^{165}Dy β^- decay (2.331 h) 1972Ma06,2004Mi18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

Parent: ^{165}Dy: E=0.0; J$^\pi$=7/2$^+$; T$_{1/2}$=2.331 h *4*; Q(β^-)=1285.7 *8*; %β^- decay=100

^{165}Dy-J$^\pi$,T$_{1/2}$: From ^{165}Dy Adopted Levels.

^{165}Dy-Q(β^-): From 2021Wa16.

1972Ma06: measured Eγ, Iγ, $\gamma\gamma$, ce; magnetic spectrometer for ce.

2014Mi01: measured conversion data for 361.7-keV transition using a magnetic β spectrometer; deduced M2+E3 mixing ratio.
Additional information 1.

2004Mi18: measured Eγ, Iγ; emission probability of 94.7γ; relative intensities of 19 γ rays from 94.7 to 1079.6 keV.

1991Mi26: measured ce data for 94.7γ, 279.8γ, 361.7γ and 633.4γ using high-resolution magnetic spectrometer.

Others:

γ: 1971Lu08, 1965Sc09, 1964Re09, 1963Ma08, 1962Ni11, 1962Ha46, 1956An34.

ce: 1963Pe11, 1962No07, 1962Vo02.

$\gamma(\theta$,T) from oriented ^{165}Dy: 1982HaYO.

β: 1963Pe11, 1959Cr73, 1955Ro57, 1947Sl14.

$\gamma\gamma(\theta)$: 1964Si24, 1959Gr01.

γ(t): 1967Ba27, 1964Ha19, 1959Gr01, 1959Cr80, 1958Ka10, 1951Wr13.

$\beta\gamma$: 1959Bo52.

^{165}Ho Levels

E(level)†	J$^\pi$‡	T$_{1/2}$‡	Comments
0.0	7/2$^-$	stable	
94.700 *3*	9/2$^-$	22.2 ps *8*	T$_{1/2}$: value from this dataset: 25 ps *10*, from $\gamma\gamma$(t) (1967Ba27).
209.805 *11*	11/2$^-$	12.7 ps *14*	
361.674 *11*	3/2$^+$	1.512 μs *4*	%IT=100 T$_{1/2}$: adopted value from γ(t) in 1959Cr80. Other: 1.65 μs *20* (γ(t),1958Ka10).
419.543 *11*	5/2$^+$		
429.387 *11*	1/2$^+$		
449.258 *11*	3/2$^+$		
491.046 *14*	7/2$^+$		
515.475 *11*	3/2$^-$	10.4 ps *11*	T$_{1/2}$: value from this dataset: <0.1 ns from γ(t) (1964Ha19).
539.010 *13*	5/2$^+$		
565.719 *20*	(5/2)$^-$	27 ps *10*	
589.801 *18*	7/2$^+$		
715.331 *11*	7/2$^+$	<0.1 μs	T$_{1/2}$: γ(t) (1958Ka10). J$^\pi$: $\gamma(\theta)$ from oriented ^{165}Dy β decay for 620γ and 715γ agree only with J^π=5/2$^+$, not with 7/2$^+$; however, 620γ to 9/2$^-$ disfavors 5/2$^+$; L=4 and analyzing powers in (pol t,α) strongly favor 7/2$^+$.
820.108 *16*	(9/2$^+$)		
995.094 *11*	5/2$^+$		
1055.761 *25*	5/2$^+$		
1079.621 *17*	7/2$^+$		
1140.36 *5*	7/2$^+$		
1186.59 *6*	9/2$^+$		

† From least-squares fit to Eγ data.

‡ From Adopted Levels.

^{165}Dy β^- decay (2.331 h) 1972Ma06,2004Mi18 (continued)

β^- radiations

av Eβ: Additional information 2.

E(decay)	E(level)	Iβ^- [†‡]	Log *ft*	Comments
(99.1 *13*)	1186.59	0.0018 *2*	7.24 *6*	av Eβ=25.49 *22*
(145.3 *13*)	1140.36	0.0020 *2*	7.70 *5*	av Eβ=38.17 *22*
(206.1 *13*)	1079.621	0.167 *3*	6.253 *14*	av Eβ=55.58 *23*
(229.9 *13*)	1055.761	0.0469 *10*	6.954 *15*	av Eβ=62.60 *24*
(290.6 *13*)	995.094	1.80 *3*	5.693 *12*	av Eβ=81.03 *25* Measured Eβ=305 *10* (1959Bo52).
(465.6 *13*)	820.108	0.012 *2*	8.54 *+8−7*	av Eβ=137.87 *27*
(570.4 *13*)	715.331	0.069 *6*	8.07 *4*	av Eβ=174.18 *28*
(695.9[#] *13*)	589.801			Iβ=−0.0082 *9*.
(720.0 *13*)	565.719	0.0012 *8*	10.2 *+5−2*	av Eβ=228.46 *30*
(746.7[#] *13*)	539.010			Iβ=−0.019 *4*.
(770.2[#] *13*)	515.475	0.0025 *22*	10.3[1u] *+9−3*	av Eβ=255.03 *29*
(794.7 *13*)	491.046	0.015 *4*	9.23 *+14−10*	av Eβ=256.49 *30*
(866.2[#] *13*)	419.543	<0.03	>9.1	av Eβ=283.82 *31* Iβ=−0.02 *5*. E(decay): 880 from 1955Ro57, 1947Sl14. Other: 1000 *30* (1959Bo52). Iβ^-: observation of this β^- transition is not compatible with very small Iβ^-<0.05% expected from the balance of I(γ+ce).
(924.0[#] *13*)	361.674			Iβ=0.09 *8* is consistent with expected no feeding for ΔJ=2, Δπ=no.
(1075.9 *13*)	209.805	0.016 *2*	10.25[1u] *+6−5*	av Eβ=367.6 *3*
(1191.0 *13*)	94.700	15.3 *4*	6.857 *13*	av Eβ=413.07 *33* Measured Eβ=1190 (1959Cr73), 1215 *20* (1959Bo52). Iβ^-: measured %Iβ=14 (1959Cr73), 16 (1959Bo52).
(1285.7 *16*)	0.0	82.6 *4*	6.248 *4*	av Eβ=452.03 *33* Measured Eβ=1285 *10* (1963Pe11), 1280 (1959Cr73), 1305 *20* (1959Bo52). Iβ^-: measured %Iβ=83 *2* (1963Pe11), 84 (1959Cr73), 80 (1959Bo52).

† ce(K)(94.7γ)/β^-=0.093 *10* (1963Pe11).
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

γ(^{165}Ho)

Iγ normalization: from Iγ(94.7γ)/100 decays of ^{165}Dy=3.80 *5* (2004Mi18).

E_γ [†]	I_γ [†&]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	δ [@]	α [a]	Comments
29.715[#] *3*	0.12 *6*	449.258	3/2$^+$	419.543	5/2$^+$	M1		14.61 *20*	%Iγ=0.0046 *23* α(L)=11.42 *16*; α(M)=2.522 *35* α(N)=0.585 *8*; α(O)=0.0849 *12*; α(P)=0.00474 *7* Mult.: α(L1)exp=12.9 *69*; L1:L2:L3=100 *20*:80.1 *32*:<5.7 (1972Ma06).
57.864[#] *5*	0.39 *6*	419.543	5/2$^+$	361.674	3/2$^+$	M1+E2	0.130 *+46−30*	12.77 *24*	%Iγ=0.0148 *23* α(K)=10.37 *18*; α(L)=1.87 *22*; α(M)=0.42 *5* α(N)=0.097 *12*; α(O)=0.0136 *13*; α(P)=0.000657 *12* Mult.: L1:L2:L3=100 *20*:14.8 *59*:12.0 *48*; α(L1)exp=1.32 *33* (1972Ma06).
67.712[#] *4*	0.40 *20*	429.387	1/2$^+$	361.674	3/2$^+$	M1		8.03 *11*	%Iγ=0.015 *8* α(K)=6.74 *9*; α(L)=1.011 *14*; α(M)=0.2232 *31* α(N)=0.0518 *7*; α(O)=0.00753 *11*; α(P)=0.000421 *6* Mult.: α(K)exp=6.3 *37*; K/L=7.4 *32* (1972Ma06).
71.502[#] *10*	0.066 *10*	491.046	7/2$^+$	419.543	5/2$^+$	M1(+E2)	<0.41	7.12 *27*	%Iγ=0.0025 *4* α(K)=5.50 *27*; α(L)=1.3 *4*; α(M)=0.29 *10* α(N)=0.066 *22*; α(O)=0.0089 *25*; α(P)=0.000340 *19* Mult.: α(K)exp=4.4 *15*, K/L=5.0 *21* (1972Ma06).
87.585[#] *4*	0.40 *4*	449.258	3/2$^+$	361.674	3/2$^+$	M1(+E2)	<0.32	3.86 *7*	%Iγ=0.0152 *15* α(K)=3.13 *9*; α(L)=0.57 *9*; α(M)=0.128 *23* α(N)=0.030 *5*; α(O)=0.0041 *6*; α(P)=0.000193 *7* Mult.: α(K)exp=3.3 *7*, K/L=7.2 *26* (1972Ma06).
89.753[#] *8*	0.080 *16*	539.010	5/2$^+$	449.258	3/2$^+$	M1(+E2)	<0.5	3.63 *9*	%Iγ=0.0030 *6* α(K)=2.83 *16*; α(L)=0.62 *17*; α(M)=0.14 *4* α(N)=0.032 *10*; α(O)=0.0044 *11*; α(P)=0.000173 *13* Mult.: α(K)exp=2.7 *10*, K/L>3 (1972Ma06).
94.700[#] *3*	100.0[‡] *6*	94.700	9/2$^-$	0.0	7/2$^-$	M1+E2	0.160 *5*	3.06 *4*	%Iγ=3.80 *5* α(K)=2.53 *4*; α(L)=0.414 *6*; α(M)=0.0924 *14* α(N)=0.02138 *32*; α(O)=0.00305 *4*; α(P)=0.0001565 *22* E_γ: from 1965Sc09. Others: 94.692 *3* (1971Lu08), 94.705 *3* (1964Re09), 94.697 *5* (1963Ma08), 94.697 *4* (1962Ni11), 94.702 *10* (1962Ha46). δ: weighted average of 0.168 *9* from subshell ratios (1991Mi26) and +0.157 *5* from E2 and M1 matrix elements in Coulomb excitation (2003Iw01). α(K)exp=2.62 *20*, K:L1:L2:L3=1000 *150*:120 *6*:22 *4*:8.6 *20*

$\gamma(^{165}Ho)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	δ [@]	α [a]	Comments
									(1963Pe11). Others: α(K)exp=2.5 *2*, K:L1:L2:L3=1000 *30*:128:19.7 *6*:9.6 *3* (1962No07); α(K)exp=2.60, K:L1:L2:L3=1000:133 *7*:17.8 *18*:8.2 *8* (1972Ma06); for L:M:N+O and L:M1:N1 see 1970Mi15, 1963Pe11, 1962Vo02. δ=0.168 *9* (1991Mi26) from L1/L2/L3=100.0 *5*/14.2 *3*/8.0 *2*.
95.931[#] *4*	0.026 *4*	515.475	3/2$^-$	419.543	5/2$^+$	[E1]		0.354 *5*	%Iγ=0.00099 *15* α(K)=0.294 *4*; α(L)=0.0466 *7*; α(M)=0.01029 *14* α(N)=0.002342 *33*; α(O)=0.000315 *4*; α(P)=1.334×10^{-5} *19*
98.80 *15*	0.023 *5*	589.801	7/2$^+$	491.046	7/2$^+$				%Iγ=0.00087 *19*
109.59[#] *3*	0.016 *5*	539.010	5/2$^+$	429.387	1/2$^+$				%Iγ=0.00061 *19*
115.104[#] *10*	0.199 *14*	209.805	11/2$^-$	94.700	9/2$^-$	M1+E2	+0.17 *+1−3*	1.744 *24*	%Iγ=0.0076 *5* α(K)=1.448 *21*; α(L)=0.231 *5*; α(M)=0.0514 *13* α(N)=0.01190 *29*; α(O)=0.001704 *35*; α(P)=8.93×10^{-5} *14* δ: from the Adopted Gammas.
119.47 *3*	0.200 *14*	539.010	5/2$^+$	419.543	5/2$^+$	M1(+E2)	<0.6	1.556 *26*	%Iγ=0.0076 *5* α(K)=1.24 *8*; α(L)=0.25 *5*; α(M)=0.056 *13* α(N)=0.0129 *29*; α(O)=0.00177 *32*; α(P)=7.5×10^{-5} *7* Mult.: α(K)exp=1.44 *31*, K/L>3.3 (1972Ma06).
129.39[#] *3*	0.014 *5*	491.046	7/2$^+$	361.674	3/2$^+$				%Iγ=0.00053 *19*
140.544[#] *20*	0.059 *6*	589.801	7/2$^+$	449.258	3/2$^+$				%Iγ=0.00224 *23*
153.803[#] *6*	0.160 *13*	515.475	3/2$^-$	361.674	3/2$^+$	[E1]		0.1006 *14*	%Iγ=0.0061 *5* α(K)=0.0844 *12*; α(L)=0.01264 *18*; α(M)=0.00278 *4* α(N)=0.000637 *9*; α(O)=8.80×10^{-5} *12*; α(P)=4.09×10^{-6} *6*
170.22[#] *3*	0.085 *9*	589.801	7/2$^+$	419.543	5/2$^+$				%Iγ=0.00323 *34*
174.96[#] *3*	0.031 *6*	995.094	5/2$^+$	820.108	(9/2$^+$)				%Iγ=0.00118 *23*
209.70 *25*	0.028 *14*	209.805	11/2$^-$	0.0	7/2$^-$	E2		0.2084 *30*	%Iγ=0.0011 *5* α(K)=0.1396 *20*; α(L)=0.0531 *8*; α(M)=0.01252 *19* α(N)=0.00284 *4*; α(O)=0.000356 *5*; α(P)=6.69×10^{-6} *10*
228.3 *3*	0.012 *6*	589.801	7/2$^+$	361.674	3/2$^+$				%Iγ=0.00046 *23*
259.53 *5*	0.41[‡] *1*	1079.621	7/2$^+$	820.108	(9/2$^+$)				%Iγ=0.0156 *4*
266.80 *15*	0.031 *8*	361.674	3/2$^+$	94.700	9/2$^-$	[E3]		0.446 *6*	%Iγ=0.00118 *30* α(K)=0.2155 *30*; α(L)=0.1767 *25*; α(M)=0.0432 *6* α(N)=0.00982 *14*; α(O)=0.001202 *17*; α(P)=1.246×10^{-5} *18*
279.763[#] *12*	14.06[‡] *8*	995.094	5/2$^+$	715.331	7/2$^+$	M1+E2	−0.38 *+3−1*	0.1398 *23*	%Iγ=0.534 *8* α(K)=0.1166 *20*; α(L)=0.01807 *25*; α(M)=0.00401 *6* α(N)=0.000929 *13*; α(O)=0.0001335 *19*; α(P)=7.08×10^{-6} *13* Mult.: α(K)exp=0.126 *36*; K/L=5.4 *7* (1991Mi26). Others:

γ(^{165}Ho) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[@]	α[a]	Comments
									>5.5 (1963Pe11), K/L=4.3 *6* (1962Vo02). L1/L2/L3=100 *6*/15 *4*/<7 (1991Mi26). E_γ: from 1965Sc09. Others: 279.759 *20* (1971Lu08), 279.784 *41* (1964Re09), 279.755 *30* (1962Ni11). δ: $\gamma(\theta$,T) (1982HaYO) gives −0.38 +*3*−*1* or +5.3 *4*. The ce data of 1991Mi26 gives 0.55 *16* from K/L and L1/L2, which supports lower δ of 1982HaYO.
[x]356.90 *25*	0.023 *12*								%Iγ=0.0009 *5*
361.68[#] *2*	23.79[‡] *12*	361.674	3/2$^+$	0.0	7/2$^-$	M2+E3	0.33 *4*	0.265 *5*	%Iγ=0.904 *13* K:L1:L2:L3=643 *8*:100:17.9 *8*:6.9 *8* (2014Mi01) α(K)=0.212 *4*; α(L)=0.0406 *6*; α(M)=0.00925 *13* α(N)=0.002148 *30*; α(O)=0.000305 *4*; α(P)=1.527×10^{-5} *33* E_γ: from 1965Sc09. Others: 361.676 *30* (1971Lu08), 361.699 *25* (1964Re09). Mult.,δ: from ce data in 2014Mi01 (earlier values from the same experimental group reported in 1991Mi26: K/L=5.2 *3*; L/M=8.1 *14*; L1:L2:L3=100.0 *9*:12.2 *7*:5.5 *8*). Others: K/L=6.3 *18* (1965Bo40). α(K)exp=0.22 *4*, K/L=4.8 *12* (1963Pe11). The δ(E3/M2) value is deduced by evaluators by fitting ce data in 2014Mi01 using BrIccMixing code. 2014Mi01 give δ(E3/M2)=0.329 *22* using a somewhat different procedure. Inclusion of ce data from 1965Bo40 and 1963Pe11 gives δ(E3/M2)=0.33 *6*. Fitting with all the ce data, including those from 1991Mi26 gives δ(E3/M2)=0.28 *6*, with a large and unacceptable reduced χ^2=12, with L/M, L1/L2 and L1/L3 data from 1991Mi26 poorly fitted.
405.25 *3*	0.298 *15*	995.094	5/2$^+$	589.801	7/2$^+$				%Iγ=0.0113 *6*
456.093 *25*	1.19[‡] *2*	995.094	5/2$^+$	539.010	5/2$^+$	M1+E2	−0.52 +*14*−*26*	0.0364 *35*	%Iγ=0.0452 *10* α(K)=0.0305 *31*; α(L)=0.00458 *29*; α(M)=0.00101 *6* α(N)=0.000235 *14*; α(O)=3.39×10^{-5} *24*; α(P)=1.84×10^{-6} *20* δ: from $\gamma(\theta)$, may also be $\delta\geq$+29.4 (1982HaYO).
472.11 *15*	0.040 *8*	565.719	(5/2)$^-$	94.700	9/2$^-$				%Iγ=0.00152 *30* E_γ: poor fit; level-energy difference=471.05. Eγ not used in fitting.
479.622 *25*	1.22[‡] *2*	995.094	5/2$^+$	515.475	3/2$^-$				%Iγ=0.0464 *10*
489.90 *10*	0.096 *10*	1079.621	7/2$^+$	589.801	7/2$^+$				%Iγ=0.0036 *4*
504.10 *15*	0.031 *8*	995.094	5/2$^+$	491.046	7/2$^+$				%Iγ=0.00118 *30*
512.57[c] *25*	0.089 *18*	1079.621	7/2$^+$	565.719	(5/2)$^-$				%Iγ=0.0034 *7* E_γ: poor fit; level-energy difference=513.87; Eγ not used in the fitting procedure.

γ(^{165}Ho) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[@]	α[a]	Comments
515.467 *25*	1.06 *5*	515.475	3/2$^-$	0.0	7/2$^-$	(E2)		0.0146 *2*	%Iγ=0.0403 *20* α(K)=0.01172 *16*; α(L)=0.002234 *31*; α(M)=0.000506 *7* α(N)=0.0001162 *16*; α(O)=1.592×10^{-5} *22*; α(P)=6.54×10^{-7} *9*
540.52 *5*	0.157 *16*	1079.621	7/2$^+$	539.010	5/2$^+$				%Iγ=0.0060 *6*
545.834 *20*	4.53 *14*	995.094	5/2$^+$	449.258	3/2$^+$	M1+E2	+0.14 *6*	0.0255 *4*	%Iγ=0.172 *6* α(K)=0.0215 *4*; α(L)=0.00308 *5*; α(M)=0.000678 *11* α(N)=0.0001574 *25*; α(O)=2.30×10^{-5} *4*; α(P)=1.306×10^{-6} *23* Iγ: 4.72 *4* for 540.5+545.8 (2004Mi18). δ: from $\gamma(\theta)$, may also be δ=+10.5 *+36−53* (1982HaYO).
565.718[b] *20*	≈0.08[b]	565.719	(5/2)$^-$	0.0	7/2$^-$				%Iγ≈0.00304 Iγ: deduced from branching ratios in Coul. ex. and (n,n′γ).
565.718[b] *20*	3.59[b‡] *3*	995.094	5/2$^+$	429.387	1/2$^+$				%Iγ=0.1364 *21* Iγ: other: 3.69 *11* (1972Ma06).
575.558 *20*	2.13[‡] *2*	995.094	5/2$^+$	419.543	5/2$^+$	M1+E2	−0.35 *+6−4*	0.0212 *5*	%Iγ=0.0809 *13* α(K)=0.0179 *4*; α(L)=0.00259 *5*; α(M)=0.000570 *11* α(N)=0.0001324 *25*; α(O)=1.93×10^{-5} *4*; α(P)=1.082×10^{-6} *25* Iγ: other: 2.20 *7* (1972Ma06). δ: from $\gamma(\theta)$, may also be δ=+4.9 *+8−10* (1982HaYO).
588.57 *5*	0.092 *9*	1079.621	7/2$^+$	491.046	7/2$^+$				%Iγ=0.00350 *35*
610.29 *5*	0.148 *15*	820.108	(9/2$^+$)	209.805	11/2$^-$				%Iγ=0.0056 *6*
620.635 *20*	2.64[‡] *2*	715.331	7/2$^+$	94.700	9/2$^-$				%Iγ=0.1003 *15* Iγ: other: 2.72 *11* (1972Ma06).
633.415 *20*	16.12[‡] *10*	995.094	5/2$^+$	361.674	3/2$^+$	M1+E2	+0.18 *1*	0.01738 *25*	%Iγ=0.613 *9* α(K)=0.01471 *21*; α(L)=0.002094 *29*; α(M)=0.000460 *6* α(N)=0.0001069 *15*; α(O)=1.560×10^{-5} *22*; α(P)=8.89×10^{-7} *13* Iγ: other: 15.87 *32* (1972Ma06). Mult.,δ: $\gamma(\theta$,T) (1982HaYO) gives +0.18 *1* or +9.9 *+11−9*. α(K)exp=0.018 *7* (1963Pe11); 0.014 *3* (1991Mi26) support lower δ.
660.08 *3*	0.74[‡] *1*	1079.621	7/2$^+$	419.543	5/2$^+$	M1(+E2)	+0.37 *+11−99*	0.0150 *13*	%Iγ=0.0281 *5* α(K)=0.0126 *11*; α(L)=0.00181 *13*; α(M)=0.000399

$^{165}_{67}$Ho$_{98}$-6

^{165}Dy β^- decay (2.331 h) 1972Ma06,2004Mi18 (continued)

γ(^{165}Ho) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	δ[@]	Comments
								27 α(N)=9.3×10^{-5} *6*; α(O)=1.35×10^{-5} *10*; α(P)=7.6×10^{-7} *7* I_γ: other: 0.74 *4* (1972Ma06). δ: from $\gamma(\theta)$, may also be ≤−6.1 (1982HaYO).
694.08 *4*	0.324 *16*	1055.761	5/2$^+$	361.674	3/2$^+$			%Iγ=0.0123 *6*
715.328 *20*	15.21[‡] *10*	715.331	7/2$^+$	0.0	7/2$^-$			%Iγ=0.578 *9* α(K)exp<0.008 I_γ: other: 14.9 *3* (1972Ma06).
725.39 *3*	0.39 *4*	820.108	(9/2$^+$)	94.700	9/2$^-$			%Iγ=0.0148 *15*
820.106 *25*	0.225 *15*	820.108	(9/2$^+$)	0.0	7/2$^-$			%Iγ=0.0085 *6*
900.41 *5*	0.070 *7*	995.094	5/2$^+$	94.700	9/2$^-$			%Iγ=0.00266 *27*
976.74 *20*	0.0063 *13*	1186.59	9/2$^+$	209.805	11/2$^-$			%Iγ=0.00024 *5*
984.92 *4*	0.178 *13*	1079.621	7/2$^+$	94.700	9/2$^-$			%Iγ=0.0068 *5*
995.089 *25*	1.66[‡] *2*	995.094	5/2$^+$	0.0	7/2$^-$			%Iγ=0.0631 *11* I_γ: other: 1.54 *5* (1972Ma06).
1045.60 *15*	0.0141 *21*	1140.36	7/2$^+$	94.700	9/2$^-$			%Iγ=0.00054 *8*
1055.76 *3*	0.91[‡] *1*	1055.761	5/2$^+$	0.0	7/2$^-$	D+Q	+0.32 *+32−18*	%Iγ=0.0346 *6* I_γ: other: 0.87 *5* (1972Ma06). Mult.: M1+E2 for 1055.76γ inconsistent with adopted ΔJ^π which requires E1+M2. δ: from $\gamma(\theta)$, may also be δ≥+2.1 (1982HaYO).
1079.63 *3*	2.63[‡] *3*	1079.621	7/2$^+$	0.0	7/2$^-$			%Iγ=0.0999 *17* I_γ: other: 2.56 *8* (1972Ma06).
1091.91 *8*	0.028 *3*	1186.59	9/2$^+$	94.700	9/2$^-$			%Iγ=0.00106 *11*
1140.36 *5*	0.038 *3*	1140.36	7/2$^+$	0.0	7/2$^-$			%Iγ=0.00144 *12*
1186.56 *10*	0.0129 *13*	1186.59	9/2$^+$	0.0	7/2$^-$			%Iγ=0.00049 *5*

† From 1972Ma06, except where noted otherwise. The intensities quoted by 1972Ma06 have been divided by a factor of 42.6 so that the two sets of intensities (from 1972Ma06 and 2004Mi18) are on the same scale.

‡ From 2004Mi18, corresponding value in 1972Ma06 is in agreement but much less precise.

\# From 1965Sc09 (curved-crystal spectrometer).

@ Deduced from conversion coefficients, unless otherwise noted. α(K)exp were deduced from Iγ (1972Ma06), ce (1972Ma06,1963Pe11) and normalized to α(K)(94.7γ)=2.59 (for M1+E2, δ=0.168 *9*). From ce data, mixing ratios are deduced using the BrIccMixing program. γ rays with significant δ>0.1 are interpreted as M1+E2, based on Weisskopf estimates for transition probabilities.

& For absolute intensity per 100 decays, multiply by 0.0380 *5*.

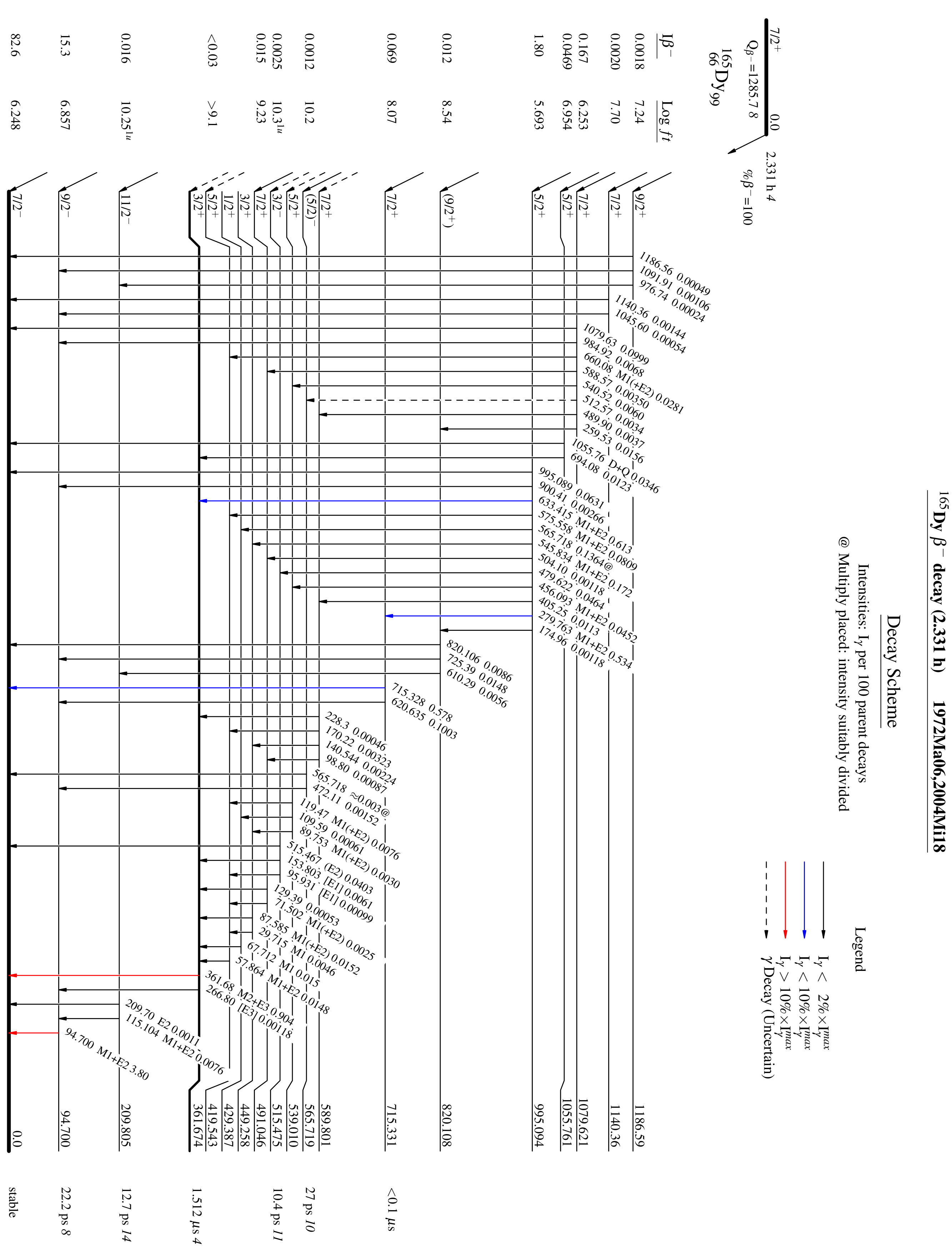
^{a} Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^{b} Multiply placed with intensity suitably divided.

$\gamma(^{165}Ho)$ (continued)

[c] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{165}_{67}Ho_{98}$-8



^{165}Dy β⁻ decay (2.331 h) 1972Ma06,2004Mi18
Decay Scheme
Intensities: Iγ per 100 parent decays
@ Multiply placed: intensity suitably divided
Legend
Iγ < 2%×Iγmax
Iγ < 10%×Iγmax
Iγ > 10%×Iγmax
γ Decay (Uncertain)
7/2+ 0.0
Qβ-=1285.7 8
$^{165}_{66}$Dy$_{99}$
2.331 h 4
%β-=100
Iβ- Log ft
0.0018 7.24
0.0020 7.70
0.167 6.253
0.0469 6.954
1.80 5.693
0.012 8.54
0.069 8.07
0.0012 10.2
0.0025 10.3
0.015 9.23
<0.03 >9.1
0.016 10.25
15.3 6.857
82.6 6.248
9/2+ 1186.59
7/2+ 1140.36
7/2+ 1079.621
5/2+ 1055.761
5/2+ 995.094
(9/2+) 820.108
7/2+ 715.331 <0.1 μs
7/2+ 589.801
(5/2)− 565.719 27 ps 10
5/2+ 539.010
3/2− 515.475 10.4 ps 11
7/2+ 491.046
3/2+ 449.258
1/2+ 429.387
5/2+ 419.543
3/2+ 361.674 1.512 μs 4
11/2− 209.805 12.7 ps 14
9/2− 94.700 22.2 ps 8
7/2− 0.0 stable
1186.56 0.00049
1091.91 0.00106
976.74 0.00024
1140.36 0.00144
1045.60 0.00054
1079.63 0.0999
984.92 0.0068
660.08 M1(+E2) 0.0281
588.57 0.00350
540.52 0.0060
512.57 0.0034
489.90 0.0037
259.53 0.0156
1055.76 D+Q 0.0346
694.08 0.0123
995.089 0.0631
900.41 0.00266
633.415 M1+E2 0.613
575.558 M1+E2 0.0809
565.718 0.1364@
545.834 M1+E2 0.172
504.10 0.00118
479.622 0.0464
456.093 M1+E2 0.0452
405.25 0.0113
279.763 M1+E2 0.534
174.96 0.00118
820.106 0.0086
725.39 0.0148
610.29 0.0056
715.328 0.578
620.635 0.1003
228.3 0.00046
170.22 0.00323
140.544 0.00224
98.80 0.00087
565.718 ≈0.003@
472.11 0.00152
119.47 M1(+E2) 0.0076
109.59 0.00061
89.753 M1(+E2) 0.0030
515.467 (E2) 0.0403
153.803 [E1] 0.0061
95.931 [E1] 0.00099
129.39 0.00053
71.502 M1(+E2) 0.0025
87.585 M1(+E2) 0.0152
29.715 M1 0.0046
67.712 M1 0.015
57.864 M1+E2 0.0148
361.68 M2+E3 0.904
266.80 [E3] 0.00118
209.70 E2 0.0011
115.104 M1+E2 0.0076
94.700 M1+E2 3.80
$^{165}_{67}$Ho$_{98}$