^{168}Dy β^- decay 1990Ch37

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111, 1807 (2010)	15-Jun-2010

Parent: ^{168}Dy: E=0.0; J$^\pi$=0$^+$; T$_{1/2}$=8.7 min *3*; Q(β^-)=1.50×10^3 *14*; %β^- decay=100.0

Other: 1982Ge04.

1990Ch37: Sources from ^{170}Er bombardments of natural tungsten, mass separation; E(^{170}Er)=8.5 MeV/nucleon. Measured Eβ, Iβ, Eγ, Iγ (plastic, silicon, planar hyperpure germanium detectors), $\beta\gamma$ coin, $\gamma\gamma$ coin, $\beta\gamma$(t), $\gamma\gamma$(t).

^{168}Ho Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
0.0	3$^+$	2.99 min *7*	T$_{1/2}$: from Adopted Levels.
143.43 *17*	(1)$^-$	>4 μs	T$_{1/2}$: estimate from intensity ratios in singles and coincidence spectra.
187.17 *22*	1$^{(-)}$		
192.57 *20*	1$^+$	108 ns *11*	T$_{1/2}$: $\beta\gamma$(t), $\gamma\gamma$(t).
630.41 *19*	1$^+$		

† From least-squares fit to Eγ.
‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(8.7×10^2 *14*)	630.41	61 *3*	4.5 *3*	av Eβ=286 *55*
(1.31×10^3 *14*)	192.57	33 *3*	5.41 *19*	av Eβ=462 *59*
(1.31×10^3 *14*)	187.17	9 *3*	5.98 *24*	av Eβ=465 *59*

† β^- feedings are from intensity imbalance at each level assuming no g.s. feeding (ΔJ=3).
‡ Absolute intensity per 100 decays.

γ(^{168}Ho)

Iγ normalization: from growth and decay of ^{168}Ho (Iγ(absolute) known for γ's in ^{168}Er).

K x ray data; I(x ray) per 100 ^{168}Dy decays.

	E(x ray)	I(x ray)
Ho Kα_2 x ray	46.6	12.2 14
Ho Kα_1 x ray	47.5	21.3 23

E$_\gamma$[†]	I$_\gamma$[†#]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[‡]	α[@]	Comments
43.8 *2*	4.4 *4*	187.17	1$^{(-)}$	143.43	(1)$^-$	(M1)	4.64 *9*	α(L)=3.63 *7*; α(M)=0.801 *16*; α(N+..)=0.214 *5* α(N)=0.186 *4*; α(O)=0.0270 *6*; α(P)=0.00151 *3* Mult.: to avoid negative I(γ+ce) balance At the 187 level, α(exp)(44γ)>3.5 ruling out E1. E2 multipolarity would imply excessively strong β^- feeding to 187 level.
143.5 *2*	6.5 *5*	143.43	(1)$^-$	0.0	3$^+$	M2	6.55	α(K)=5.01 *8*; α(L)=1.185 *18*; α(M)=0.276 *5*; α(N+..)=0.0741 *12* α(N)=0.0645 *10*; α(O)=0.00912 *14*; α(P)=0.000454 *7*

Continued on next page (footnotes at end of table)

^{168}Dy β^- decay 1990Ch37 (continued)

$\gamma(^{168}Ho)$ (continued)

E_γ †	I_γ †#	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α @	Comments
192.5 *2*	32.8 *20*	192.57	1^+	0.0	3^+	E2	0.277	α(K)=0.180 *3*; α(L)=0.0752 *11*; α(M)=0.0178 *3*; α(N+..)=0.00455 *7* α(N)=0.00404 *6*; α(O)=0.000502 *8*; α(P)=8.43×10^{-6} *12*
437.0 *7*	8.5 *11*	630.41	1^+	192.57	1^+	[M1]	0.0456	α(K)=0.0385 *6*; α(L)=0.00553 *8*; α(M)=0.001217 *18*; α(N+..)=0.000326 *5* α(N)=0.000283 *5*; α(O)=4.13×10^{-5} *6*; α(P)=2.34×10^{-6} *4*
443.3 *2*	15.5 *11*	630.41	1^+	187.17	$1^{(-)}$	[E1]	0.00703	α(K)=0.00597 *9*; α(L)=0.000833 *12*; α(M)=0.000182 *3*; α(N+..)=4.84×10^{-5} *7* α(N)=4.21×10^{-5} *6*; α(O)=6.02×10^{-6} *9*; α(P)=3.20×10^{-7} *5*
487.0 *2*	22.5 *16*	630.41	1^+	143.43	$(1)^-$	[E1]	0.00568	α(K)=0.00483 *7*; α(L)=0.000670 *10*; α(M)=0.0001467 *21*; α(N+..)=3.90×10^{-5} *6* α(N)=3.39×10^{-5} *5*; α(O)=4.86×10^{-6} *7*; α(P)=2.60×10^{-7} *4*
630.4 *3*	13.6 *11*	630.41	1^+	0.0	3^+	[E2]	0.00888	α(K)=0.00726 *11*; α(L)=0.001263 *18*; α(M)=0.000283 *4*; α(N+..)=7.48×10^{-5} *11* α(N)=6.53×10^{-5} *10*; α(O)=9.09×10^{-6} *13*; α(P)=4.10×10^{-7} *6*

† From 1990Ch37.
‡ From Iγ/Iγ(x ray) in coincidence spectra, except As noted.
\# Absolute intensity per 100 decays.
@ 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.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays