3^{-}	962.92	3^{+}			
258.17 *5*	1.5 *2*	1895.54	2^{+}	1637.36	1^{-}			
260.08 *2*	17.9 *9*	1148.29	2^{-}	888.22	2^{+}	E1(+M2)	+0.04 *+16−11*	δ: 1977Ho11 give δ(M2/E1)=−0.08 *+30−31*.
282.88 *2*	15.5 *8*	548.52	6^{+}	265.65	4^{+}	E2		
[x]289.4 *3*	0.16 *4*							

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^{162}Dy(n,n′γ) 2002Go15 (continued)

γ(^{162}Dy) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
295.05 *3*	2.86 *15*	1570.76	3⁻	1275.76	1⁻	[E2]		Mult.: 2002Go15 report (E2+M2), but this may be a misprint. Placement requires mult=E2.
311.22 *5*	1.20 *8*	1668.81	4⁻	1357.57	3⁻			
321.96 *4*	1.37 *8*	1210.15	3⁻	888.22	2⁺	E1(+M2)	−0.01 *3*	
[x]329.7 *3*	0.20 *4*							
334.074 *13*	5.97 *30*	1297.00	4⁻	962.92	3⁺	E1(+M2)	−0.01 *3*	
347.49[@a] *5*	1.1[@] *2*	1408.48?		1060.98	4⁺			
347.49[@] *11*	1.1[@] *2*	1530.22	6⁻	1182.73	5⁺			
361.4[@] *3*	0.19[@] *4*	1570.76	3⁻	1210.15	3⁻			
372.20 *9*	1.65 *10*	920.72	8⁺	548.52	6⁺	E2		
391.71 *22*	0.57 *5*	1574.21	4⁺	1182.73	5⁺			
[x]411.4 *11*	0.09 *3*							
[x]443.7 *5*	0.17 *5*							
451.99 *22*	0.33 *4*	1634.02	5⁺	1182.73	5⁺			
[x]489.08 *20*	0.16 *4*							
[x]523.5 *3*	0.24 *4*							
529.19[@] *12*	0.80[@] *6*	1738.87	3⁻	1210.15	3⁻			
529.19[@] *12*	0.80[@] *6*	1826.44	4⁻	1297.00	4⁻			
[x]542.1 *5*	0.19 *5*							
543.54[@] *10*	1.12[@] *8*	1691.64	2⁻	1148.29	2⁻			
543.54[@] *10*	1.12[@] *8*	1840.85	3⁺	1297.00	4⁻			
551.1 *6*	0.27 *4*	1910.32	3⁻	1357.57	3⁻			
556.33 *19*	0.45 *5*	1766.53	3⁻	1210.15	3⁻			
[x]565.77 *22*	0.27 *5*							
572.95[@] *4*	2.03[@] *11*	1535.80	4⁺	962.92	3⁺			
572.95[@] *4*	2.03[@] *11*	1634.02	5⁺	1060.98	4⁺			
588.8 *5*	0.12 *5*	1863.83	2⁻	1275.76	1⁻			
590.6 *3*	0.28 *5*	1738.87	3⁻	1148.29	2⁻			
[x]610.93 *22*	<0.44							
[x]616.2 *5*	0.17 *5*							
618.3 *3*	0.30 *6*	1766.53	3⁻	1148.29	2⁻			
622.40 *14*	0.38 *4*	888.22	2⁺	265.65	4⁺			
630.48 *22*	<0.53	1840.85	3⁺	1210.15	3⁻			
[x]632.4 *4*	0.22 *5*							
634.15 *6*	1.49 *9*	1182.73	5⁺	548.52	6⁺	M1+E2	−7 *+2−20*	
643.84 *22*	0.29 *5*	1826.44	4⁻	1182.73	5⁺			
647.53 *3*	3.03 *16*	1535.80	4⁺	888.22	2⁺	E2		
[x]652.1 *3*	0.19 *4*							
652.1 *3*	0.19 *4*	1863.83	2⁻	1210.15	3⁻			E_γ: placement is that of the evaluator. γ shown as unplaced by 2002Go15.
[x]654.1 *4*	0.18 *5*							
671.55[@] *10*	0.83[@] *6*	1634.02	5⁺	962.92	3⁺			
671.55[@] *10*	0.83[@] *6*	1886.81	4⁺	1210.15	3⁻			E_γ: poor energy fit, level-energy difference=676.8 keV. Note that γ is doubly placed.
678.05[@] *13*	0.42[@] *4*	1738.87	3⁻	1060.98	4⁺			
678.05[@] *13*	0.42[@] *4*	1974.10	4⁻	1297.00	4⁻			
[x]681.0 *5*	0.18 *5*							
684.8[@] *2*	0.16[@] *3*	1574.21	4⁺	888.22	2⁺			
684.8[@] *2*	0.16[@] *3*	2008.84		1324.40	6⁺			

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^{162}Dy(n,n′γ) 2002Go15 (continued)

γ(^{162}Dy) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
[x]694.19 *16*	0.57 *6*							
697.29 *2*	5.3 *3*	962.92	3^+	265.65	4^+	M1+E2	>45	
711.69 *13*	0.60 *6*	2008.84		1297.00	4^-			
[x]714.5 *3*	0.40 *5*							
[x]720.8 *4*	0.09 *3*							
728.40 *13*	0.82 *6*	1691.64	2^-	962.92	3^+			
747.24[@] *13*	0.51[@] *5*	1895.54	2^+	1148.29	2^-			
747.24[@] *13*	0.51[@] *5*	2071.56	4^+	1324.40	6^+			
[x]748.96 *13*	0.58 *5*							
765.3 *4*	0.10 *4*	1826.44	4^-	1060.98	4^+			
770.96 *22*	0.22 *4*	2128.53	(2^+)	1357.57	3^-			
775.93 *6*	1.12 *7*	1324.40	6^+	548.52	6^+			
779.57 *19*	0.30 *5*	1840.85	3^+	1060.98	4^+			
[x]791.3 *4*	0.29 *4*							
795.315 *10*	9.6 *5*	1060.98	4^+	265.65	4^+	M1+E2	+12 *+18−4*	
[x]801.3 *6*	0.12 *4*							
803.33 *10*	<1.7	1766.53	3^-	962.92	3^+			
807.502 *10*	27.1 *14*	888.22	2^+	80.66	2^+	M1+E2	+57 *+∞−33*	
[x]812.8 *3*	0.17 *3*							
[x]815.8 *5*	0.12 *3*							
819.76 *13*	0.40 *10*	1782.68	2^+	962.92	3^+			
834.2 *4*	0.15 *4*	1895.54	2^+	1060.98	4^+			
842.27 *7*	1.41 *9*	1390.63	5^-	548.52	6^+			
849.50[@a] *15*	0.41[@] *5*	1738.87	3^-	888.22	2^+			E_γ: 2002Go15 show this as a placement in their γ line list but do not include it in their level-scheme table.
849.50[@] *15*	0.41[@] *5*	1910.32	3^-	1060.98	4^+			
[x]853.8 *4*	0.09 *3*							
857.54 *6*	0.96 *6*	1745.82	1^+	888.22	2^+	E1,M1		Mult.: placement requires M1.
863.77 *13*	0.54 *5*	1826.44	4^-	962.92	3^+			
[x]869.93 *13*	<0.75							
[x]872.7 *4*	0.16 *3*							
878.54[@] *10*	0.84[@] *6*	1766.53	3^-	888.22	2^+			
878.54[@] *10*	0.84[@] *6*	1840.85	3^+	962.92	3^+			
882.272 *10*	26.1 *13*	962.92	3^+	80.66	2^+	M1+E2	+41 *+34−13*	
888.150 *10*	24.2 *12*	888.22	2^+	0.0	0^+	E2		
894.39 *22*	0.35 *5*	1782.68	2^+	888.22	2^+			
900.80 *19*	0.44 *5*	1863.83	2^-	962.92	3^+			
911.86 *22*	0.31 *4*	1974.10	4^-	1060.98	4^+			
917.089 *15*	5.4 *3*	1182.73	5^+	265.65	4^+	M1+E2	+50 *+50−2*	
923.8 *3*	0.13 *3*	1886.81	4^+	962.92	3^+			
[x]932.5 *3*	0.22 *4*							E_γ: 2002Go15 place this from a 1895.0 level, but there is no other evidence for the existence of such a level.
937.12 *8*	0.80 *6*	1485.61	5^-	548.52	6^+			
942.12 *11*	0.51 *5*	1490.64	7^+	548.52	6^+			
944.444 *20*	3.94 *20*	1210.15	3^-	265.65	4^+	E1+M2	−0.10 *+3−5*	
947.35 *16*	0.51 *5*	1910.32	3^-	962.92	3^+			
951.8 *5*	0.065 *26*	1840.85	3^+	888.22	2^+			E_γ: 2002Go15 show this as a placement in their γ line list but do not include it in their level-scheme table.
[x]952.7 *10*	0.056 *28*							
[x]956.0 *3*	0.19 *4*							
[x]957.3 *6*	0.13 *4*							

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^{162}Dy(n,n′γ) 2002Go15 (continued)

γ(^{162}Dy) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
969.74 *10*	0.68 *5*	1518.40	5^-	548.52	6^+			
975.64 *6*	1.26 *8*	1863.83	2^-	888.22	2^+			
980.352 *20*	5.11 *26*	1060.98	4^+	80.66	2^+	E2		
992.75 *29*	0.15 *4*	2053.41	5^-	1060.98	4^+			
1007.0 *4*	0.27 *4*	1895.54	2^+	888.22	2^+			
1010.09 *19*	0.51 *5*	1974.10	4^-	962.92	3^+			
[x]1015.0 *3*	<0.50							
[x]1017.7 *3*	0.28 *5*							
1022.07 *16*	0.38 *5*	1910.32	3^-	888.22	2^+			
1025.74[@] *19*	0.39[@] *5*	1574.21	4^+	548.52	6^+			
[x]1041.6 *5*	0.24 *5*							
[x]1047.0 *3*	0.42 *6*							
1058.76 *16*	0.59 *5*	1324.40	6^+	265.65	4^+			
[x]1073.2 *4*	0.30 *4*							
[x]1079.1 *5*	0.13 *3*							
[x]1082.0 *6*	0.07 *3*							
1088.40 *19*	0.45 *5*	1636.93	7^-	548.52	6^+			
1092.23 *2*	4.26 *22*	1357.57	3^-	265.65	4^+			
1107.8 *4*	0.12 *4*	2071.56	4^+	962.92	3^+			
[x]1109.9 *3*	0.12 *4*							
[x]1114.3 *4*	0.23 *4*							
1124.95 *3*	2.36 *13*	1390.63	5^-	265.65	4^+	E1(+M2)	+0.05 *5*	
1129.424 *15*	6.7 *3*	1210.15	3^-	80.66	2^+	E1+M2	+0.05 *+5−3*	
[x]1134.2 *3*	0.24 *5*							
1141.94[a] *25*	0.42 *4*	1408.48?		265.65	4^+			
[x]1152.9 *6*	0.19 *4*							
[x]1166.2 *5*	0.15 *4*							
[x]1169.2 *5*	0.13 *4*							
[x]1173.6 *6*	0.16 *4*							
[x]1178.4 *6*	0.20 *4*							
1187.74 *4*	2.52 *13*	1453.43	2^+	265.65	4^+	E2		
1195.109 *15*	9.0 *4*	1275.76	1^-	80.66	2^+	E1		δ: 2002Go15 report δ(M2/E1)=0.00 *4*.
[x]1213.7 *6*	0.07 *3*							
[x]1217.76 *13*	0.69 *6*							
1219.94 *4*	2.00 *11*	1485.61	5^-	265.65	4^+			
[x]1223.31 *25*	0.26 *5*							
[x]1227.8 *6*	0.21 *8*							
[x]1232.3 *4*	0.11 *3*							
1252.79 *6*	1.44 *8*	1518.40	5^-	265.65	4^+			
[x]1257.3 *9*	0.09 *4*							
[x]1261.6 *9*	0.09 *4*							
[x]1267.6 *6*	0.14 *4*							
1276.56[&] *2*	4.7[&] *13*	1275.76	1^-	0.0	0^+			I_γ: from Iγ(1276γ)/Iγ(1195γ) in ^{162}Tb β^- decay and Iγ(1195γ). Iγ=11.5 *6* for the composite peak.
1276.56[&] *2*	6.8[&] *14*	1357.57	3^-	80.66	2^+			I_γ: from Iγ=11.5 *6* for the composite peak and Iγ=4.7 *13* for the other placement of this transition.
[x]1284.6 *5*	0.13 *3*							
[x]1297.9 *3*	0.18 *3*							
1308.64 *6*	1.78 *10*	1574.21	4^+	265.65	4^+	M1(+E2)	+0.04 *+8−10*	
[x]1312.3 *3*	0.28 *4*							
[x]1317.3 *5*	0.24 *5*							
1319.65 *4*	2.44 *14*	1400.32	0^+	80.66	2^+			

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^{162}Dy(n,n′γ) 2002Go15 (continued)

γ(^{162}Dy) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
[x]1330.0 *3*	0.15 *4*							
[x]1332.4 *3*	0.20 *4*							
[x]1342.56 *19*	0.33 *4*							
[x]1350.75 *25*	0.23 *4*							
[x]1355.5 *3*	0.23 *4*							
1372.80 *4*	3.50 *18*	1453.43	2^+	80.66	2^+	M1+E2	+0.40 *15*	
[x]1391.9 *4*	0.21 *5*							
[x]1394.5 *4*	0.34 *5*							
1404.0 *3*	0.31 *4*	1668.81	4^-	265.65	4^+			
[x]1428.1 *5*	0.09 *4*							
[x]1438.6 *3*	0.28 *4*							
1462.92 *13*	0.81 *6*	1728.57	2^+	265.65	4^+			
[x]1464.7 *5*	0.16 *4*							
[x]1468.9 *15*	0.10 *5*							
1473.40 *19*	0.55 *5*	1738.87	3^-	265.65	4^+			
[x]1483.2 *5*	0.06 *3*							
[x]1489.5 *4*	0.20 *4*							
[x]1496.2 *6*	0.10 *4*							
1501.5 *4*	0.09 *3*	1766.53	3^-	265.65	4^+			
1516.6 *3*	0.14 *4*	1782.68	2^+	265.65	4^+			
1556.67 *10*	1.65 *9*	1637.36	1^-	80.66	2^+	E1		
1574.82 *25*	0.22 *4*	1840.85	3^+	265.65	4^+			
1585.62[@] *10*	1.09[@] *7*	1666.29	0^+	80.66	2^+			
1585.62[@] *10*	1.09[@] *7*	1851.28	4^-	265.65	4^+			
[x]1602.1 *3*	0.33 *4*							
1610.95 *10*	0.99 *7*	1691.64	2^-	80.66	2^+	(E1)		
1637.32 *22*	0.40 *4*	1637.36	1^-	0.0	0^+			
1647.90 *10*	1.21 *7*	1728.57	2^+	80.66	2^+	M1+E2		δ: 2002Go15 report δ=−0.20 *+15−18* or +4.3 *+57−18*.
1658.5 *3*	0.16 *4*	1738.87	3^-	80.66	2^+			
1665.29 *10*	0.90 *6*	1745.82	1^+	80.66	2^+	E1,M1		Mult.: placement requires M1.
[x]1684.1 *5*	0.18 *4*							
1686.76 *29*	0.35 *5*	1951.94		265.65	4^+			
[x]1698.3 *5*	0.057 *27*							
1702.08 *19*	0.54 *5*	1782.68	2^+	80.66	2^+			
[x]1708.3 *10*	0.12 *5*							E_γ: 2002Go15 place this from a 1708.3 level, but there is no other evidence for the existence of such a level.
[x]1710.4 *13*	0.08 *5*							
1716.0 *7*	0.17 *5*	1982.76	2^+	265.65	4^+			
[x]1722.8 *4*	0.20 *5*							
1728.58 *19*	0.66 *6*	1728.57	2^+	0.0	0^+			
[x]1735.7 *4*	0.17 *4*							E_γ: 2002Go15 place this from a 1816.4 level, but there is no other evidence for the existence of such a level.
1757.3 *6*	0.15 *4*	1837.09		80.66	2^+			
1759.63 *26*	0.28 *4*	1840.85	3^+	80.66	2^+			2002Go15 indicate that this γ may also be placed from a 1759.6 level, but no there is no other evidence for such a level.
[x]1767.9 *7*	0.083 *24*							
[x]1773.80 *19*	0.46 *5*							E_γ: 2002Go15 place this from a 1773.8 level, but there is no other evidence for the existence of such a level.
1782.8[@] *2*	0.61[@] *6*	1782.68	2^+	0.0	0^+			I_γ: most, possibly all, of the intensity in this

Continued on next page (footnotes at end of table)

^{162}Dy(n,n′γ) 2002Go15 (continued)

γ(^{162}Dy) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
							peak is associated with this placement. See the comment in the ^{161}Dy(n,γ) E=th data set.
1782.8[@] 2	0.61[@] 6	1863.83	2−	80.66	2+		See the comment for the other placement of this peak.
1787.56 22	0.41 5	2053.41	5−	265.65	4+		
[x]1798.2 4	0.20 4						E_γ: 2002Go15 place this from a 1798.2 level, but there is no other evidence for the existence of such a level.
1806.15 9	1.29 8	1886.81	4+	80.66	2+	E2	
1814.92[@] 9	1.22[@] 8	1895.54	2+	80.66	2+		I_γ: most of the intensity must be associated with this placement (see the comment on the other placement of this γ).
1814.92[@a] 9	1.22[@] 8	2080.60	(2,3)	265.65	4+		γ shown from both this level and the 1895.5 level. However, most of the intensity must be associated with this latter placement, otherwise the population of this 2080.6 level will be too large (private communication from the authors of 2002Go15).
[x]1832.36 22	0.19 5						E_γ: 2002Go15 place this from a 1832.4 level. An 1833 level is seen in (d,p) and (d,t), but that level should not deexcite via a γ directly to the g.s..
1837.04 13	0.31 4	1837.09		0.0	0+		
1871.00 22	0.31 4	1951.94		80.66	2+		
1902.29 12	1.09 7	1982.76	2+	80.66	2+		
1918.80 13	1.00 7	1999.68	2+	80.66	2+		
[x]1940.3 5	0.17 5						
[x]1943.7 6	0.20 5						
1950.6[a] 3	0.38 4	1951.94		0.0	0+		
1982.55 13	1.08 7	1982.76	2+	0.0	0+		E_γ: γ may contain a contribution from ^{18}O (2002Go15).
[x]1992.0 10	0.13 4						
1999.98[@] 16	1.00[@] 7	1999.68	2+	0.0	0+		
1999.98[@] 16	1.00[@] 7	2080.60	(2,3)	80.66	2+		
2022.1 3	0.38 4	2022.1		0.0	0+		
2047.79 19	0.50 5	2128.46	1−	80.66	2+		
[x]2067.92 16	0.56 5						
2111.3 4	0.28 4	2192.0		80.66	2+		
[x]2124.1 4	0.21 3						
2135.8 4	0.12 4	2216.5		80.66	2+		
2233.3 5	0.30 5	2314.1		80.66	2+		
2240.4 4	0.35 5	2240.4		0.0	0+		
2274.7 12	0.23 8	2355.4		80.66	2+		
2290.4 7	0.27 7	2290.4		0.0	0+		
2305.9 8	0.38 7	2386.6		80.66	2+		
2310.4 4	0.90 9	2310.4		0.0	0+		
2315.1[@] 12	0.29[@] 9	2314.1		0.0	0+		
2315.1[@] 12	0.29[@] 9	2395.2	1+	80.66	2+		
2323.8[@] 8	0.22[@] 6	2323.8		0.0	0+		
2323.8[@] 8	0.22[@] 6	2404.5		80.66	2+		
[x]2331.0 5	0.33 6						
2339.6 8	0.17 6	2339.6		0.0	0+		
2345.7 7	0.28 6	2345.7		0.0	0+		
2349.7 7	0.28 6	2349.7		0.0	0+		
2361.7 8	0.29 6	2361.7		0.0	0+		
2369.4 6	0.28 6	2369.4		0.0	0+		
2378.2 9	0.22 7	2458.9		80.66	2+		
2382.2 10	0.21 7	2382.2		0.0	0+		

Continued on next page (footnotes at end of table)

^{162}Dy(n,n′γ) 2002Go15 (continued)

γ(^{162}Dy) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Comments
2394.8 *10*	0.21 *6*	2395.2	1^+	0.0	0^+	
2399.4 *6*	0.35 *6*	2480.1		80.66	2^+	
2406.8 *7*	0.22 *5*	2487.5		80.66	2^+	
x2418.1 *7*	0.16 *6*					
x2425.6 *12*	0.20 *7*					
2429.6 *10*	0.25 *8*	2510.3		80.66	2^+	
2438.4 *6*	0.33 *6*	2438.4		0.0	0^+	
2442.4 *10*	0.22 *7*	2523.1		80.66	2^+	
2448.4 *6*	0.18 *5*	2529.1		80.66	2^+	
2455.3 *10*	0.26 *6*	2536.8		80.66	2^+	
2473.6 *6*	0.53 *7*	2554.3		80.66	2^+	
2490.9 *6*	0.43 *6*	2571.6		80.66	2^+	
x2505.4 *6*	0.44 *6*					
2519.7 *5*	0.47 *6*	2519.7		0.0	0^+	
x2532.3 *12*	0.19 *6*					
2537.5 *10*	0.23 *7*	2536.8		0.0	0^+	
2550.6 *11*	0.21 *7*	2550.6		0.0	0^+	
2554.5 *10*	0.25 *7*	2554.3		0.0	0^+	
2562.7 *13*	0.14 *5*	2643.4		80.66	2^+	
2569.3 *12*	0.16 *6*	2569.3		0.0	0^+	
x2587.4 *7*	0.30 *5*					
2628.9 *10*	0.08 *3*	2709.6		80.66	2^+	
x2644.7 *7*	0.31 *5*					
2663.0 *8*	0.13 *4*	2663.0		0.0	0^+	
2669.4 *15*	0.14 *5*	2750.1		80.66	2^+	
x2674.5 *14*	0.16 *6*					
x2692.3 *20*	0.11 *6*					
2697.4 *11*	0.21 *7*	2778.1		80.66	2^+	
2721.3 *9*	0.13 *5*	2802.7		80.66	2^+	
x2734.3 *10*	0.23 *5*					
x2745.0 *12*	0.26 *5*					
x2756.9 *11*	0.22 *5*					
x2786.2 *12*	0.12 *5*					
2788.6 *8*	0.19 *6*	2788.6		0.0	0^+	
2803.2 *8*	0.26 *5*	2802.7		0.0	0^+	
2821.1 *16*	0.15 *6*	2902.1	1^+	80.66	2^+	
2829.0 *13*	0.20 *7*	2909.7		80.66	2^+	
2840.2[a] *10*	0.23 *5*	2960.9		120.7?		
2902.1 *6*	0.27 *5*	2902.1	1^+	0.0	0^+	
2929.2 *10*	0.12 *4*	2929.2		0.0	0^+	
x2945.3 *9*	0.13 *4*					
2980.3 *4*	29 *4*	3061.2	1^+	80.66	2^+	I_γ: Relative branching, from 1995Jo20.
2990.6[@] *7*	0.23[@] *4*	2990.6		0.0	0^+	
2990.6[@] *7*	0.23[@] *4*	3071.3		80.66	2^+	
x2999.1 *14*	0.06 *3*					
3014.0 *9*	0.27 *5*	3014.0		0.0	0^+	
3061.4 *4*	71 *4*	3061.2	1^+	0.0	0^+	I_γ: Relative branching, from 1995Jo20.
x3148.2 *9*	0.10 *3*					

† From 2002Go15, unless noted otherwise.
‡ Relative values,at θ=125°, from 2002Go15, unless noted otherwise.
# From 2002Go15, $\gamma(\theta)$. Quadrupole transitions are assumed to be E2. γ's with sizeable δ values are taken to be M1+E2, rather than E1+M2. In instances where the parities of the levels are well established from other sources, they are used to distinguish

Continued on next page (footnotes at end of table)

^{162}Dy(n,n′γ) 2002Go15 (continued)

$\gamma(^{162}Dy)$ (continued)

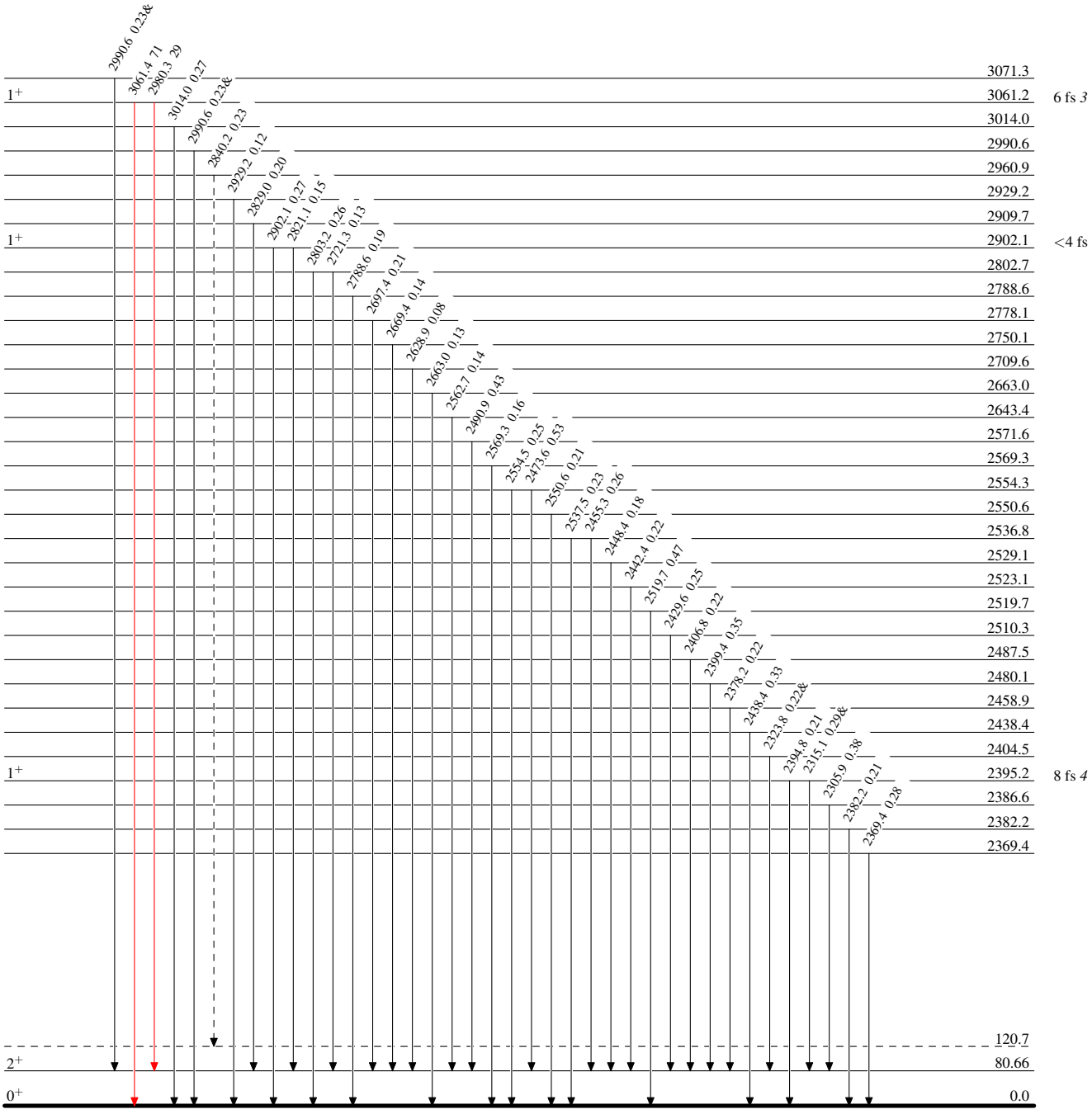
between E1 and M1.
@ Multiply placed with undivided intensity.
& Multiply placed with intensity suitably divided.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

^{162}Dy(n,n′γ) 2002Go15

Level Scheme

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)



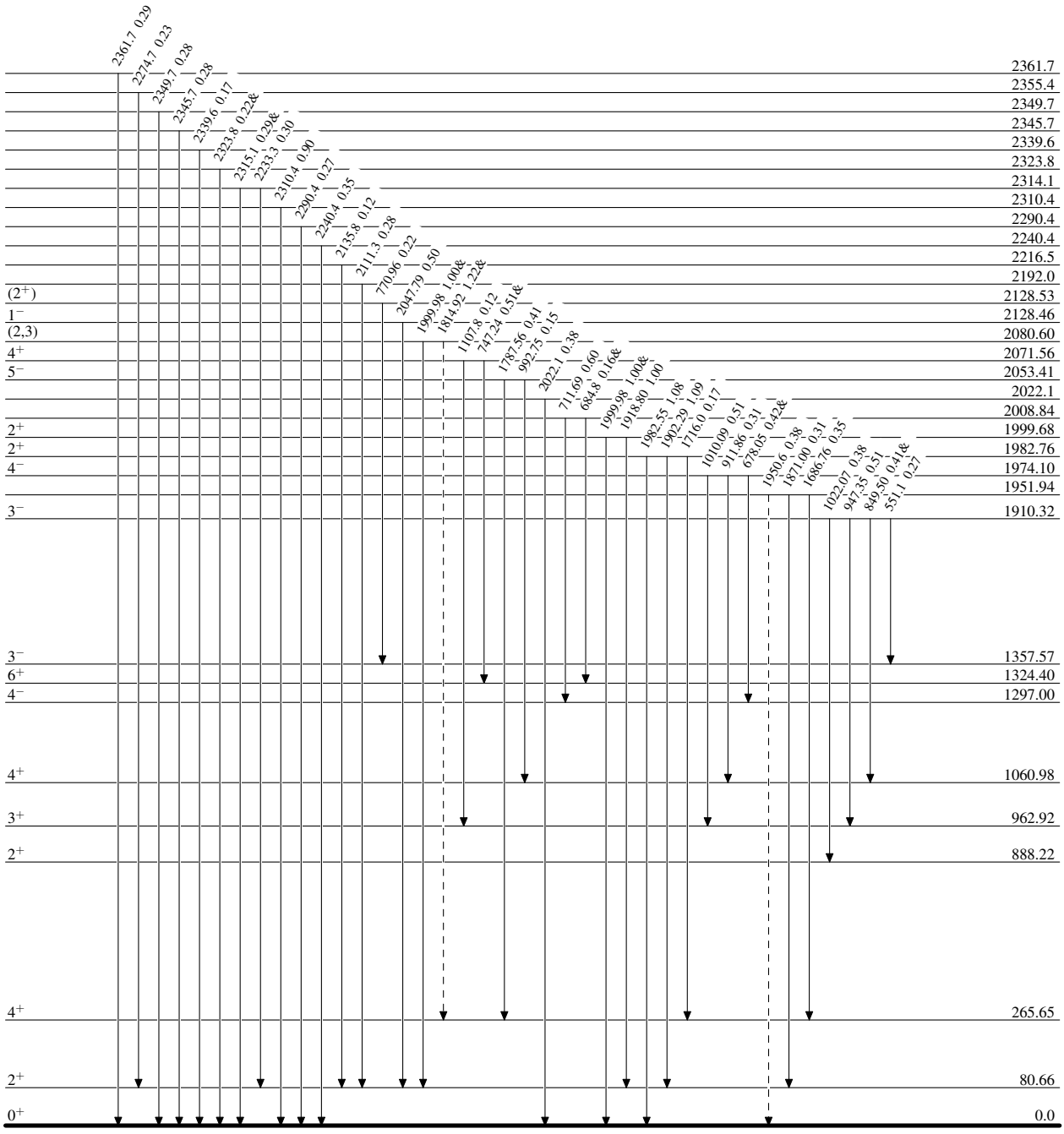
$^{162}_{66}Dy_{96}$

^{162}Dy(n,n′γ) 2002Go15

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)



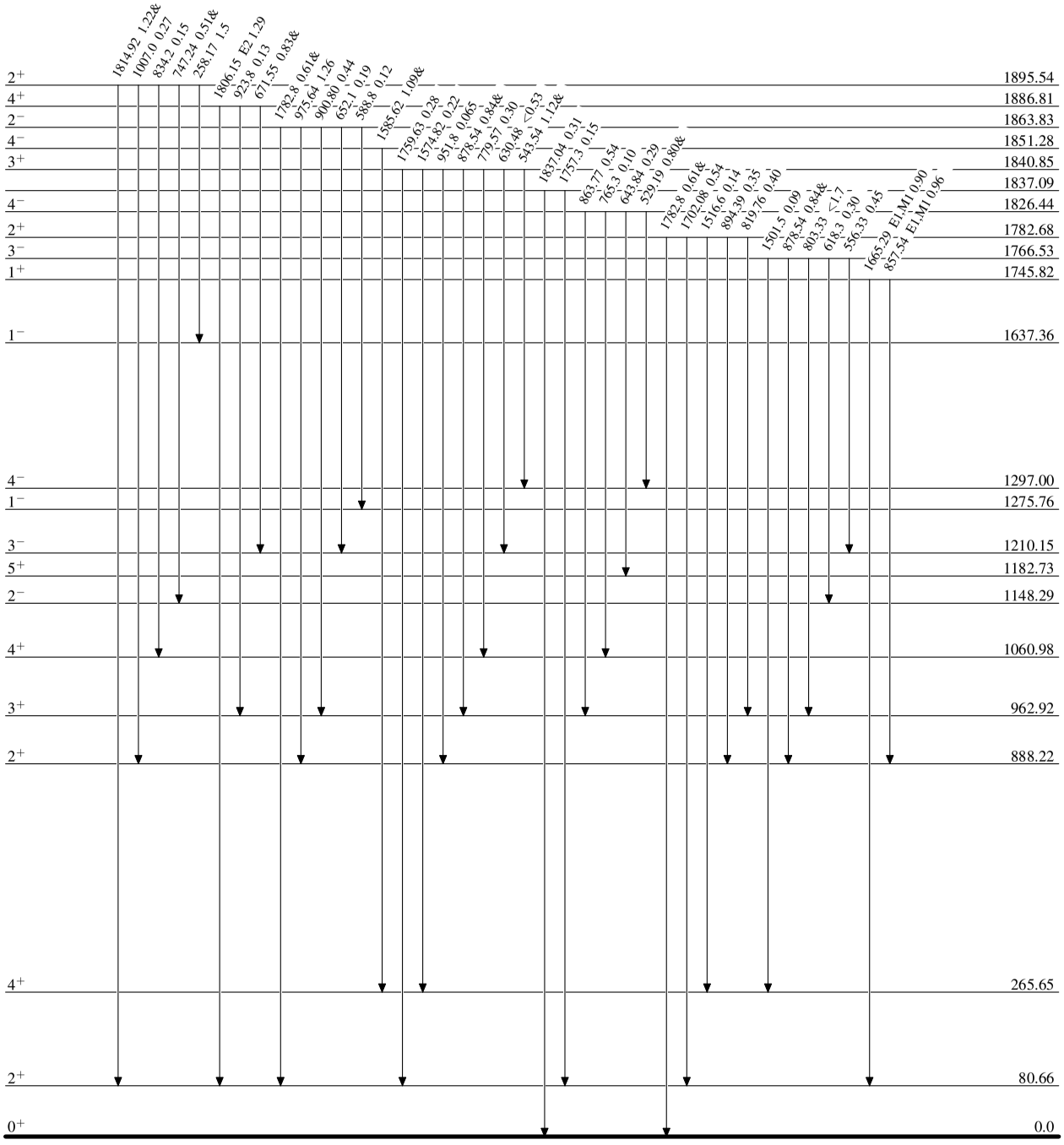
$^{162}_{66}Dy_{96}$

^{162}Dy(n,n′γ) 2002Go15

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



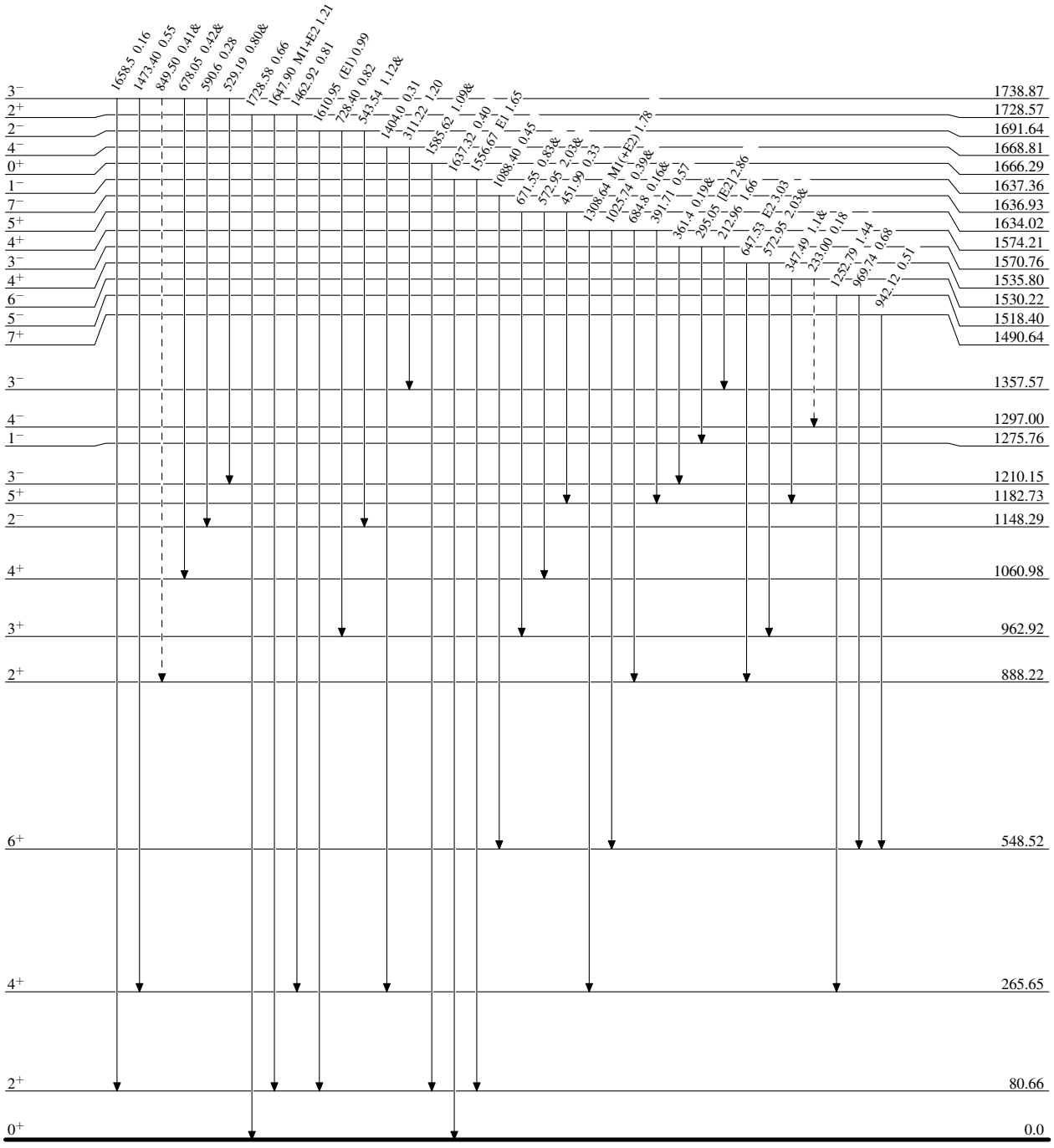
$^{162}_{66}Dy_{96}$

^{162}Dy(n,n′γ) 2002Go15

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)



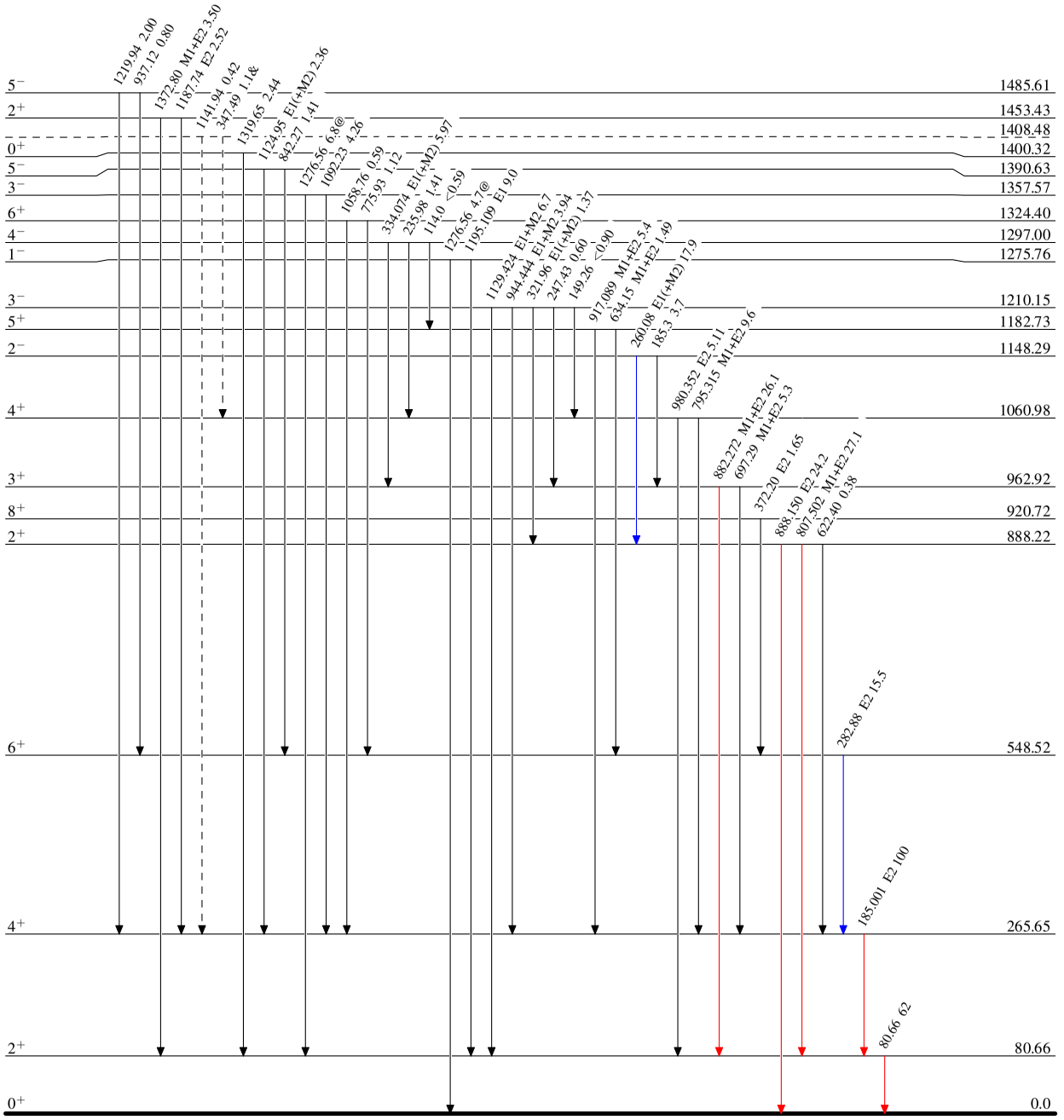
$^{162}_{66}Dy_{96}$

^{162}Dy(n,n′γ) 2002Go15

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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)



$^{162}_{66}Dy_{96}$