Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109,1103 (2008)	1-Mar-2008

Q(β^-)=487.1 *10*; S(n)=7043.5 *4*; S(p)=9.31×10^3 *syst*; Q(α)=−729 *4* 2012Wa38
Note: Current evaluation has used the following Q record 486.8 10 *7043.5 4* 9220 syst-728 4 2003Au03.
Uncertainty in S(p) is 200 (2003Au03).

^{166}Dy Levels

Cross Reference (XREF) Flags

- A ^{165}Dy(n,γ) E=thermal
- B ^{164}Dy(t,p)
- C ^{118}Sn(^{164}Dy,^{116}Snγ)
- D ^{166}Tb β^- decay

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.	0$^+$	81.6 h *1*	ABCD	%β^-=100 J$^\pi$: g.s. of even-even nucleus; L(t,p)=0. T$_{1/2}$: weighted average from 81.8 h *2* (1962Gu03) and 81.46 h *20* (1963Ho15). Others: 80.2 h *5* (1960He09), 82 h (1950Bu30), 81 h (1949Ke22).
76.587[@] *1*	2$^+$[#]		ABCD	J$^\pi$: E2 77γ to 0$^+$ g.s..
253.5278[@] *14*	4$^+$[#]		ABCD	
526.9670[@] *25*	6$^+$[#]		A C	
857.163[&] *4*	(2)$^+$		AB D	J$^\pi$: M1(+E2) 781γ to 2$^+$ 77; band assignment.
892.0[@] *10*	8$^+$[#]		C	
928.729[&] *4*	(3)$^+$		A D	J$^\pi$: E2(+M1) γ to 2$^+$ 77 and to 4$^+$ 254; band assignment.
1023.434[&] *4*	(4)$^+$		AB	J$^\pi$: M1+E2 770γ to 4$^+$ 254; E2 947γ to 2$^+$ 77; band assignment.
1029.903[a] *4*	(2$^-$)		A D	J$^\pi$: γ to (3)$^+$ 929 and to (2)$^+$ 857 in γ band.
1095.210[a] *4*	(3$^-$)		AB D	
1141.266[&] *13*	(5$^+$)		A	
1149[b]	0$^+$		B	J$^\pi$: L(t,p)=0.
1180.854[a] *4*	(4$^-$)		A	
1189.387 *4*	(2$^+$,3,4$^-$)		A	J$^\pi$: 159γ to (2$^-$) 1030; 166γ to (4$^+$) 1023.
1208[b]	(2$^+$)		B	
1274			B	E(level): for contaminated line.
1334			B	E(level): for contaminated line.
1341.0[@] *15*	10$^+$[#]		C	
1351			B	E(level): for contaminated line.
1515			B	
1556			B	
1616			B	
1645			B	
1674			B	
1770			B	
1864			B	
1868.0[@] *18*	12$^+$[#]		C	
1891			B	
2029			B	
2048			B	
2069.7 *3*	($\leq$3$^-$)		D	J$^\pi$: log *ft*≈5.4 in β^- decay from (1$^-$,2$^-$) ^{166}Tb.

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Adopted Levels, Gammas (continued)

^{166}Dy Levels (continued)

E(level)[†]	XREF	E(level)[†]	J^π[‡]	XREF
2120	B	2311		B
2183	B	2383		B
2252	B	2467.0[@] *20*	14+[#]	C
		3119.0?[@] *22*	(16+)[#]	C

[†] From least-squares fit to Eγ, assigning 1 keV uncertainty to Eγ data for which the authors did not state an uncertainty, except for levels observed only in (t,p) reaction.
[‡] Based on the systematics for band structures of the even Dy isotopes, unless otherwise noted.
[#] Established J^π for the g.s. and 76 level combined with known E2 multipolarity for the J=4 to J=2 *177*-keV transition and a regular sequence of level energies enable the assignment of definite J^π to g.s. band members with J≤14.
[@] Band(A): $K^\pi=0^+$ band (1998Wu04). A=12.80, B=−0.0063.
[&] Band(B): $K^\pi=2^+$ γ-vibrational band (1988Ka44). A=12.05, B=−0.0065.
[a] Band(C): $K^\pi=(2^-)$ band. A=11.13, B=−0.013. Possible octupole band analogous to that in ^{164}Dy.
[b] Band(D): $K^\pi=0^+$ band (1988Bu08). A=9.8 if B=0.

γ(^{166}Dy)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[&]	Comments
76.587	2+	76.587 *1*	100	0.	0+	E2	7.51	
253.5278	4+	176.941 *1*	100	76.587	2+	E2	0.357	
526.9670	6+	273.439 *2*	100	253.5278	4+	E2	0.0859	
857.163	(2)+	780.571 *6*	88 *17*	76.587	2+	M1(+E2)	0.0074 *23*	
		857.156 *11*	100 *22*	0.	0+	[E2]	0.00422	
892.0	8+	365[@]		526.9670	6+			
928.729	(3)+	675.218 *9*	13.7 *27*	253.5278	4+	E2(+M1)	0.011 *4*	
		852.128 *8*	100 *19*	76.587	2+	E2(+M1)	0.0061 *18*	
1023.434	(4)+	769.907 *6*	100 *21*	253.5278	4+	M1+E2	0.0077 *24*	
		946.850 *15*	65 *13*	76.587	2+	E2	0.00341	
1029.903	(2−)	101.175 *1*	4.4 *8*	928.729	(3)+	[E1]	0.299	I_γ: from (n,γ) E=thermal. Other I(101γ):I(173γ)=13 *4*:100 *13* in β^- decay.
		172.738 *1*	100 *10*	857.163	(2)+	[E1]	0.0716	
1095.210	(3−)	166.479 *3*	73 *8*	928.729	(3)+	[E1]	0.0789	
		238.062 *4*	100 *10*	857.163	(2)+	[E1]	0.0309	
1141.266	(5+)	614.302 *26*	9.6 *17*	526.9670	6+			
		887.734 *15*	100 *21*	253.5278	4+			
1180.854	(4−)	85.644 *2*	1.6 *8*	1095.210	(3−)			
		157.421 *3*	12.3 *8*	1023.434	(4)+			
		252.124 *3*	100 *10*	928.729	(3)+			
1189.387	(2+,3,4−)	94.178 *1*	2.8 *18*	1095.210	(3−)			
		159.492 *4*	5.5 *9*	1029.903	(2−)			
		165.95 *1*	17.4 *18*	1023.434	(4)+			
		260.652 *2*	100 *9*	928.729	(3)+			
1341.0	10+	449[@]	100	892.0	8+			
1868.0	12+	527[@]	100	1341.0	10+			
2069.7	(≤3−)	1039.8 *3*	100	1029.903	(2−)			E_γ: from β^- decay.
2467.0	14+	599[@]	100	1868.0	12+			
3119.0?	(16+)	652[@a]	100	2467.0	14+			

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Adopted Levels, Gammas (continued)

$\gamma(^{166}Dy)$ (continued)

† From $^{165}Dy(n,\gamma)$, E=thermal, except as noted.

‡ Relative photon intensity normalized to 100 for strongest γ deexciting each level; from $^{165}Dy(n,\gamma)$ E=thermal, except as noted. Branching from β^- decay is in good agreement with that from (n,γ).

From subshell ratios and/or $\alpha(K)$exp in (n,γ) E=thermal.

@ From $^{118}Sn(^{164}Dy,^{116}Sn\gamma)$; uncertainty unstated by authors.

& Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^{a} Placement of transition in the level scheme is uncertain.

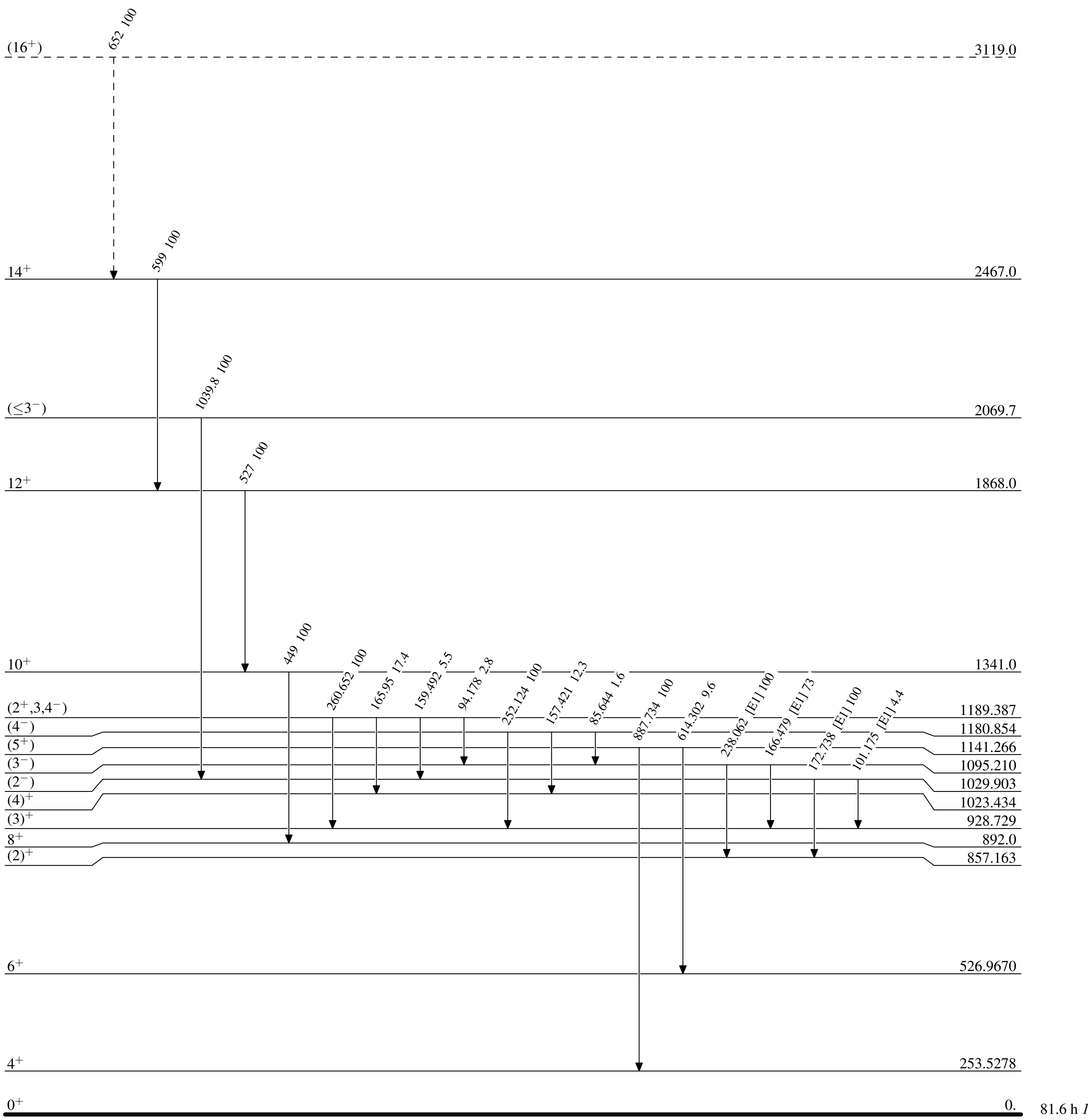
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

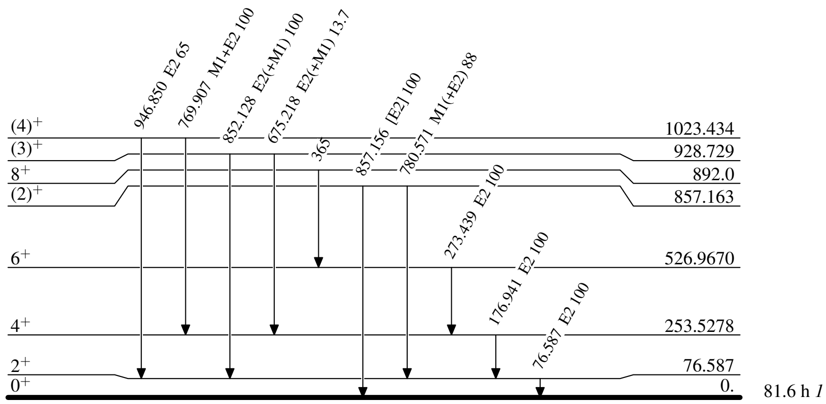


$^{166}_{66}Dy_{100}$

Adopted Levels, Gammas

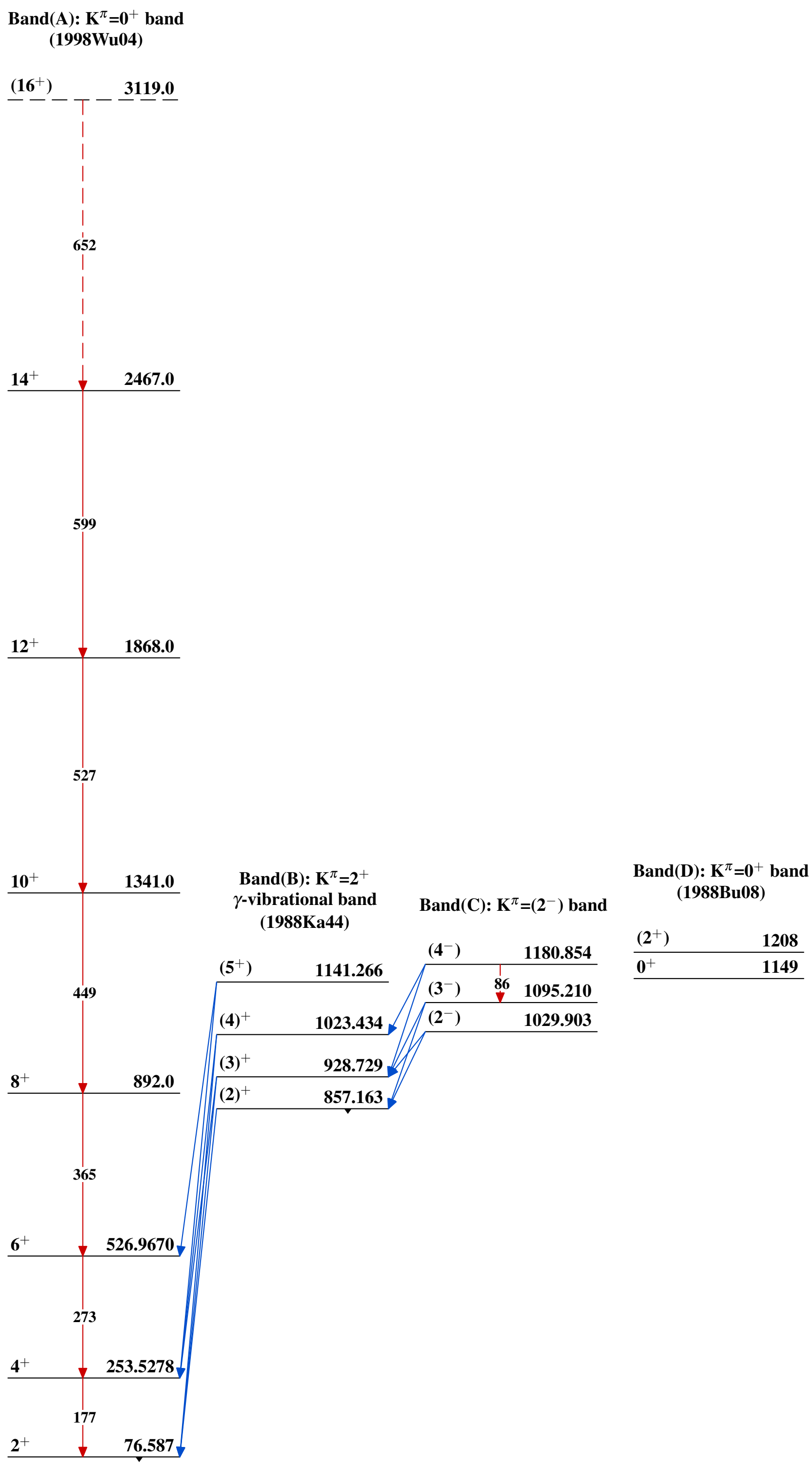
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{166}_{66}Dy_{100}$

Adopted Levels, Gammas



$^{166}_{66}Dy_{100}$