^{164}Dy(n,n′γ) 2017Go07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 147, 1 (2018)	30-Nov-2017

2017Go07: E(n)=fast neutrons from reactor. Target=1.77 g/cm^2 thick enriched (94.7%) ^{164}Dy. Measured Eγ, Iγ, γ(θ) using an HPGe detector. Previous data were used to establish a level scheme. Deduced levels, J, π, multipolarity, mixing ratios.

Others:

1976Ba34 (also 1978De41): E=fast reactor neutrons. Measured Eγ, Iγ at 90° relative to the neutron beam.

1984De31 (also 1980Ab13): E(n)=0.58-2.2 MeV. Measured Eγ, Iγ at 90° relative to the neutron beam. Spin assignments are based on comparison of experimental yields with corresponding theoretical values.

1995Jo20: E=2.2-3.6 MeV neutrons obtained from ^{3}H(p,n)^{3}He reaction. Measured Eγ, Iγ, γ(θ), level lifetimes by DSAM. Deduced B(M1) values.

1977Ho11: E=1.5-2.4 MeV. Measured Eγ, γ(θ).

All data are from 2017Go07 unless otherwise stated.

^{164}Dy Levels

The existence of following levels, proposed in earlier literature (see ^{164}Dy Adopted Levels in the ENSDF database, May 2001 update) is questioned by 2017Go07: 1393.7, 1607.7, 1725.3, 1773.0, 1952.8, 2015.2 and 2157.7. Levels at 1723 and 1773 keV in 1984De31, and 1736 keV by 1980Ab13 are not confirmed by 2017Go07; the γ rays are either not seen or placed elsewhere. Levels above 3 MeV are from 1995Jo20.

E(level)[†]	Jπ[#]	Comments
0.0	0^+	
73.396 *9*	2^+	
242.238 *11*	4^+	
501.338 *15*	6^+	
761.819 *9*	2^+	
828.218 *11*	3^+	
843.69 *6*	8^+	
915.993 *12*	4^+	
976.926 *12*	2^-	
1024.650 *15*	5^+	
1039.310 *11*	3^-	
1122.772 *14*	4^-	
1153.573 *21*	6^+	
1225.173 *16*	5^-	
1261.2 *3*	10^+	
1301.92 *4*	7^+	
1350.43 *3*	6^-	
1469.57 *15*	8^+	
1495.93 *6*	(7^-)	
1588.099 *16*	4^-	
1607.2?	(4^+)	E(level),Jπ: from 1976Ba34, not confirmed by 2017Go07.
1654.71 *3*	0^+	Jπ: excitation function in 1984De31 suggests J=4.
1674.947 *21*	1^-	Placements of 549.1γ, tentative 911.0γ and 1431.0γ from this level are given by 1984De31 but not observed in 2017Go07.
1686.566 *22*	5^-	
1716.225 *25*	2^+	An 888.1γ from this level is given by 1976Ba34; 2017Go07 report unplaced 887.18γ and 889.36γ.
1723.4?		E(level): from 1984De31, but not confirmed by 2017Go07.
1736.4? *8*	$(1,2^+)$	E(level): the existence of this level is not confirmed by 2017Go07 and the γ transitions from this level are placed differently in 2017Go07. Jπ: excitation function suggests J=(2) (1984De31).
1758.169 *23*	3^-	

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^{164}Dy(n,n′γ) 2017Go07 (continued)

^{164}Dy Levels (continued)

E(level)†	Jπ#	$T_{1/2}$@	Comments
1779.16 *4*	0^+		
1796.68 *3*	2^+		Jπ: excitation function suggests J=3 (1984De31).
1804.25 *5*	6^-		
1809.574 *25*	1^-		
1840.66 *3*	1^+		Jπ: excitation function suggests J=3 (1984De31).
1846.34 *4*	2^-		
1852.87 *5*	4^+		
1883.56 *11*	(0^+)		
1891.70 *4*	4^+		
1909.52 *3*	3^-		Jπ: excitation function suggests J=4 (1984De31).
1914.22 *6*	5^-		
1921.22 *3*	2^+		Jπ: excitation function suggests J=3,4 (1984De31).
1933.21 *6*	3^+		2017Go07 placed a 1271.43γ from this level, but there is no final level at 662 keV.
1933.64 *7*	4^-		
1940.83 *15*	7^-		
1949.79 *3*	3^-		Jπ: excitation function suggests J=3 (1984De31). A 1706.1γ placed from this level in 1980Ab13.
1978.42 *3*	(4^-)		
1978.81 *3*	3^+		
1979.30 *4*	2^+		
1985.67 *7*	$(2^-,3^-)$		
1998.63 *6*	(4)		
2015.2?			E(level): from 1984De31, not confirmed by 2017Go07.
2041.66 *4*	(4^-)		
2049.13 *4*	$2^+,3^+$		
2053.36 *9*	3^+		
2053.62 *8*	$1^{(-)}$		
2078.04 *4*	$2^+,3^+$		
2078.48 *5*	4^+		
2099.96 *6*	3^+		
2102.01 *6*	4^+		
2113.19 *8*	(2^+)		
2123.89 *5*	$(2^+,3^+)$		Jπ: (3^+) in Adopted Levels.
2152.43 *6*	3^+		
2173.30 *9*			
2194.82 *8*	(4^+)		
2205.77 *9*	(4^+)		
2230.43 *9*	(2^+)		
2248.13 *8*	2^+		
2271.0? *4*			
2302.16 *11*	$2^+,3$		
2330.01 *10*	1^-		
2396.39 *20*			
2429.11 *14*	$1,2^+$		
2437.2 *3*	$1,2^+$		
2442.81 *15*			
2473.26 *12*	(2^+)		
2531.0 *3*	1^+	11.8 fs *28*	B(M1)↑=0.43 *10* (1995Jo20)
2539.12 *20*	1^+	12.5 fs *28*	B(M1)↑=0.40 *10* (1995Jo20)
2577.87 *15*	1^+	9.0 fs *35*	B(M1)↑=0.53 *20* (1995Jo20)
2583.22 *16*	$1,2^+$		
2653.7 *3*	1^+		
2662.1? *3*	$1,2^+$		
2670.49 *24*	1^-		
2694.0 *3*	1^+	7.6 fs *21*	B(M1)↑=0.50 *10* (1995Jo20)
2735.5? *3*			

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^{164}Dy(n,n′γ) 2017Go07 (continued)

^{164}Dy Levels (continued)

E(level)[†]	J$^{\pi}$[#]	$T_{1/2}$[@]	Comments
3111.1[‡] *3*	1$^+$	6.9 fs *28*	B(M1)↑=0.43 *20* (1995Jo20)
3159.1[‡] *3*	1$^+$	6.2 fs *28*	B(M1)↑=0.40 *20* (1995Jo20)
3173.6[‡] *3*	1$^+$	13.9 fs *42*	B(M1)↑=0.19 *7* (1995Jo20)

[†] Deduced by evaluators from least-squares fit to Eγ values.
[‡] From 1995Jo20.
[#] As given in 2017Go07, based on previous assignments and γ(θ) data and decay modes in the present work.
[@] From DSAM (1995Jo20).

γ(^{164}Dy)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
73.394 *13*	82 *10*	73.396	2^+	0.0	0^+			
98.21 *18*	0.96 *14*	1122.772	4^-	1024.650	5^+			
123.32 *6*	2.82 *14*	1039.310	3^-	915.993	4^+			
131.99 *25*	0.35 *8*	2041.66	(4^-)	1909.52	3^-			
x138.50 *21*	0.36 *8*							
145.95 *20*	0.32 *6*	1122.772	4^-	976.926	2^-			
148.700 *19*	6.83 *23*	976.926	2^-	828.218	3^+			Additional information 10. I_γ: other: 7.1 *17* (1976Ba34).
154.24 *25*	0.14 *5*	915.993	4^+	761.819	2^+			
x156.3 *3*	0.19 *5*							
x159.78 *22*	0.38 *5*							
168.837 *10*	100	242.238	4^+	73.396	2^+	(E2)		A_2=+0.215 *16*; A_4=+0.003 *22* Additional information 2.
185.93 *25*	0.28 *6*	1225.173	5^-	1039.310	3^-			
196.47 *10*	0.41 *6*	1024.650	5^+	828.218	3^+			
200.53 *9*	0.47 *5*	1225.173	5^-	1024.650	5^+			
206.78 *3*	2.76 *11*	1122.772	4^-	915.993	4^+			Additional information 18. I_γ: other: 2.6 *3* (1976Ba34).
211.097 *13*	10.6 *3*	1039.310	3^-	828.218	3^+			Additional information 15. I_γ: others: 8.8 *17* (1976Ba34), Iγ(211γ)/Iγ(277.6γ)=0.57 (1984De31), 0.44 *12* (1980Ab13). δ(Q/D)=+1.8 *+45−9* or −0.18 *38* (1977Ho11).
215.104 *10*	41.6 *11*	976.926	2^-	761.819	2^+	(E1(+M2))	−0.05 *5*	A_2=+0.135 *10*; A_4=+0.008 *15* Additional information 11. I_γ: other: 34 *8* (1976Ba34). Other δ=+1.6 *+21−7* or +0.14 *33* (1977Ho11).
x227.52 *24*	0.35 *4*							
237.56 *10*	0.42 *4*	1153.573	6^+	915.993	4^+			
x247.77 *18*	0.40 *4*							
259.101 *11*	18.4 *5*	501.338	6^+	242.238	4^+	(E2)		A_2=+0.270 *16*; A_4=−0.036 *22* Additional information 3. I_γ: other: 7.5 *20* (1976Ba34).
277.488 *11*	17.5 *4*	1039.310	3^-	761.819	2^+	(E1(+M2))	0.000 *+24−30*	A_2=−0.167 *13*; A_4=+0.014 *19* Additional information 16. I_γ: other: 12.5 *26* (1976Ba34). Other δ=+0.02 *16* or −4.0 *+16−74* (1977Ho11).
x292.5 *3*	0.29 *5*							
294.554 *11*	14.3 *3*	1122.772	4^-	828.218	3^+	(E1(+M2))	−0.003 *16*	A_2=−0.206 *11*; A_4=+0.004 *16* Additional information 19. I_γ: other: 7.8 *13* (1976Ba34). Other δ=−4.7 *+20−96* or 0.00 *14* (1977Ho11).
x297.46 *15*	0.33 *5*							
309.180 *15*	4.44 *11*	1225.173	5^-	915.993	4^+			Additional information 21. I_γ: other: 4.1 *13* (1976Ba34).

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^{164}Dy(n,n′γ) 2017Go07 (continued)

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
311.9 *4*	0.08 *3*	2152.43	3^+	1840.66	1^+			
316.0 *3*	0.15 *4*	1469.57	8^+	1153.573	6^+			Additional information 23.
319.8[b] *5*	0.08[b] *3*	2078.04	$2^+,3^+$	1758.169	3^-			
319.8[b] *6*	0.08[b] *3*	2173.30		1852.87	4^+			
[x]322.0 *6*	0.07 *3*							
325.782 *22*	2.43 *6*	1350.43	6^-	1024.650	5^+			
[x]326.3[&] *2*	4.4[&] *13*							
[x]334.3 *3*	0.15 *4*							
[x]336.34 *10*	0.38 *4*							
342.35[b] *5*	1.36[b] *4*	843.69	8^+	501.338	6^+			
342.35[b] *5*	1.36[b] *4*	1495.93	(7^-)	1153.573	6^+			
345.55 *7*	0.66 *3*	1933.64	4^-	1588.099	4^-	(M1+E2)	+0.87 *24*	A_2=+0.29 *3*; A_4=−0.09 *5*
[x]353.1[&] *4*	3.4[&] *10*							
356.5 *4*	0.09 *3*	2248.13	2^+	1891.70	4^+			
361.72[b] *10*	0.33[b] *3*	1949.79	3^-	1588.099	4^-			
361.72[b] *10*	0.33[b] *3*	2078.04	$2^+,3^+$	1716.225	2^+			
366.0[†] *3*	0.16 *3*	2123.89	$(2^+,3^+)$	1758.169	3^-			
[x]370.5[†‡] *3*	0.25 *4*							
[x]387.0[&] *5*	1.7[&] *3*							
[x]391.0[&] *5*	1.7[&] *3*							
410.53 *5*	0.80 *3*	1998.63	(4)	1588.099	4^-			
414.79 *20*	0.29 *10*	915.993	4^+	501.338	6^+			
417.5 *3*	0.10 *3*	1261.2	10^+	843.69	8^+			
[x]423.69 *20*	0.18 *3*							
433.4 *3*	0.116 *24*	2230.43	(2^+)	1796.68	2^+			
[x]447.64 *20*	0.34 *8*							
453.8[b] *3*	0.106[b] *24*	1804.25	6^-	1350.43	6^-			
453.8[b] *3*	0.106[b] *24*	2041.66	(4^-)	1588.099	4^-			
[x]457.5 *4*	0.088 *25*							
458.4 *3*	0.12 *3*	2113.19	(2^+)	1654.71	0^+			
461.26 *13*	0.32 *3*	1686.566	5^-	1225.173	5^-			
465.37[c#] *15*	0.26[c]	1588.099	4^-	1122.772	4^-			A_2=−0.029 *25*; A_4=−0.024 *39* Combined intensity for the doublet=0.60 *8*.
465.37[c] *15*	0.34[c]	2053.36	3^+	1588.099	4^-			
519.59 *3*	1.10 *3*	761.819	2^+	242.238	4^+			
523.329 *23*	1.54 *5*	1024.650	5^+	501.338	6^+			Additional information 13. I_γ: other: 0.4 *2* (1976Ba34).
[x]538.3[&] *2*	1.5[&] *2*							
[x]542.50[†‡] *12*	0.55 *3*							

$^{164}_{66}Dy_{98}$-5

^{164}Dy(n,n′γ) 2017Go07 (continued)

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
548.82 *3*	2.51 *6*	1588.099	4^-	1039.310	3^-	(E2+M1)		A_2=+0.021 *26*; A_4=+0.177 *37* Additional information 25. E_γ: Placed from 1675 level in 1984De31. I_γ: other: 1.2 *2* (1976Ba34). −0.03<1/δ<+0.02 (2017Go07).
x549.9 *3*	0.24 *3*							
x553.0 *3*	0.21 *3*							
x556.8 *3*	0.16 *3*							
x559.0 *3*	0.24 *3*							
563.81 *3*	1.23 *4*	1686.566	5^-	1122.772	4^-	(E2+M1)	+22 *+126−9*	A_2=+0.05 *4*; A_4=+0.25 *6* Additional information 30.
x569.1& *10*	1.0& *3*							
579.14 *7*	0.47 *3*	1804.25	6^-	1225.173	5^-	(M1+E2)		A_2=−0.07 *5*; A_4=+0.12 *8* δ<−12 from −0.08<1/δ<0.0 (2017Go07).
585.985 *13*	10.94 *24*	828.218	3^+	242.238	4^+	(E2+M1)		A_2=−0.151 *12*; A_4=+0.045 *17* Additional information 6. I_γ: others: 6.1 *7* (1976Ba34), Iγ(585.5γ)/Iγ(754.86γ)=0.22 *3* (1980Ab13), 0.224 (1984De31). 1/δ=−0.002 *17* (2017Go07).
x588.2 *3*	0.14 *3*							
590.4 *3*	0.12 *3*	1940.83	7^-	1350.43	6^-			
x599.3 *3*	0.13 *3*							
611.168 *13*	6.59 *14*	1588.099	4^-	976.926	2^-	(E2)		A_2=+0.264 *14*; A_4=−0.070 *19* Additional information 26. I_γ: other: 1.0 *7* (1976Ba34), Iγ(611γ)/Iγ(548.5γ)=3.0 (1980Ab13).
x615.5 *5*	0.069 *21*							
617.74 *12*	0.35 *3*	2205.77	(4^+)	1588.099	4^-			
x620.55 *21*	0.15 *3*							
625.86 *16*	0.237 *24*	1469.57	8^+	843.69	8^+			Additional information 24.
x630.1 *3*	0.141 *23*							
x632.7 *4*	0.067 *23*							
x633.89 *20*	0.25 *3*							
x638.1 *3*	0.091 *20*							
x643.2 *4*	0.084 *20*							
647.248 *25*	1.89 *4*	1686.566	5^-	1039.310	3^-	(E2)		A_2=+0.319 *17*; A_4=−0.077 *24*
652.231 *19*	2.51 *6*	1153.573	6^+	501.338	6^+	(E2+M1)	−5.4 *+16−24*	A_2=−0.236 *17*; A_4=−0.248 *25* Additional information 20.
x654.0 *4*	0.069 *24*							
x657.4 *7*	0.050 *21*							
673.743 *10*	20.7 *5*	915.993	4^+	242.238	4^+	(E2+M1)	+23 *+105−9*	A_2=−0.152 *9*; A_4=−0.089 *14* Additional information 8. Others: δ=+2.7 *+87−13* or −0.49 *+28−35* (1977Ho11).
681.43 *6*	0.54 *3*	1804.25	6^-	1122.772	4^-	(E2)		A_2=+0.26 *4*; A_4=−0.12 *6*
688.422 *10*	62.8 *14*	761.819	2^+	73.396	2^+	(M1+E2)		A_2=−0.032 *9*; A_4=−0.014 *12*

$^{164}_{66}Dy_{98}$-6

^{164}Dy(n,n′γ) 2017Go07 (continued)

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
								Additional information 4. I_γ: other: 51 *7* (1976Ba34). δ: −0.41 *3* or >+28 from 0.0<1/δ<+0.036 (2017Go07); δ=−0.67 *+57−35* or −2.1 to +9.5 (1977Ho11).
x699.7 *4*	0.082 *21*							
x714.58 *25*	0.112 *22*							
715.69 *18*	0.170 *24*	1940.83	7^-	1225.173	5^-	(E2)		A_2=+0.19 *8*; A_4=−0.09 *12*
723.81 *8*	0.406 *24*	1225.173	5^-	501.338	6^+			
x739.69 *24*	0.14 *3*							
754.817 *10*	61.8 *14*	828.218	3^+	73.396	2^+	(E2+M1)	+7×10[1] *+18−3*	A_2=+0.075 *10*; A_4=+0.072 *14* Additional information 7. I_γ: other: 49 *7* (1976Ba34). δ: from 1/δ=+0.014 *10* (2017Go07). Others: +0.23 *13* or −6.3 to +11.4 (1977Ho11).
761.813 *10*	60.4 *13*	761.819	2^+	0.0	0^+	(E2)		A_2=+0.192 *8*; A_4=−0.044 *11* Additional information 5. I_γ: others: 37 *6* (1976Ba34), Iγ(761.87γ)/Iγ(688.46γ)=0.859 (1984De31); 0.83 *7* (1980Ab13); 0.80 *17* (1978De41).
x768.6 *5*	0.046 *20*							
770.6 *6*	0.034 *19*	1809.574	1^-	1039.310	3^-			
x772.6 *6*	0.046 *18*							
x780.46 *24*	0.123 *25*							
782.406 *11*	10.99 *24*	1024.650	5^+	242.238	4^+	(E2+M1)	+33 *+17−8*	A_2=+0.034 *9*; A_4=+0.194 *13* Additional information 14. I_γ: other: 6.5 *13* (1976Ba34). Other δ=+0.36 *24* or +2.4 to −57.3 (1977Ho11).
787.1 *4*	0.065 *20*	1940.83	7^-	1153.573	6^+			
x792.7 *5*	0.042 *15*							
797.18 *7*	0.52 *3*	1039.310	3^-	242.238	4^+			
800.58 *3*	0.92 *3*	1301.92	7^+	501.338	6^+			
x808.28 *19*	0.24 *3*							
810.4 *4*	0.082 *21*	1933.64	4^-	1122.772	4^-			
x812.4 *7*	0.043 *19*							
x819.1 *4*	0.063 *22*							
x825.8 *3*	0.085 *18*							
827.04 *9*	0.302 *22*	1949.79	3^-	1122.772	4^-			
x828.8 *3*	0.100 *20*							
x837.9 *4*	0.064 *20*							
842.610 *11*	13.0 *3*	915.993	4^+	73.396	2^+	(E2)		A_2=+0.290 *12*; A_4=−0.037 *17* Additional information 9. I_γ: others: 2.0 *7* (1976Ba34), Iγ(842.7γ)/Iγ(673.66γ)=0.575 (1984De31), 0.67 *22* (1980Ab13), 0.71 *15* (1978De41).
844.3[d]	<1	1607.2?	(4^+)	761.819	2^+			E_γ,I_γ: from 1976Ba34.
x846.6 *3*	0.079 *23*							

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
[x]855.10 *12*	0.261 *21*							
863.2 *3*	0.127 *21*	1985.67	(2$^-$,3$^-$)	1122.772	4$^-$			
[x]870.2 *4*	0.061 *20*							
[x]872.2 *5*	0.044 *20*							
875.8 *4*	0.059 *17*	1998.63	(4)	1122.772	4$^-$			
880.79 *12*	0.23 *3*	1796.68	2$^+$	915.993	4$^+$			
[x]887.18 *21*	0.116 *23*							E_γ: other: a 888.1γ is placed from 1716 level by 1976Ba34. I_γ: other: 0.20 *7* (1976Ba34).
[x]889.36 *15*	0.27 *3*							
892.88 *8*	0.41 *3*	1654.71	0$^+$	761.819	2$^+$			
[x]894.86 *25*	0.104 *22*							
[x]901.87 *34*	0.146 *20*							
903.55 *18*	0.27 *3*	976.926	2$^-$	73.396	2$^+$			E_γ: from Table 1 of 2017Go07, 903.59 in authors′ table 2. Additional information 12. I_γ: other: 0.13 *7* (1976Ba34).
[x]905.8 *5*	0.057 *18*							
910.52[#] *4*	1.20 *4*	1949.79	3$^-$	1039.310	3$^-$			A_2=+0.109 *16*; A_4=−0.037 *23*
911.34[#] *3*	1.63 *5*	1153.573	6$^+$	242.238	4$^+$			A_2=+0.109 *16*; A_4=−0.037 *23*
911.7[d] *8*	1.1 *2*	1736.4?	(1,2$^+$)	828.218	3$^+$			E_γ: from 1980Ab13. A 911.1γ is also placed from the 1153.6 level by 1976Ba34, while 2017Go07 place a 910.52γ from the 1949.8 level and a 911.34γ from the 1153.6 level. Additional information 32. I_γ: from 1976Ba34. Others: Iγ(911.7γ)/Iγ(1736.4γ)=0.27 (1984De31), 0.35 *6* (1980Ab13).
[x]916.68 *3*	1.02 *5*							E_γ: other: 917.3 *7* from 1980Ab13.
[x]929.47 *13*	0.250 *25*							
[x]931.91 *24*	0.155 *23*							
[x]933.9 *5*	0.056 *20*							
[x]937.2 *6*	0.046 *18*							
939.95 *17*	0.227 *25*	1979.30	2$^+$	1039.310	3$^-$			
944.57[d] *18*	0.23 *3*	1921.22	2$^+$	976.926	2$^-$			
946.34 *10*	0.42 *3*	1985.67	(2$^-$,3$^-$)	1039.310	3$^-$			
954.57 *24*	0.147 *23*	1716.225	2$^+$	761.819	2$^+$			
[x]957.58 *10*	0.43 *3*							
965.914 *16*	2.93 *9*	1039.310	3$^-$	73.396	2$^+$	(E1(+M2))	+0.006 *+14−26*	A_2=−0.159 *12*; A_4=+0.006 *18* Additional information 17. I_γ: others: 1.7 *7* (1976Ba34), Iγ(966.2γ)/Iγ(277.6γ)=0.20 (1984De31), 0.23 *8* (1980Ab13). Other δ=+0.02 *16* or −4.0 *+16−74* (1977Ho11).
968.4 *5*	0.048 *18*	1469.57	8$^+$	501.338	6$^+$			
972.81 *4*	0.85 *4*	1949.79	3$^-$	976.926	2$^-$	(M1+E2)	+0.09 *4*	A_2=−0.09 *3*; A_4=+0.01 *4*

$^{164}_{66}$Dy$_{98}$-8

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
						Additional information 48. I_γ: others: Iγ(972.9γ)/Iγ(1706.1γ)=0.35 (1984De31), 0.44 *15* (1980Ab13).
[x]980.4 *3*	0.14 *5*					
982.933 *20*	2.19 *7*	1225.173	5^-	242.238	4^+	Additional information 22. I_γ: other: 1.3 *3* (1976Ba34).
[x]986.8 *6*	0.047 *21*					
[x]988.72 *10*	0.38 *3*					
994.62 *24*	0.162 *23*	1495.93	(7^-)	501.338	6^+	
1000.8[d] *4*	0.061 *25*	2123.89	$(2^+,3^+)$	1122.772	4^-	E_γ: other: 1000.2 *10* unplaced in 1976Ba34. I_γ: other: 0.5 *2* (1976Ba34).
1002.35[c#] *4*	0.21[c]	1979.30	2^+	976.926	2^-	A_2=−0.13 *3*; A_4=+0.03 *4* Combined intensity for the doublet=0.93 *4*.
1002.35[c] *4*	0.72[c]	2041.66	(4^-)	1039.310	3^-	
1005.6 *5*	0.064 *21*	1921.22	2^+	915.993	4^+	E_γ: other: 1002.5 *9* with Iγ=0.5 *2* placed from 1920 level in 1980Ab13, but it could correspond to the 1002.35γ, doubly placed by 2017Go07 from 1979.4 and 2041.7 levels.
1008.58 *13*	0.242 *22*	1985.67	$(2^-,3^-)$	976.926	2^-	
[x]1012.92 *10*	0.38 *3*					
1017.8[b] *4*	0.076[b] *18*	1779.16	0^+	761.819	2^+	
1017.8[b] *4*	0.076[b] *18*	1933.64	4^-	915.993	4^+	
1022.1[d] *4*	0.051 *15*	1998.63	(4)	976.926	2^-	Additional information 52.
[x]1025.4 *5*	0.052 *19*					
[x]1027.2 *4*	0.107 *22*					
[x]1029.14 *18*	0.221 *23*					
[x]1033.41 *14*	0.258 *23*					
[x]1035.4 *5*	0.046 *15*					
1038.68 *13*	0.255 *22*	2078.04	$2^+,3^+$	1039.310	3^-	
[x]1041.05 *20*	0.119 *19*					
1048.0 *5*	0.078 *20*	1809.574	1^-	761.819	2^+	Additional information 39.
[x]1051.8 *5*	0.056 *19*					
1054.1 *5*	0.044 *19*	2078.48	4^+	1024.650	5^+	
[x]1058.0[†] *4*	0.080 *18*					
1062.60[b] *15*	0.193[b] *19*	1978.81	3^+	915.993	4^+	
1062.60[b] *15*	0.193[b] *19*	2102.01	4^+	1039.310	3^-	
[x]1063.8 *3*	0.082 *16*					
[x]1066.0 *5*	0.044 *11*					
[x]1070.40 *19*	0.188 *23*					
1072.18 *13*	0.36 *3*	2049.13	$2^+,3^+$	976.926	2^-	
1075.0 *4*	0.096 *19*	2099.96	3^+	1024.650	5^+	
1083.2 *5*	0.056 *15*	1998.63	(4)	915.993	4^+	
1101.14 *4*	0.77 *4*	2078.04	$2^+,3^+$	976.926	2^-	
1105.6 *5*	0.066 *21*	1933.64	4^-	828.218	3^+	
[x]1107.9 *5*	0.075 *21*					
[x]1109.9 *7*	0.051 *19*					

$^{164}_{66}Dy_{98}$-9

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
[x]1123.2 *3*	0.168 *22*							
[x]1126.87 *21*	0.181 *24*							
[x]1131.81 *20*	0.166 *22*							
[x]1134.5[†‡] *4*	0.106 *19*							
[x]1136.78 *18*	0.250 *25*							
[x]1143.5[†‡] *3*	0.143 *21*							
[x]1148.5 *8*	0.040 *17*							
1150.59 *8*	0.46 *3*	1978.81	3^+	828.218	3^+			
1155.3 *4*	0.090 *19*	2194.82	(4^+)	1039.310	3^-			
1157.9 *7*	0.057 *21*	1985.67	$(2^-,3^-)$	828.218	3^+			
1160.0 *5*	0.070 *21*	1921.22	2^+	761.819	2^+			
1162.48 *11*	0.35 *3*	2078.48	4^+	915.993	4^+			
1169.12[d] *24*	0.152 *21*	1998.63	(4)	828.218	3^+			E_γ: poor fit. Level-energy difference=1170.4 *3*. This γ was not used in the least-squares fit procedure.
[x]1173.3 *4*	0.072 *20*							
[x]1176.75 *8*	0.365 *24*							
[x]1178.5 *4*	0.108 *22*							
[x]1180.8 *4*	0.085 *22*							
1184.00 *6*	0.60 *3*	2099.96	3^+	915.993	4^+	(M1+E2)		A_2=−0.29 *4*; A_4=+0.04 *6* δ: +0.33 *+13−10* or +4.9 *+38−19* (2017Go07).
[x]1189.27 *21*	0.191 *25*							
[x]1190.86 *21*	0.212 *25*							
[x]1195.19 *24*	0.191 *25*							
1196.84[d] *25*	0.181 *24*	2113.19	(2^+)	915.993	4^+			
1208.6 *4*	0.081 *18*	2248.13	2^+	1039.310	3^-			
[x]1213.66 *6*	0.79 *4*							
1217.00 *3*	1.87 *8*	1978.81	3^+	761.819	2^+	(M1+E2)	+0.35 *4*	A_2=+0.149 *17*; A_4=−0.013 *25* Additional information 49. I_γ: others: 0.6 *7* (1976Ba34).
1220.73 *16*	0.250 *22*	2049.13	$2^+,3^+$	828.218	3^+			
1223.92[#] *10*	1.71 *15*	1985.67	$(2^-,3^-)$	761.819	2^+			A_2=+0.02 *3*; A_4=−0.03 *4* E_γ: other: 1224.0 *5* unplaced in 1976Ba34. I_γ: other: 1.1 *3* (1976Ba34).
1225.11[#] *18*	0.90 *20*	2053.36	3^+	828.218	3^+			A_2=+0.02 *3*; A_4=−0.03 *4*
[x]1226.99 *8*	0.61 *4*							
1231.56[d] *8*	0.427 *25*	2271.0?		1039.310	3^-			
1236.50 *14*	0.259 *22*	2152.43	3^+	915.993	4^+			
[x]1239.8 *4*	0.114 *18*							
[x]1243.15 *35*	0.149 *20*							
[x]1248.8 *5*	0.060 *17*							
1250.52 *13*	0.41 *3*	2078.48	4^+	828.218	3^+			
[x]1252.41 *15*	0.26 *3*							

$^{164}_{66}Dy_{98}$-10

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
[x]1253.92 *25*	0.156 *24*					
1257.6 *5*	0.089 *22*	2173.30		915.993	4^+	
[x]1260.3 *4*	0.127 *24*					
[x]1262.36 *14*	0.37 *3*					
[x]1267.6 *6*	0.032 *16*					
1271.43[b] *21*	0.258[b] *23*	2099.96	3^+	828.218	3^+	
1271.43[b] *21*	0.258[b] *23*	2248.13	2^+	976.926	2^-	
[x]1274.86 *21*	0.19 *3*					
1278.58 *18*	0.227 *20*	2194.82	(4^+)	915.993	4^+	
1285.00 *10*	0.54 *3*	2113.19	(2^+)	828.218	3^+	
1287.32 *4*	1.25 *5*	2049.13	$2^+,3^+$	761.819	2^+	A_2=+0.15 *3*; A_4=+0.01 *5*
1289.8 *3*	0.148 *23*	2205.77	(4^+)	915.993	4^+	
1291.40 *15*	0.34 *3*	2053.36	3^+	761.819	2^+	
[x]1302.51 *8*	0.47 *3*					
[x]1308.76 *20*	0.166 *24*					
[x]1311.0 *10*	0.042 *21*					
1316.0 *3*	0.117 *21*	2078.04	$2^+,3^+$	761.819	2^+	
[x]1320.0 *4*	0.063 *21*					
[x]1329.57 *22*	0.202 *23*					
[x]1334.9 *3*	0.103 *20*					
[x]1336.5 *3*	0.114 *22*					
1338.4 *3*	0.123 *23*	2099.96	3^+	761.819	2^+	
[x]1343.6 *4*	0.101 *22*					
1345.22[†d] *11*	0.48 *4*	2173.30		828.218	3^+	
[x]1347.8 *3*	0.16 *3*					
[x]1349.3 *3*	0.16 *3*					
1351.28 *14*	0.31 *3*	2113.19	(2^+)	761.819	2^+	
[x]1357.8 *4*	0.091 *20*					
1366.24 *23*	0.122 *21*	2194.82	(4^+)	828.218	3^+	
[x]1371.00 *11*	0.42 *3*					
[x]1372.8 *3*	0.082 *21*					
1377.41 *17*	0.142 *23*	2205.77	(4^+)	828.218	3^+	
[x]1378.82 *10*	0.45 *3*					
[x]1380.43 *20*	0.115 *21*					
1386.8 *5*	0.042 *10*	2302.16	$2^+,3$	915.993	4^+	
1390.50 *15*	0.298 *22*	2152.43	3^+	761.819	2^+	A_2=−0.01 *8*; A_4=−0.01 *12*
[x]1397.3 *8*	0.063 *18*					
1402.2 *3*	0.144 *25*	2230.43	(2^+)	828.218	3^+	
[x]1404.46 *11*	0.40 *3*					
[x]1410.4 *3*	0.29 *3*					
1411.48[#] *9*	0.89 *7*	2173.30		761.819	2^+	A_2=+0.033 *22*; A_4=−0.032 *31*
1412.88 *15*	0.32 *4*	1914.22	5^-	501.338	6^+	
[x]1418.5 *3*	0.128 *24*					

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
[x]1425.7 *4*	0.097 *21*							
[x]1428.9 *4*	0.091 *21*							
1433.18 *10*	0.44 *3*	2194.82	(4$^+$)	761.819	2$^+$			
[x]1437.0 *4*	0.123 *25*							E_γ: other: 1436.1 *10* (1976Ba34). I_γ: other: 0.3 *1* (1976Ba34).
[x]1439.09 *16*	0.30 *3*							
1443.90[#] *21*	0.18 *3*	2205.77	(4$^+$)	761.819	2$^+$			A_2=+0.01 *6*; A_4=+0.09 *8*
[x]1445.33 *15*	0.29 *3*							
[x]1451.2 *3*	0.149 *23*							
[x]1454.32 *17*	0.302 *25*							
[x]1464.1 *4*	0.09 *3*							
1468.66 *12*	0.52 *3*	2230.43	(2$^+$)	761.819	2$^+$			
[x]1471.5 *4*	0.080 *25*							
1473.88[b] *13*	0.52[b] *3*	1716.225	2$^+$	242.238	4$^+$			
1473.88[b] *13*	0.52[b] *3*	2302.16	2$^+$,3	828.218	3$^+$			
[x]1476.2 *4*	0.15 *3*							
[x]1477.90 *21*	0.254 *25*							
[x]1484.0 *3*	0.165 *25*							
1486.26 *12*	0.41 *3*	2248.13	2$^+$	761.819	2$^+$			
[x]1488.3 *5*	0.107 *23*							
[x]1490.8 *5*	0.098 *23*							
[x]1492.6 *4*	0.113 *23*							
[x]1494.5 *3*	0.162 *25*							
[x]1502.1 *4*	0.090 *22*							
1515.94 *3*	1.91 *8*	1758.169	3$^-$	242.238	4$^+$	(E1+M2)	+0.06 *3*	A_2=−0.109 *16*; A_4=+0.017 *23* Additional information 34. I_γ: other: 1.2 *2* (1976Ba34).
[x]1520.9 *5*	0.079 *17*							
[x]1526.3 *3*	0.148 *23*							
[x]1529.9 *5*	0.071 *21*							
[x]1535.90 *10*	0.38 *3*							
1540.2 *4*	0.061 *10*	2302.16	2$^+$,3	761.819	2$^+$			
[x]1543.00 *16*	0.22 *3*							E_γ: other: 1543.2 *4* (1976Ba34). I_γ: other: 0.4 *1* (1976Ba34).
[x]1544.63 *12*	0.36 *3*							
[x]1547.63 *23*	0.15 *3*							
[x]1552.0 *4*	0.100 *20*							
1554.50 *7*	0.80 *4*	1796.68	2$^+$	242.238	4$^+$			Additional information 37. I_γ: other: 0.5 *2* (1976Ba34).
[x]1557.07 *20*	0.206 *25*							
[x]1563.9[†] *4*	0.108 *20*							
[x]1568.8[†] *5*	0.068 *23*							

$^{164}_{66}$Dy$_{98}$-12

^{164}Dy(n,n′γ) 2017Go07 (continued)

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
[x]1572.39[†] *22*	0.237 *25*							
[x]1575.5 *4*	0.106 *21*							
1581.31 *3*	1.97 *8*	1654.71	0^+	73.396	2^+			A_2=+0.019 *16*; A_4=−0.001 *22* Additional information 27. I_γ: other: 0.6 *1* (1976Ba34). γ(θ) is isotropic.
[x]1585.02 *10*	0.40 *3*							
[x]1587.46 *17*	0.269 *24*							
[x]1590.24 *19*	0.237 *24*							
[x]1592.65 *9*	0.48 *3*							
[x]1598.22 *20*	0.239 *22*							
1600.16 *23*	0.23 *3*	2102.01	4^+	501.338	6^+			
1601.530 *25*	3.63 *13*	1674.947	1^-	73.396	2^+	(E1(+M2))	0.00 *8*	A_2=−0.010 *11*; A_4=+0.001 *17* Additional information 28. I_γ: other: 1.5 *2* (1976Ba34).
[x]1605.7 *4*	0.118 *19*							
1610.56 *8*	0.70 *3*	1852.87	4^+	242.238	4^+	(M1+E2)	+0.40 *17*	A_2=+0.40 *4*; A_4=−0.01 *6* Additional information 42.
[x]1613.8 *5*	0.085 *24*							
[x]1615.04 *10*	0.47 *3*							
[x]1618.06 *14*	0.347 *23*							
1622.8[d] *5*	0.096 *22*	2123.89	$(2^+,3^+)$	501.338	6^+			γ to 6^+ is unlikely.
[x]1625.8 *6*	0.074 *23*							
[x]1630.7 *3*	0.147 *20*							
[x]1633.5 *4*	0.107 *22*							
[x]1635.7 *9*	0.050 *21*							
[x]1642.14 *18*	0.30 *3*							
1642.815 *25*	4.28 *16*	1716.225	2^+	73.396	2^+	(M1+E2)	+0.75 *50*	A_2=+0.380 *15*; A_4=+0.015 *20* Additional information 31. I_γ: other: 2.0 *7* (1976Ba34). δ: from +0.26<δ<+1.25 (2017Go07).
1649.45 *4*	1.43 *6*	1891.70	4^+	242.238	4^+			A_2=+0.30 *3*; A_4=+0.01 *4* Additional information 43. I_γ: other: 0.5 *2* (1976Ba34). δ(E2/M1)=+0.04 *+13−9* or +0.88 *20* (2017Go07).
1650.0[d] *11*		1723.4?		73.396	2^+			E_γ: from 1984De31. A 1649.8γ in 1978De41, a 1650γ in 1976Ba34 and a 1649.45γ in 2017Go07 are placed from the 1892 level.
[x]1657.9 *7*	0.053 *18*							
1664.2[d] *20*	0.5 *3*	1736.4?	$(1,2^+)$	73.396	2^+			E_γ: from 1980Ab13. 2017Go07 report an unplaced 1665.0γ. I_γ: from Iγ(1664.2γ)/Iγ(911.7γ)=0.48 *20* (1980Ab13) and Iγ(1664.2γ)/Iγ(1736.4γ)=0.19 (1984De31), 0.17 *7* (1980Ab13).
[x]1665.0 *6*	0.064 *18*							
1667.26 *3*	1.95 *8*	1909.52	3^-	242.238	4^+	(E1(+M2))	+0.01 *2*	A_2=−0.066 *17*; A_4=+0.033 *24*

$^{164}_{66}Dy_{98}$-13

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
								Additional information 44.
								I_γ: other: 0.7 *3* (1976Ba34).
1671.97 *6*	0.74 *3*	1914.22	5^-	242.238	4^+	(E1(+M2))	−0.01 *4*	A_2=−0.23 *4*; A_4=+0.02 *5*
1674.959# *31*	2.51 *10*	1674.947	1^-	0.0	0^+	(E1)		A_2=−0.109 *15*; A_4=+0.013 *21*
								Additional information 29.
								I_γ: other: 1.1 *5* from Iγ(1675γ)/Iγ(1601.3γ)=0.7 (1984De31), 1.2 *3* (1980Ab13).
1680.8 *5*	0.101 *24*	2442.81		761.819	2^+			
1684.75 *3*	2.49 *10*	1758.169	3^-	73.396	2^+	(E1+M2)	−0.10 *3*	A_2=−0.252 *19*; A_4=+0.015 *27*
								Additional information 35.
								I_γ: others: 0.9 *2* (1976Ba34), Iγ(1683.0γ)/Iγ(1515.6γ)=0.78 (1984De31), 0.75 *29* (1976Ba34).
x1687.2 *5*	0.107 *24*							
1690.94b# *10*	1.04b *4*	1933.21	3^+	242.238	4^+			A_2=+0.28 *4*; A_4=+0.04 *6*
								δ(E2/M1)=−0.9 *3* from γ(θ), but 1690.94γ is doubly placed (2017Go07).
1690.94bd *10*	<1.04b	1933.64	4^-	242.238	4^+			δ(M2/E1)=+0.02 *13* from γ(θ), but 1690.94γ is doubly placed.
x1693.13 *22*	0.312 *24*							
x1703.75 *22*	0.25 *3*							
1705.75 *4*	1.42 *7*	1779.16	0^+	73.396	2^+			A_2=+0.008 *21*; A_4=0
								Additional information 36.
								E_γ: Placed from 1947 level by 1980Ab13.
								γ(θ) is isotropic.
x1708.01 *10*	0.57 *4*							
x1713.5 *3*	0.233 *24*							
1716.25 *11*	0.55 *3*	1716.225	2^+	0.0	0^+	(E2)		A_2=+0.27 *5*; A_4=−0.05 *7*
1723.26 *3*	3.40 *14*	1796.68	2^+	73.396	2^+	(M1+E2)		A_2=+0.109 *12*; A_4=−0.005 *17*
								Additional information 38.
								I_γ: others: 1.4 *9* (1976Ba34), from Iγ(1555.5γ)/Iγ(1723.8γ)=0.37 *11* (1980Ab13).
								δ=−0.09 *4* or +3.0 *4* (2017Go07).
1736.167c# *23*	3.2c	1809.574	1^-	73.396	2^+			A_2=+0.051 *10*; A_4=+0.007 *15*
								Combined intensity for the doublet=4.71 *18*.
1736.167c *23*	1.5c	1978.42	(4^-)	242.238	4^+			
1736.4d *8*	<2.4	1736.4?	$(1,2^+)$	0.0	0^+			E_γ: from 1980Ab13, but 2017Go07 place this γ from 1809.6+1978.4 levels and claim that this transition cannot be associated with the 1736 level because of their measured γ(θ).
								Additional information 33.
								I_γ: from 1976Ba34.
1755.19d *11*	0.288 *23*	2583.22	$1,2^+$	828.218	3^+			
x1759.8 *8*	0.053 *19*							
x1763.8 *5*	0.125 *22*							
1767.20 *4*	1.36 *6*	1840.66	1^+	73.396	2^+			A_2=−0.02 *3*; A_4=+0.03 *5*
								Additional information 40.

$^{164}_{66}Dy_{98}$-14

^{164}Dy(n,n′γ) 2017Go07 (continued)

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	Comments
[x]1771.2 *3*	0.108 *24*							
1772.93 *3*	3.14 *13*	1846.34	2^-	73.396	2^+	(E1(+M2))	+0.01 *9*	A_2=+0.149 *20*; A_4=−0.029 *29* E_γ: other: 1773.0 *7* placed by 1984De31 from a 1773 level, but this placement is ruled out by the 1773γ(θ) in 2017Go07.
1779.50 *6*	0.70 *5*	1852.87	4^+	73.396	2^+			
[x]1783.5 *5*	0.100 *22*							
[x]1786.8 *4*	0.110 *20*							
[x]1793.2 *4*	0.131 *23*							
1796.64 *15*	0.39 *3*	1796.68	2^+	0.0	0^+			
1799.5[d] *6*	0.065 *20*	2041.66	(4^-)	242.238	4^+			
[x]1804.6 *4*	0.151 *23*							
[x]1806.14[†‡] *18*	0.286 *25*							
1809.6 *4*	0.114 *23*	1809.574	1^-	0.0	0^+			
1810.15 *11*	0.53 *4*	1883.56	(0^+)	73.396	2^+			A_2=+0.03 *4*; A_4=+0.04 *6* γ(θ) is isotropic.
1811.5 *5*	0.106 *22*	2053.36	3^+	242.238	4^+			
1818.4 *4*	0.138 *20*	1891.70	4^+	73.396	2^+			
[x]1828.0 *3*	0.156 *23*							
[x]1831.3 *3*	0.158 *23*							
1836.18[b#] *6*	0.64[b] *3*	1909.52	3^-	73.396	2^+			A_2=−0.25 *4*; A_4=0.00 *5* Additional information 45. I_γ: other: 1.0 *3* (1976Ba34). δ(M2/E1)=−0.10 *5*, but 1836γ is doubly placed (2017Go07).
1836.18[b] *6*	0.64[b] *3*	2078.48	4^+	242.238	4^+			
[x]1838.9 *4*	0.14 *3*							
1840.70 *4*	1.55 *7*	1840.66	1^+	0.0	0^+	D		A_2=−0.121 *19*; A_4=−0.019 *28* Additional information 41. I_γ: others: 1.08 *18* (1980Ab13), Iγ(1840.5γ)/Iγ(1767.6γ)=0.93 (1984De31).
[x]1843.57 *20*	0.28 *3*							
[x]1845.83 *20*	0.27 *3*							
1847.82 *3*	2.49 *12*	1921.22	2^+	73.396	2^+	(M1+E2)		A_2=−0.021 *13*; A_4=+0.001 *19* Additional information 46. I_γ: other: 1.2 *3* (1976Ba34). δ=−0.38 *4* or +17 *+29−5* (2017Go07).
[x]1853.9 *4*	0.129 *21*							
1857.2 *3*	0.44 *3*	2099.96	3^+	242.238	4^+			
1859.81[b#] *6*	2.28[b] *9*	1933.21	3^+	73.396	2^+			A_2=+0.157 *19*; A_4=−0.012 *27* Additional information 47. I_γ: other: 0.7 *2* (1976Ba34).
1859.81[b] *6*	2.28[b] *9*	2102.01	4^+	242.238	4^+			
[x]1877.24 *16*	0.293 *21*							

$^{164}_{66}Dy_{98}$-15

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	Comments
1881.7 *6*	0.054 *18*	2123.89	(2$^+$,3$^+$)	242.238	4$^+$		
x1884.9 *6*	0.058 *18*						
x1888.8†‡ *6*	0.069 *21*						
1892.1 *4*	0.133 *21*	2653.7	1$^+$	761.819	2$^+$		
x1902.2 *8*	0.041 *20*						
x1904.4 *4*	0.094 *22*						
1905.98 *7*	0.94 *5*	1979.30	2$^+$	73.396	2$^+$		A_2=+0.14 *3*; A_4=+0.01 *4* Additional information 50. I_γ: others: 0.8 *3* (1976Ba34). δ(E2/M1)=−0.04 *+11−8* or +2.5 *+8−6* (2017Go07).
1910.17 *7*	0.72 *4*	2152.43	3$^+$	242.238	4$^+$		A_2=−0.12 *5*; A_4=−0.02 *6*
x1915.3 *6*	0.049 *16*						
x1919.4 *6*	0.070 *20*						
1921.09 *13*	0.44 *3*	1921.22	2$^+$	0.0	0$^+$	(E2)	A_2=+0.17 *5*; A_4=0.07 *7*
1925.0 *6*	0.073 *22*	1998.63	(4)	73.396	2$^+$		
x1926.77 *21*	0.259 *25*						
x1929.6 *6*	0.073 *22*						
x1934.3 *4*	0.130 *21*						
1941.8[d] *8*		2015.2?		73.396	2$^+$		E_γ: Placement from 1984De31.
x1944.0 *4*	0.099 *22*						
x1948.2 *6*	0.067 *22*						
1952.44 *20*	0.254 *23*	2194.82	(4$^+$)	242.238	4$^+$		
x1958.5 *4*	0.128 *21*						
x1972.5 *6*	0.054 *16*						
1975.6 *4*	0.134 *22*	2049.13	2$^+$,3$^+$	73.396	2$^+$		
1979.37#	0.55	1979.30	2$^+$	0.0	0$^+$		A_2=−0.069 *18*; A_4=+0.001 *26* Eγ=1979.86 *3*, Iγ=1.73 *6* for the triplet. Additional information 51.
1979.91	0.45	2053.36	3$^+$	73.396	2$^+$		See comment for 1979.37γ.
1980.22#	0.75	2053.62	1$^{(-)}$	73.396	2$^+$		See comment for 1979.37γ.
x1981.9 *3*	0.111 *20*						
x1986.5 *3*	0.161 *21*						
x1990.53†‡ *16*	0.295 *24*						
x2000.2 *4*	0.123 *18*						
2004.4[b]† *10*	0.068[b] *22*	2078.04	2$^+$,3$^+$	73.396	2$^+$		
2004.4[b] *10*	0.068[b] *22*	2078.48	4$^+$	73.396	2$^+$		
x2009.4 *7*	0.099 *21*						
x2019.83 *12*	0.54 *3*						
x2022.6 *5*	0.058 *16*						
2028.8[b] *4*	0.130[b] *18*	2102.01	4$^+$	73.396	2$^+$		
2028.8[b] *4*	0.130[b] *18*	2271.0?		242.238	4$^+$		
2039.83 *23*	0.215 *24*	2113.19	(2$^+$)	73.396	2$^+$		

$^{164}_{66}$Dy$_{98}$-16

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	Comments
[x]2047.8 *3*	0.141 *21*						
2050[d] *1*		2049.13	$2^+,3^+$	0.0	0^+		E_γ: from 1976Ba34 only, considered as uncertain.
2050.47 *5*	1.09 *5*	2123.89	$(2^+,3^+)$	73.396	2^+		A_2=+0.13 *3*; A_4=+0.04 *4*
2053.61 *8*	0.54 *3*	2053.62	$1^{(-)}$	0.0	0^+	D	A_2=−0.10 *5*; A_4=+0.11 *7*
[x]2061.14[†] *22*	0.238 *20*						
[x]2068.9[†] *4*	0.153 *19*						
[x]2073.8 *3*	0.187 *21*						
[x]2077.2 *5*	0.129 *24*						
2079.04 *15*	0.37 *3*	2152.43	3^+	73.396	2^+		A_2=−0.31 *6*; A_4=+0.09 *8*
[x]2087.1[†‡] *4*	0.115 *16*						
[x]2093.1 *3*	0.126 *21*						
[x]2100.8[†‡] *4*	0.142 *22*						
[x]2106.5[†‡] *5*	0.104 *21*						
2113.2 *5*	0.101 *21*	2113.19	(2^+)	0.0	0^+		
[x]2116.3 *11*	0.045 *21*						
2123.9[d] *4*	0.148 *21*	2123.89	$(2^+,3^+)$	0.0	0^+		γ from (3^+) to 0^+, g.s. is unlikely.
[x]2128.8 *5*	0.138 *22*						
2132.7 *6*	0.108 *22*	2205.77	(4^+)	73.396	2^+		
[x]2140.0 *7*	0.073 *18*						
[x]2145.3 *6*	0.086 *18*						
[x]2158.0 *6*	0.069 *13*						
[x]2160.5 *4*	0.112 *13*						
[x]2165.2 *5*	0.073 *13*						
[x]2170.91 *21*	0.217 *22*						
2174.68 *15*	0.42 *3*	2248.13	2^+	73.396	2^+		
[x]2177.7 *6*	0.071 *18*						
[x]2182.9 *10*	0.041 *16*						
[x]2186.2 *3*	0.191 *23*						
[x]2187.90 *15*	0.37 *3*						
[x]2191.6 *4*	0.113 *22*						
[x]2194.96 *18*	0.32 *3*						
2197.4 *5*	0.098 *22*	2271.0?		73.396	2^+		
[x]2209.0 *4*	0.133 *20*						
2228.82[#] *20*	0.27 *3*	2302.16	2^+,3	73.396	2^+		A_2=+0.08 *3*; A_4=+0.05 *4*
2230.40[#] *15*	0.48 *4*	2230.43	(2^+)	0.0	0^+		A_2=+0.08 *3*; A_4=+0.05 *4*
2248.17 *21*	0.269 *23*	2248.13	2^+	0.0	0^+		
[x]2250.9 *6*	0.086 *18*						
2256.68 *12*	0.50 *4*	2330.01	1^-	73.396	2^+		
[x]2258.8 *9*	0.065 *20*						Additional information 1.
[x]2264.9 *6*	0.107 *22*						
[x]2274.1 *5*	0.100 *22*						

$^{164}_{66}Dy_{98}$-17

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
x2275.95 *21*	0.35 *3*					
x2278.6 *7*	0.066 *20*					
x2284.8 *6*	0.081 *20*					
x2290.1 *5*	0.118 *22*					
x2292.7 *7*	0.105 *21*					
x2298.1 *6*	0.141 *23*					
x2306.1† *4*	0.221 *24*					
x2311.3† *5*	0.170 *23*					
x2318.74 *18*	0.270 *22*					
2322.98 *20*	0.312 *22*	2396.39		73.396	2^+	
x2327.5 *7*	0.077 *16*					
2329.83 *17*	0.322 *22*	2330.01	1^-	0.0	0^+	
x2350.6 *4*	0.254 *20*					
x2353.0& *10*	0.6& *3*					
2355.72 *14*	0.50 *2*	2429.11	$1,2^+$	73.396	2^+	
x2357.7 *4*	0.164 *24*					
2363.6 *3*	0.250 *20*	2437.2	$1,2^+$	73.396	2^+	
x2366.4& *10*	0.4& *2*					
2369.41 *15*	0.50 *3*	2442.81		73.396	2^+	
x2372.7 *6*	0.073 *14*					
x2385.3 *8*	0.045 *12*					
x2392.8 *6*	0.051 *12*					
x2397.3	0.077 *11*					
2399.88 *12*	0.373 *25*	2473.26	(2^+)	73.396	2^+	
x2414.3 *5*	0.114 *15*					
x2420.51 *21*	0.259 *20*					
x2425.8 *4*	0.154 *17*					
2428.4 *7*	0.049 *12*	2429.11	$1,2^+$	0.0	0^+	
2437.6 *5*	0.118 *15*	2437.2	$1,2^+$	0.0	0^+	
x2440.6 *5*	0.146 *17*					
x2449.4† *8*	0.074 *11*					
2457.6 *3*	0.104 *14*	2531.0	1^+	73.396	2^+	E_γ: weighted average of 2458.2 *5* (2017Go07) and 2457.5 *2* (1995Jo20). I_γ: other: Iγ(2458)/Iγ(2531)=31 *4*/69 *4* (1995Jo20).
x2460.8 *10*	0.067 *13*					
2465.7 *2*	0.095 *14*	2539.12	1^+	73.396	2^+	E_γ: weighted average of 2465.5 *4* (2017Go07) and 2465.7 *2* (1995Jo20). I_γ: other: Iγ(2466)/Iγ(2539)=27 *4*/73 *4* (1995Jo20).
x2467.0 *4*	0.086 *14*					
x2469.1 *7*	0.179 *25*					
2473.0 *3*	0.211 *21*	2473.26	(2^+)	0.0	0^+	
x2478.28 *21*	0.274 *22*					
x2484.0 *9*	0.054 *12*					
x2485.9 *8*	0.054 *12*					
x2491.0 *4*	0.055 *12*					

$^{164}_{66}Dy_{98}$-18

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
[x]2492.88 *27*	0.235 *20*					
[x]2495.95 *24*	0.240 *20*					
[x]2501.6 *8*	0.037 *10*					
2504.5 *2*	0.070 *12*	2577.87	1^+	73.396	2^+	E_γ: weighted average of 2504.8 *6* (2017Go07) and 2504.5 *2* (1995Jo20). I_γ: other: Iγ(2505)/Iγ(2578)=31 *4*/69 *4* (1995Jo20).
2509.77 *16*	0.39 *3*	2583.22	$1,2^+$	73.396	2^+	
[x]2514.2 *4*	0.118 *12*					
2531.49[†d] *18*	0.321 *22*	2531.0	1^+	0.0	0^+	A_2=−0.12 *2* (1995Jo20) E_γ: other: 2530.8 *2* (1995Jo20).
[x]2534.2 *11*	0.069 *14*					
2538.94[†d] *17*	0.44 *4*	2539.12	1^+	0.0	0^+	A_2=−0.10 *3* (1995Jo20) E_γ: other: 2539.1 *2* (1995Jo20).
[x]2540.8 *24*	0.081 *13*					
[x]2548.5 *7*	0.068 *12*					
[x]2553.9 *6*	0.077 *12*					
[x]2556.3 *7*	0.065 *12*					
[x]2562.3 *14*	0.042 *11*					
[x]2565.4 *5*	0.162 *16*					
[x]2569.2 *4*	0.159 *16*					
2577.8 *2*	0.195 *17*	2577.87	1^+	0.0	0^+	A_2=−0.33 *7* (1995Jo20) E_γ: weighted average of 2577.6 *4* (2017Go07) and 2577.9 *2* (1995Jo20).
2580.1 *4*	0.078 *16*	2653.7	1^+	73.396	2^+	
2584.3 *9*	0.063 *14*	2583.22	$1,2^+$	0.0	0^+	
[x]2588.2 *8*	0.095 *12*					
[x]2592.9 *4*	0.194 *17*					
2597.0 *3*	0.217 *18*	2670.49	1^-	73.396	2^+	
[x]2606.9 *5*	0.099 *11*					
[x]2611.3 *5*	0.087 *11*					
2620.5[@] *4*		2694.0	1^+	73.396	2^+	Iγ(2621)/Iγ(2694)=28 *4*/72 *4* (1995Jo20).
[x]2623.7 *5*	0.056 *10*					
[x]2628.7 *5*	0.055 *10*					
[x]2633.6 *4*	0.070 *10*					
[x]2642.9 *6*	0.112 *11*					
[x]2648.5 *6*	0.056 *10*					
2653.9 *10*	0.063 *10*	2653.7	1^+	0.0	0^+	
[x]2657.7 *5*	0.116 *13*					
2662.11[bd] *25*	0.27[b] *3*	2662.1?	$1,2^+$	0.0	0^+	
2662.11[bd] *25*	0.27[b] *3*	2735.5?		73.396	2^+	
2670.6 *4*	0.136 *14*	2670.49	1^-	0.0	0^+	
[x]2673.5 *3*	0.209 *22*					
[x]2679.1 *4*	0.131 *14*					
[x]2690.4 *7*	0.087 *12*					

$^{164}_{66}Dy_{98}$-19

γ(^{164}Dy) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
2694.1 *4*	0.142 *14*	2694.0	1^+	0.0	0^+	A_2=−0.23 *3* (1995Jo20) E_γ: weighted average of 2694.0 *4* (2017Go07) and 2694.1 *4* (1995Jo20).
[x]2698.8 *10*	0.064 *12*					
[x]2704.1 *9*	0.056 *11*					
3037.8[@] *4*		3111.1	1^+	73.396	2^+	Iγ(3037.8)/Iγ(3111.0)=27 *5*/73 *5* (1995Jo20).
3085.3[@] *4*		3159.1	1^+	73.396	2^+	Iγ(3085.3)/Iγ(3159.4)=36 *5*/64 *5* (1995Jo20).
3100.1[@] *4*		3173.6	1^+	73.396	2^+	Iγ(3100.1)/Iγ(3173.6)=32 *5*/68 *5* (1995Jo20).
3111.0[@] *4*		3111.1	1^+	0.0	0^+	A_2=−0.32 *8* (1995Jo20)
3159.4[@] *4*		3159.1	1^+	0.0	0^+	A_2=−0.17 *5* (1995Jo20)
3173.6[@] *4*		3173.6	1^+	0.0	0^+	A_2=−0.21 *7* (1995Jo20)

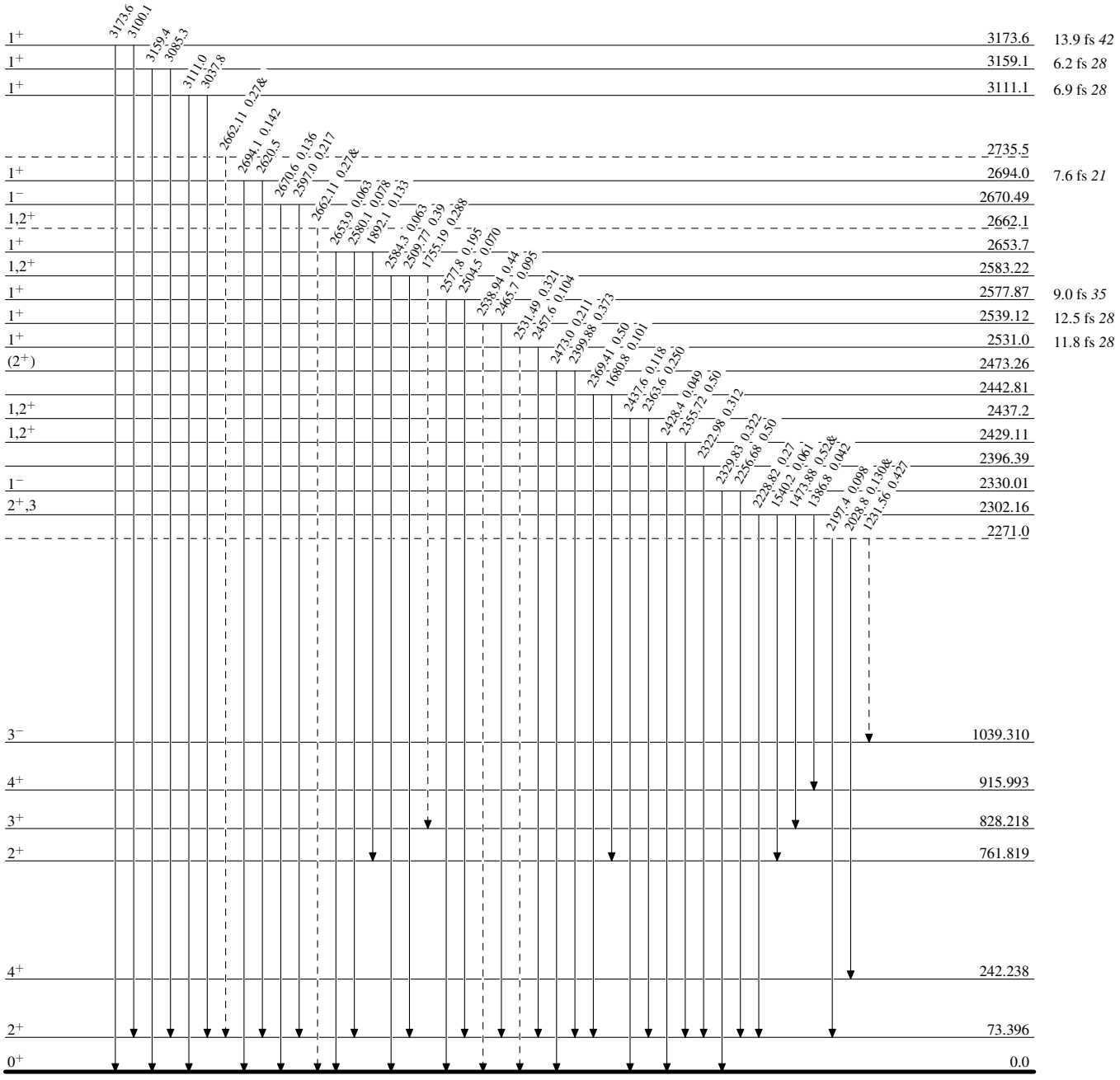
[†] Multiplet.
[‡] γ-ray assignment to ^{164}Dy is uncertain.
[#] γ(θ) data for unresolved multiplet.
[@] From 1995Jo20.
[&] From 1976Ba34.
[a] From γ(θ) data in 2017Go07. Evaluators have assigned these in parentheses as γ(θ) data are insensitive to parity determination. See Adopted Levels, Gammas dataset for more firm assignments.
[b] Multiply placed with undivided intensity.
[c] Multiply placed with intensity suitably divided.
[d] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{164}Dy(n,n′γ) 2017Go07

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)

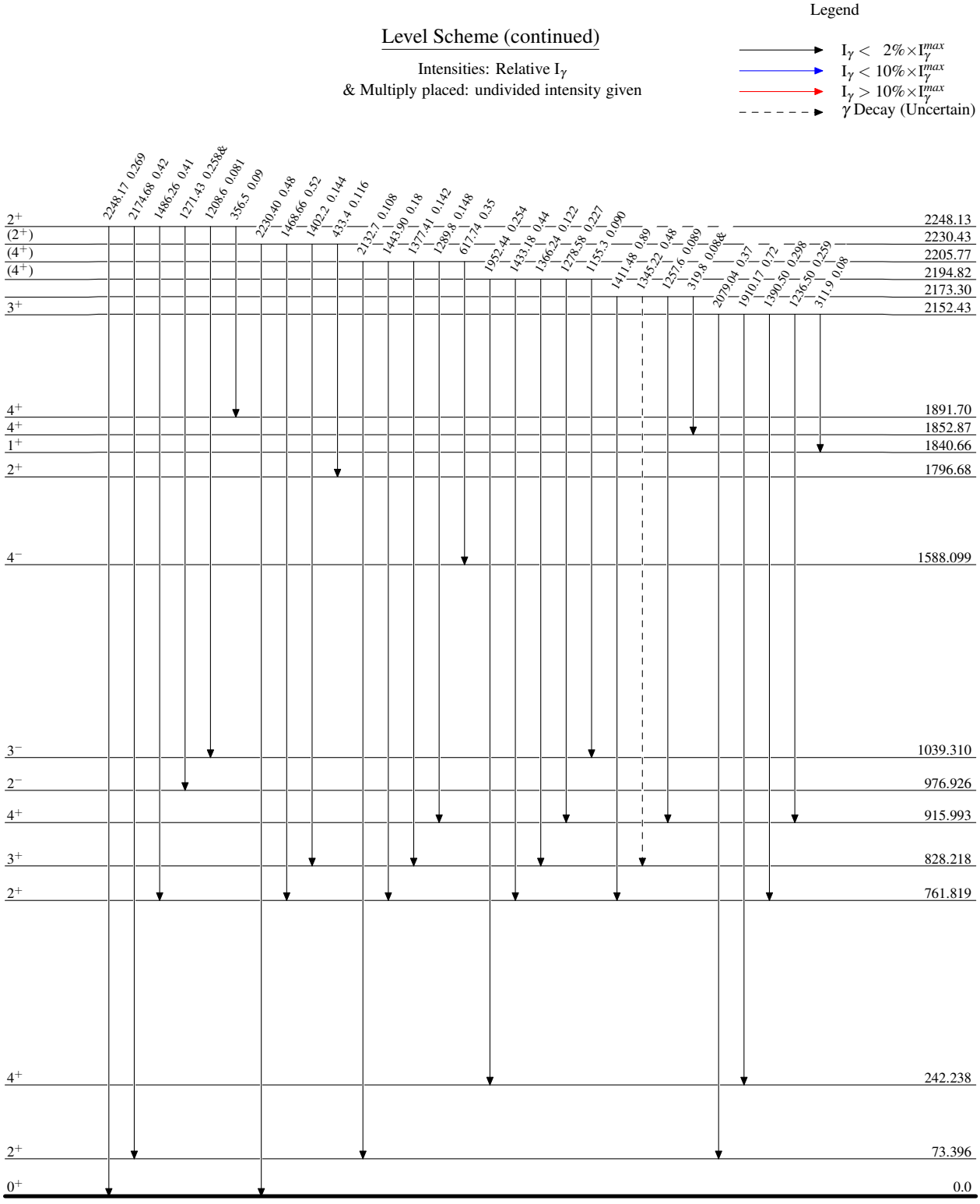


$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given



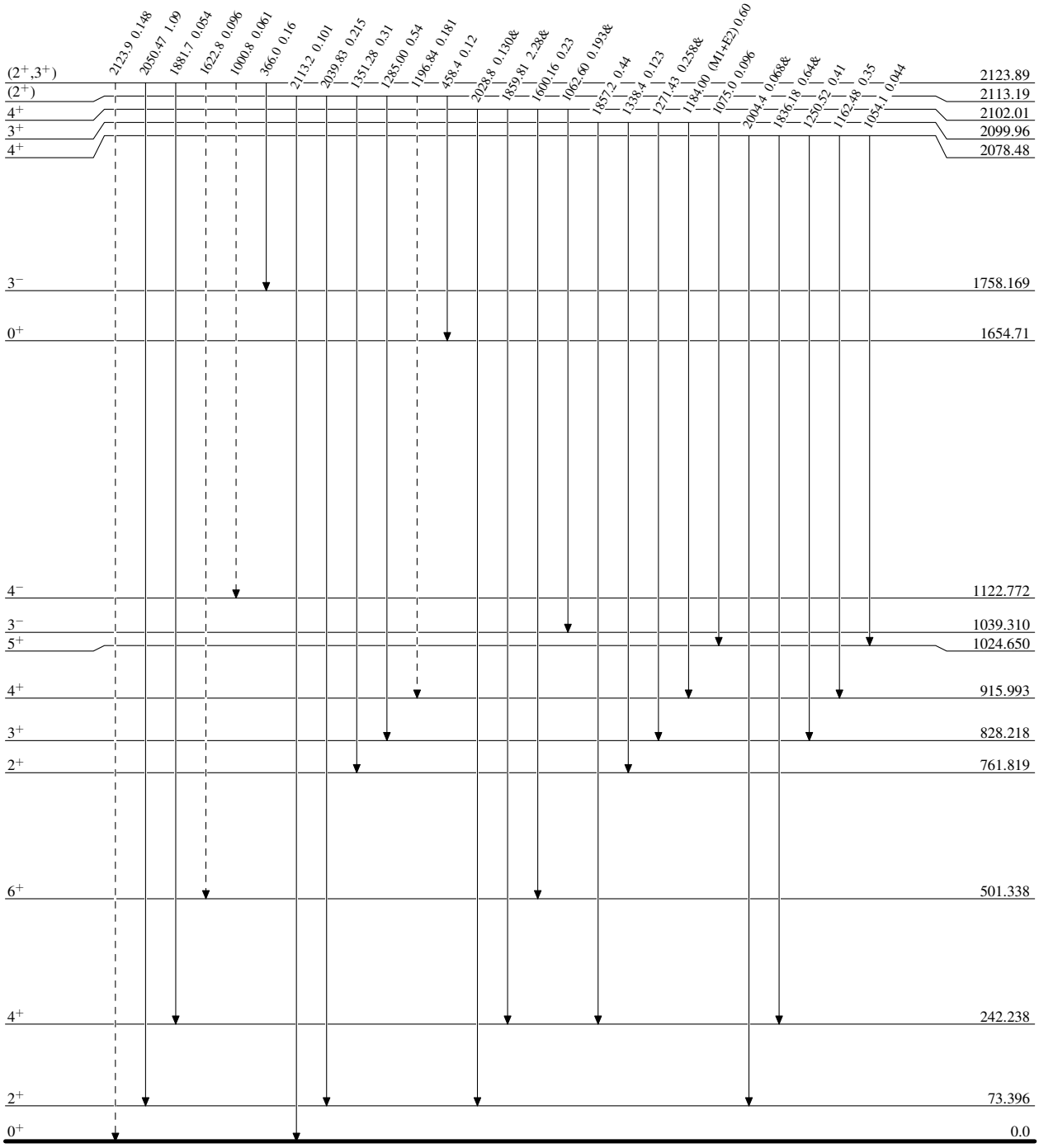
$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

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)



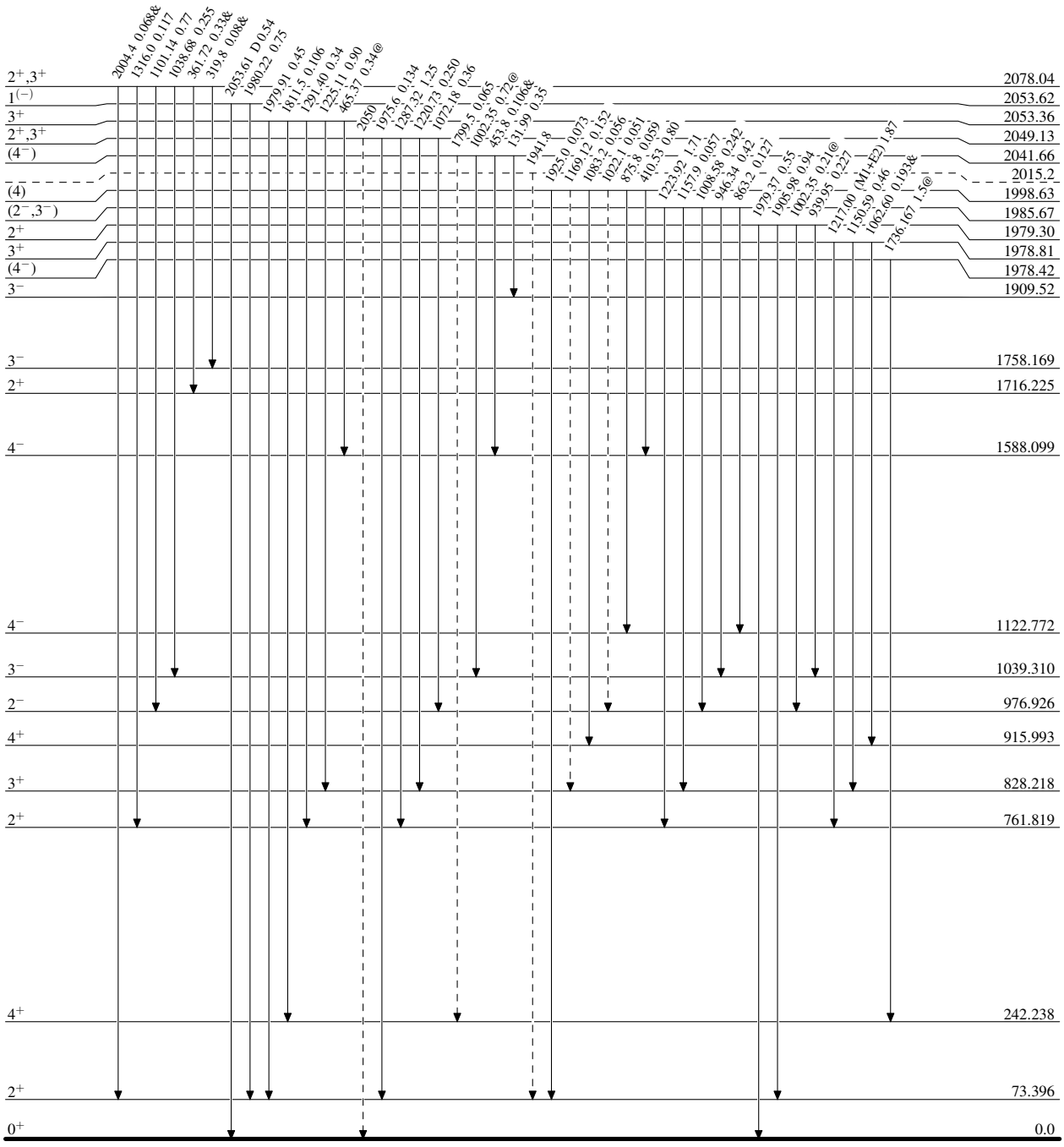
$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

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)



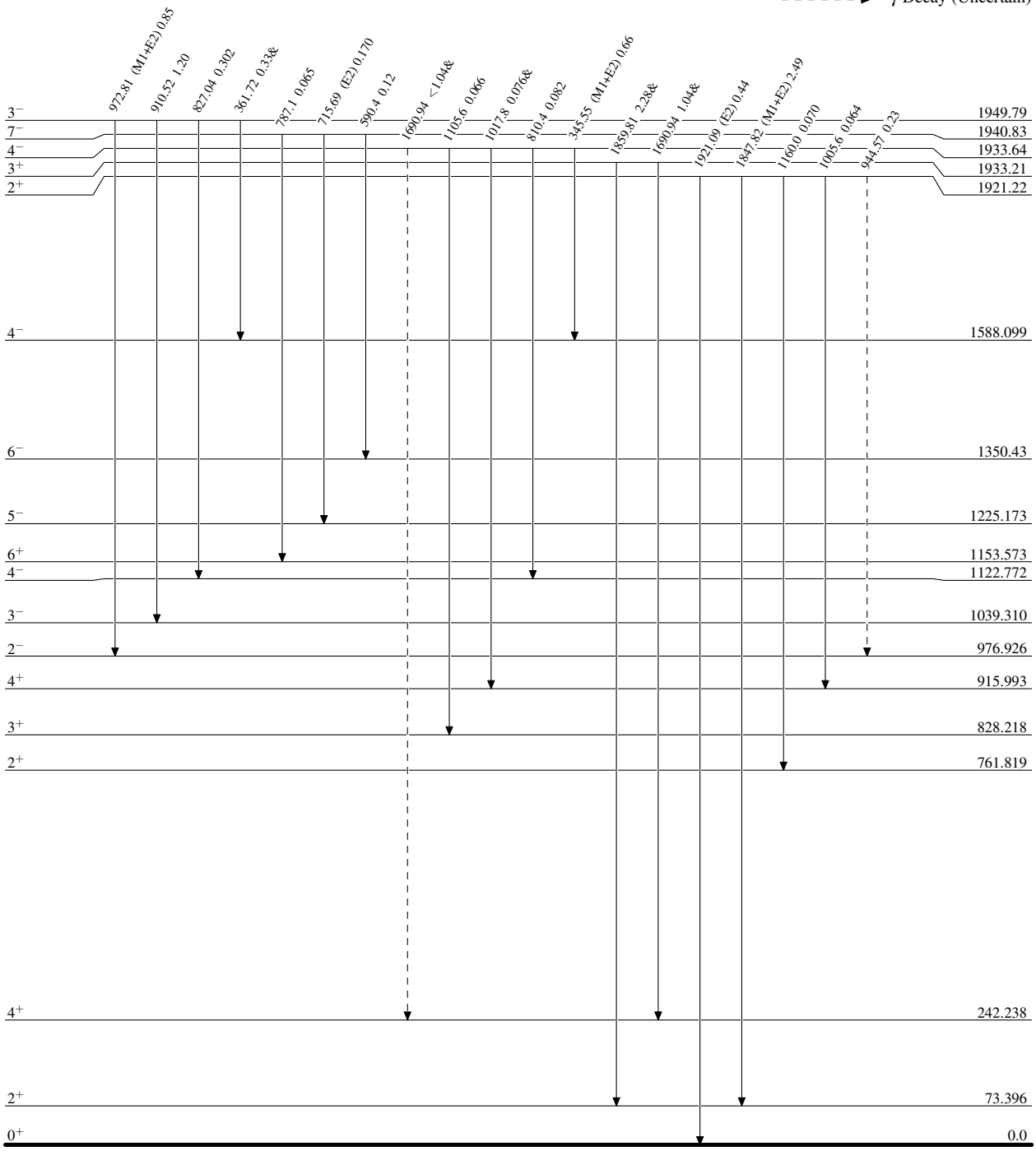
$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

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)

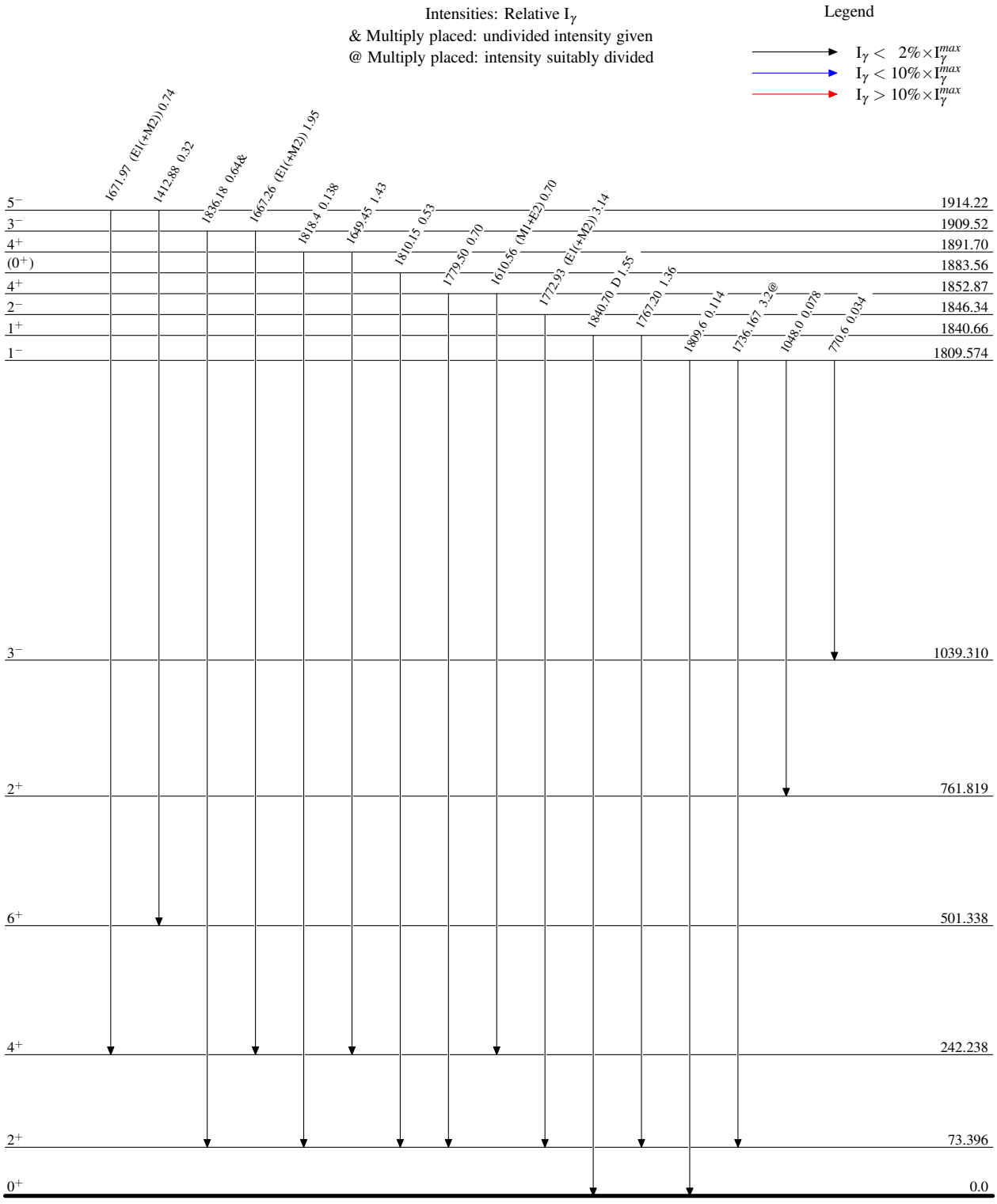


$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

Level Scheme (continued)

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



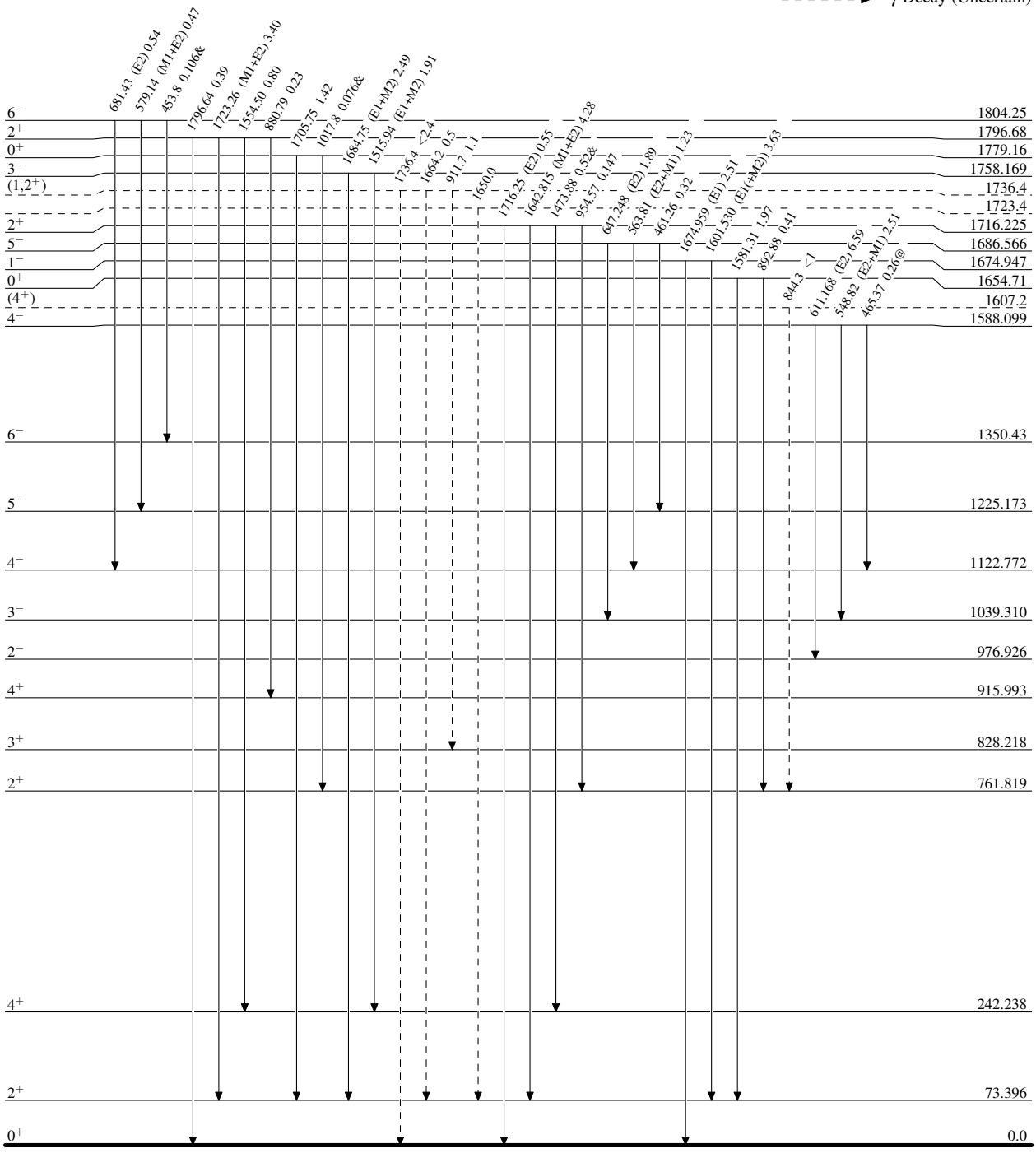
$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

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)



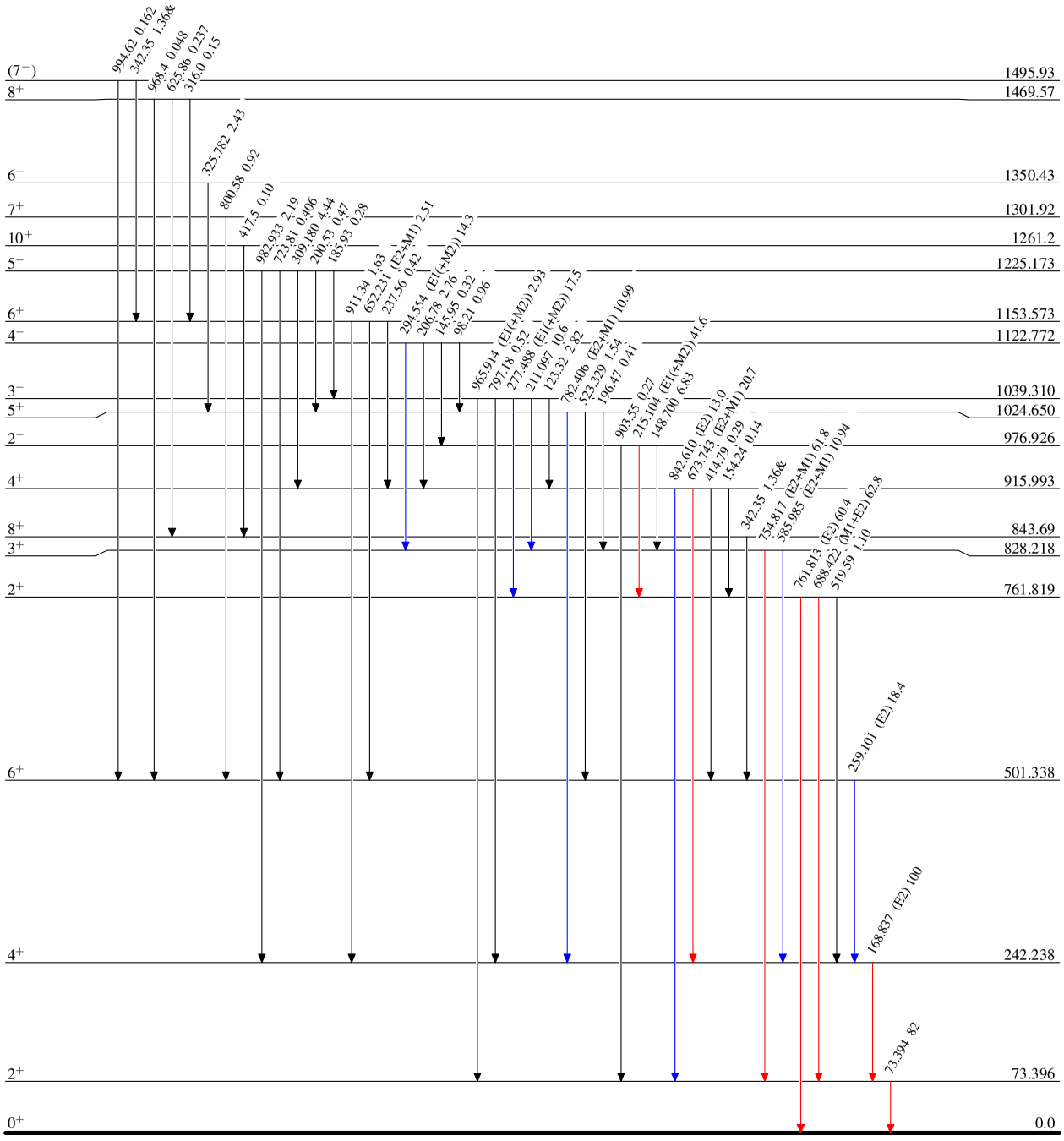
$^{164}_{66}Dy_{98}$

^{164}Dy(n,n′γ) 2017Go07

Level Scheme (continued)

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

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



$^{164}_{66}Dy_{98}$