^{164}Ho ε decay (28.8 min) 1973KaZW,1972Dr04

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(ε)=961.4 *14*; %ε decay=60 *5*
^{164}Ho-J^π,$T_{1/2}$: From ^{164}Ho Adopted Levels.
^{164}Ho-Q(ε): From 2017Wa10.
^{164}Ho-%ε decay: %β^-=40 *5*, %ε=60 *5* (see ^{164}Ho β^- decay and ^{164}Ho Adopted Levels).
γ, K-x ray: 1973KaZW, 1972Dr04, 1968Da23, 1966Jo07. Others: 1972Ka19, 1971Pa02, 1966Se07, 1957Mi67, 1954Br96.
$I(\beta^+)/I(\beta^-)<5\times10^{-4}$ (1954Br96).
ce: 1966Jo07, 1957Mi67, 1954Br96.
Measurements of half-life of ^{164}Ho decay: 1972Ka19, 1972Dr04, 1966Jo07, 1966Se07, 1961We02, 1954Ha19, 1954Br96, 1950Wi13, 1950Wa12, 1938Po05. See Also ^{164}Ho Adopted Levels.
I(ε)(to 73 level)/I(β^-)(to 91 level in ^{164}Er)=1.49 *11* (calculated from data of 1973KaZW).
Additional information 1.
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}Dy Levels

E(level)[†]	J^π[‡]
0.0	0^+
73.39	2^+
762.5? *5*	2^+

[†] From Eγ data.
[‡] From Adopted Levels.

ε radiations

The decay scheme seems complete as RADLST code gives total energy absorbed=575 keV *70* as compared to Q(ε)×%ε branch=578 keV *48*.

E(decay)	E(level)	Iε[‡]	Log *ft*	Comments
(198.9[#] *15*)	762.5?	≈0.001	≈7.6	εK=0.7524 *14*; εL=0.1883 *10*; εM+=0.0592 *4* Iε: log *ft*≈7.7 (1973KaZW) implies %ε≈0.001.
(888.0 *14*)	73.39	19[†] *2*	4.8 *1*	εK=0.8261; εL=0.13407 *3*; εM+=0.03986 *1*
(961.4 *14*)	0.0	41[†] *6*	4.6 *1*	εK=0.8273; εL=0.13317 *3*; εM+=0.039539 *9*

[†] Branch to 73 level is 31.4% 24 of total %ε=60 *5* from 1973KaZW, as deduced by 1974Bu30 (α=164 Nuclear Data Sheets evaluation in 1974).
[‡] Absolute intensity per 100 decays.
[#] Existence of this branch is questionable.

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γ(^{164}Dy)

Iγ normalization: Branch to 73-keV level is 31.4% 24 of total %ε=60 *5* from 1973KaZW, from photon and K x ray intensities of 1973KaZW, as deduced in 1974Bu30 evaluation.

E_γ	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [#]	Comments
73.392 *5*	100	73.39	2^+	0.0	0^+	E2	8.8 *9*	α(K)exp=2.7 *5* (1954Br96); α(K)exp=3.15 *25* (1966Se07) α(K)=2.15 *3*; α(L)=5.18 *8*; α(M)=1.245 *18* α(N)=0.279 *4*; α(O)=0.0331 *5*; α(P)=9.41×10^{-5} *14* E_γ: From Adopted Gammas. Mult.: from α(K)exp and K:L:M=100:238:55 (1966Jo07). Others: 1954Br96, 1957Mi67.
689.3[†] *5*	≈0.030[‡]	762.5?	2^+	73.39	2^+			
762.4[†] *5*	≈0.025[‡]	762.5?	2^+	0.0	0^+			

[†] From 1968Da23.
[‡] Very weak γ (1973KaZW). log *ft*≈7.7 (1973KaZW) implies %ε≈0.001 to 762 level, which in turn implies Iγ(762)+Iγ(689)≈0.055. Iγ(762)/Iγ(689)=0.90 *10* (1968Da23).
[#] Additional information 2.
[@] For absolute intensity per 100 decays, multiply by 0.0188 *21*.

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Decay Scheme

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