^{165}Dy β^- decay (1.257 min) 1972Ma06,1974StZQ

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=108.1562 *13*; J^π=1/2$^-$; $T_{1/2}$=1.257 min *6*; Q(β^-)=1285.7 *8*; %β^- decay=2.27 *9*

^{165}Dy-J^π,$T_{1/2}$: From ^{165}Dy Adopted Levels.

^{165}Dy-Q(β^-): From 2021Wa16.

^{165}Dy-%β^- decay: From %IT+%Iβ^-=%I(γ+ce)(108.6γ)(^{165}Dy)+ΣI(γ+ce to g.s.)(^{165}Ho)=100, using measured Iγ in 1972Ma06.
See ^{165}Dy IT decay dataset.

1972Ma06, 1974StZQ: measured Eγ, Iγ, γ(t).

Others:

γ: 1964Ha19, 1964Bu01.

β: 1960To06 using scintillation detector.

I(γ+ce)(108γ):Iβ=97.76 *11*:2.24 *11* from decay scheme in 1972Ma06; 97.6 *3*:2.4 *3* (1960To06). Others: 1959Cr73, 1964Ha19.

^{165}Ho Levels

E(level)†	J^π‡	$T_{1/2}$	E(level)†	J^π‡	E(level)†	J^π‡
0.0	7/2$^-$	stable	449.20 *14*	3/2$^+$	790.57 *17*	3/2$^-$
361.472 *3*	3/2$^+$		515.278 *7*	3/2$^-$	1037.5 *10*	(1/2$^+$)
419.31 *5*	5/2$^+$		538.84 *17*	5/2$^+$	1066.5 *4*	(3/2$^+$)
429.0 *3*	1/2$^+$		680.4 *4*	(1/2)$^-$		

† From least-squares fit to Eγ data, assuming 0.5 keV uncertainty for Eγ, when not stated.

‡ From the Adopted Levels.

β^- radiations

av Eβ: Additional information 1.

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(356.4 *13*)	1037.5	0.00046 *25*	7.50 *+30−20*	av Eβ=101.8 *4*
(603.3 *8*)	790.57	≈0.02	≈6.6	av Eβ=185.89 *29*
(878.6 *8*)	515.278	1.91 *10*	5.236 *+34−32*	av Eβ=288.60 *31* Measured Eβ=890 *50* (1960To06).
(944.7 *8*)	449.20	0.101 *25*	6.63 *+13−10*	av Eβ=314.34 *31*
(964.9 *9*)	429.0	0.11 *6*	6.60 *+30−20*	av Eβ=322.3 *4*
(974.6‡ *8*)	419.31	<0.04	>7.6^{1u}	av Eβ=329.54 *30* Iβ=0.01 *3*.
(1032.4 *8*)	361.472	0.14 *7*	6.62 *+30−18*	av Eβ=349.02 *32* Measured Eβ=1020 *80* (1960To06).

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

$\gamma(^{165}Ho)$

Iγ normalization: From I(γ+ce)(361.47γ+515.47γ)=100.

E_γ [†]	I_γ [@a]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	α [b]	Comments
30	<2	449.20	3/2$^+$	419.31	5/2$^+$	M1		14.21 *20*	%Iγ<0.006 α(L)=11.10 *16*; α(M)=2.452 *34* α(N)=0.569 *8*; α(O)=0.0826 *12*; α(P)=0.00460 *6*
57.8 *2*	2.7 *4*	419.31	5/2$^+$	361.472	3/2$^+$	M1+E2	0.130 *+46−30*	12.81 *28*	%Iγ=0.0083 *13* α(K)=10.40 *21*; α(L)=1.87 *24*; α(M)=0.42 *6* α(N)=0.097 *13*; α(O)=0.0136 *15*; α(P)=0.000659 *14*
67.9 *5*	4.0 *20*	429.0	1/2$^+$	361.472	3/2$^+$	M1		7.97 *21*	%Iγ=0.012 *6* α(K)=6.69 *17*; α(L)=1.002 *26*; α(M)=0.221 *6* α(N)=0.0514 *13*; α(O)=0.00747 *19*; α(P)=0.000417 *11*
87.70 *15*	3.7 *4*	449.20	3/2$^+$	361.472	3/2$^+$	M1(+E2)	<0.32	3.85 *7*	%Iγ=0.0113 *13* α(K)=3.12 *9*; α(L)=0.57 *9*; α(M)=0.128 *22* α(N)=0.029 *5*; α(O)=0.0041 *6*; α(P)=0.000192 *7*
89.7[&]	0.36 *11*	538.84	5/2$^+$	449.20	3/2$^+$	M1(+E2)	<0.5	3.63 *9*	%Iγ=0.00110 *34* I_γ: deduced from the branching ratios in the Adopted Gammas.
95.96 *5*	13.0 *10*	515.278	3/2$^-$	419.31	5/2$^+$	[E1]		0.354 *5*	%Iγ=0.040 *4* α(K)=0.294 *4*; α(L)=0.0466 *7*; α(M)=0.01028 *14* α(N)=0.002340 *33*; α(O)=0.000315 *4*; α(P)=1.333×10^{-5} *19*
109.6[&]	0.07 *2*	538.84	5/2$^+$	429.0	1/2$^+$	[E2]		2.01 *5*	%Iγ=2.1×10^{-4} *6*
119.5 *2*	0.9 *2*	538.84	5/2$^+$	419.31	5/2$^+$	M1(+E2)	<0.6	1.555 *27*	%Iγ=0.0028 *6* α(K)=1.24 *8*; α(L)=0.25 *5*; α(M)=0.056 *13* α(N)=0.0129 *29*; α(O)=0.00177 *31*; α(P)=7.5×10^{-5} *7*
153.803[#] *6*	80.7 *24*	515.278	3/2$^-$	361.472	3/2$^+$	[E1]		0.1006 *14*	%Iγ=0.247 *13* 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*
230.7[&]		680.4	(1/2)$^-$	449.20	3/2$^+$				
251.73 *5*	6.0 *3*	790.57	3/2$^-$	538.84	5/2$^+$				%Iγ=0.0184 *12*
251.8[&]		680.4	(1/2)$^-$	429.0	1/2$^+$				
341.5[&]		790.57	3/2$^-$	449.20	3/2$^+$				
361.471[#] *3*	178 *5*	361.472	3/2$^+$	0.0	7/2$^-$	M2+E3	0.33 *4*	0.265 *5*	%Iγ=0.545 *29* α(K)=0.213 *5*; α(L)=0.0407 *6*; α(M)=0.00927 *14* α(N)=0.00215 *3*; α(O)=0.000306 *5*; α(P)=1.53×10^{-5} *4*
361.7[&]		790.57	3/2$^-$	429.0	1/2$^+$				
371.3[&]		790.57	3/2$^-$	419.31	5/2$^+$				

^{165}Dy β^- decay (1.257 min) 1972Ma06,1974StZQ (continued)

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

E_γ[†]	I_γ[@ a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[b]	Comments
515.467[#] *25*	509 *15*	515.278	$3/2^-$	0.0	$7/2^-$	(E2)	0.0146 *2*	%Iγ=1.56 *8* 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* E_γ: poor fit in the decay scheme, Δ(Eγ) increased to 0.05 keV in the fitting procedure.
647.3[&]		1066.5	$(3/2^+)$	419.31	$5/2^+$			
676.0 *10*	0.15 *8*	1037.5	$(1/2^+)$	361.472	$3/2^+$			%Iγ=0.00046 *25*
704.9[&]		1066.5	$(3/2^+)$	361.472	$3/2^+$			

† From 1972Ma06, unless otherwise stated.
‡ From the Adopted Gammas.
# γ rays from 1965Sc09 used for normalization of Eγ in 1972Ma06.
@ Normalized to I(108.16γ from ^{165}Dy IT decay)=1000.
& From 1974StZQ.
[a] For absolute intensity per 100 decays, multiply by 0.00306 *14*.
[b] 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.

$^{165}_{67}Ho_{98}$-3

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Decay Scheme

Intensities: I_γ per 100 parent decays