^{164}Ho β^- decay (28.8 min) 1973KaZW,1966Jo07,1954Br96

History

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

Parent: ^{164}Ho: E=0.0; $J^\pi=1^+$; $T_{1/2}$=28.8 min *5*; Q(β^-)=961.4 *14*; %β^- decay=40 *5*

^{164}Ho-J^π,$T_{1/2}$: From ^{164}Ho Adopted Levels.

^{164}Ho-Q(β^-): from 2017Wa10.

^{164}Ho-%β^- decay: %β^+%ε=60 *5*, %β^-=40 *5*, from I(K x ray) and Iγ of 1973KaZW, I(ce) of 1966Jo07, and α values (for 73γ and 91γ); see earlier evaluation by 1974Bu30 for details.

$T_{1/2}$: 1972Ka19, 1972Dr04, 1966Jo07. Others: 1966Se07, 1961We02, 1954Ha19, 1954Br96, 1950Wi13, 1950Wa12, 1938Po05.

γ, K-x ray: 1973KaZW, 1972Dr04, 1968Da23, 1966Jo07. Others: 1972Ka19, 1971Pa02, 1966Se07, 1957Mi67, 1954Br96.

β^-, β^+, $\beta\gamma$ coin: 1966Se07, 1954Br96. Others: 1966Jo07, 1950Wi13.

I(β^+)/I(β^-)<5×10^{-4} (1954Br96).

$\beta\gamma$(t): 1968Se02, 1963Fo02, 1954Br96.

$\gamma\gamma$: 1973KaZW, 1966Se07, 1954Br96.

ce: 1966Jo07, 1957Mi67, 1954Br96.

I(ε) (73 level in ^{164}Dy)/I(β^-) to 91 level=1.49 *11* (calculated by 1974Bu30 from data of 1973KaZW).

X-ray and γ-ray intensities:

I(Kα_1 x ray, Ho)=1000 (1973KaZW), 655 (1972Dr04).

I(Kα_1 x ray, Dy)=1280 *25* (1973KaZW), 1356 (1972Dr04).

I(Kα_1 x ray, Er)=76 *2* (1973KaZW), 76 (1972Dr04).

I(73γ in ^{164}Dy)=91 *6* (1973KaZW), 81 (1972Dr04).

I(91γ in ^{164}Er)=127 *8*, 103 (1972Dr04).

^{164}Er Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	0^+		
91.39 *3*	2^+	1.47 ns *5*	$T_{1/2}$: $\beta\gamma$(t). Weighted average of 1.4 ns *5* (1954Br96), 1.43 ns *5* (1963Fo02), 1.52 ns *6* (1968Se02). Other: 1963De21.

[†] From Eγ data.

[‡] From Adopted Levels.

β^- radiations

The decay scheme is complete from total energy absorbed=384 keV *38* (from RADLST code) as compared to Q(β^-)×%β^- branching ratio=384 keV *48*.

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(870.0 *14*)	91.39	12 *2*	5.7 *1*	av Eβ=286.13 *54* E(decay): 875 *20* (1966Se07),≈900 (1954Br96). Iβ^-: 60 *20* (1966Se07).
(961.4 *14*)	0.0	28 *5*	5.5 *1*	av Eβ=321.65 *55* E(decay): 965 *20* (1966Se07), 990 *30* (1954Br96). Iβ^-: 100 (1966Se07).

[†] From %β^-=40 *5* and I(β^-) (to 91 level)/I(β^-)=0.31 from I(ce)(91γ)/I(β^-)=25.1 (1966Jo07) and α(91γ)=4.2.

[‡] Absolute intensity per 100 decays.

^{164}Ho β^- decay (28.8 min) 1973KaZW,1966Jo07,1954Br96 (continued)

$\gamma(^{164}Er)$

Iγ normalization: I(β^-) to 91 level is deduced as 31% of total β^- decay from I(ce)(91γ)/I(β^-)=25.1 (1966Jo07) and α(91γ)=4.15.

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[‡]	Comments
91.39 *3*	100	91.39	2^+	0.0	0^+	E2	4.15	α(K)=1.314 *19*; α(L)=2.17 *3*; α(M)=0.528 *8* α(N)=0.1194 *17*; α(O)=0.01397 *20*; α(P)=5.51×10^{-5} *8* E_γ: from Adopted Gammas. α(K)exp=1.31 *11* (1968Bo37), α(K)exp=1.25 *9* (1973KaZW). Measured I(ceK)=87, I(ceL)=104, I(ceM)=45 (1966Jo07); these are intensities/1000 β^- decays. Total ce intensity=251/1000 β^- decays, including 0.33(IceM) for shells higher than M. Using α=4.15, corresponding Iγ=60, giving I(γ+ce)(91.4 transition)=311/1000 β^- decays or 31.1% of total β^- decays. Note that 1966Jo07 deduce 26% from the same data, which seems incorrect.

[†] For absolute intensity per 100 decays, multiply by 0.023 *3*.
[‡] 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.

^{164}Ho β^- decay (28.8 min) 1973KaZW,1966Jo07,1954Br96

Decay Scheme

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