^{149}Dy ε decay (0.490 s) 1993KlZZ,1988Ba02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

Parent: ^{149}Dy: E=2661.94 *34*; $J^\pi=(27/2)^-$; $T_{1/2}$=0.490 s *15*; Q(ε)=3795 *9*; %ε+%β^+ decay=0.7 *3*
^{149}Dy-E,J^π,$T_{1/2}$: From ^{149}Dy Adopted Levels.
^{149}Dy-Q(ε): From 2021Wa16.
^{149}Dy-%ε+%β^+ decay: From estimated %ε+%β^+ branch ≈0.7% *3* (1988Ba02); for bare atom (2003Li42) %ε=0.
1993KlZZ: Measured Eγ, Iγ, $\gamma\gamma$; analyzed Gamow-Teller decay.
1988Ba02: Source produced by ^{90}Zr(^{64}Zn,n4p) and ^{89}Y(^{64}Zn,n3p); measured Eγ, Iγ, decay characteristics.
2003Li42: decay of fully-ionized atom; ^{149}Dy isomer nuclei produced in fragmentation of ^{209}Bi projectile at 900 MeV/nucleon; separated with fragment separator (FRS) and stored in the cooler ring (ESR) at GSI. Measured half-life of fully ionized ^{149}Dy.

^{149}Tb Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
35.75 *8*	11/2$^-$	4.17 min *5*	%ε+%β^+=99.978 *4*; %α=0.022 *4* Energy, $T_{1/2}$ and decay modes from the Adopted Levels. Additional information 1.
822.3 *3*	15/2$^-$		
1381.9 *5*	19/2$^-$		
1672.5 *6*	23/2$^-$		
2302.9 *6*	(27/2)$^-$		
2663.9 *7*	(25/2)$^-$		

† From a least-squares fit to γ-ray energies, assuming $\Delta E\gamma$=0.3 keV.
‡ From the Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(3793 *9*)	2663.9	0.3 *1*	0.4 *2*	4.3 *3*	0.7 *3*	av Eβ=1248.3 *42*; εK=0.4342 *21*; εL=0.0644 *3*; εM+=0.01879 *9*

† Absolute intensity per 100 decays.

γ(^{149}Tb)

E$_\gamma$†	I$_\gamma$†#	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.‡	α@	Comments
290.6	120	1672.5	23/2$^-$	1381.9	19/2$^-$	E2	0.0688 *10*	%Iγ=0.84 *36* α(K)=0.0518 *7*; α(L)=0.01321 *18*; α(M)=0.00302 *4* α(N)=0.000686 *10*; α(O)=9.60×10^{-5} *13*; α(P)=3.21×10^{-6} *4*
361.0	120	2663.9	(25/2)$^-$	2302.9	(27/2)$^-$	M1	0.0637 *9*	%Iγ=0.84 *36* α(K)=0.0539 *8*; α(L)=0.00765 *11*; α(M)=0.001666 *23* α(N)=0.000385 *5*; α(O)=5.95×10^{-5} *8*; α(P)=3.96×10^{-6} *6*
559.6	100	1381.9	19/2$^-$	822.3	15/2$^-$	E2	0.01089 *15*	%Iγ=0.70 *30* α(K)=0.00890 *12*; α(L)=0.001556 *22*; α(M)=0.000346 *5*

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^{149}Dy ε decay (0.490 s) 1993KlZZ,1988Ba02 (continued)

$\gamma(^{149}Tb)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [@]	Comments
								α(N)=7.93×10^{-5} *11*; α(O)=1.170×10^{-5} *16*; α(P)=6.01×10^{-7} *8*
630.4	100	2302.9	(27/2)$^-$	1672.5	23/2$^-$	E2	0.00812 *11*	%Iγ=0.70 *30* α(K)=0.00669 *9*; α(L)=0.001117 *16*; α(M)=0.0002476 *35* α(N)=5.68×10^{-5} *8*; α(O)=8.44×10^{-6} *12*; α(P)=4.55×10^{-7} *6*
786.5	120	822.3	15/2$^-$	35.75	11/2$^-$	E2	0.00486 *7*	%Iγ=0.84 *36* α(K)=0.00405 *6*; α(L)=0.000630 *9*; α(M)=0.0001387 *19* α(N)=3.19×10^{-5} *4*; α(O)=4.80×10^{-6} *7*; α(P)=2.79×10^{-7} *4*

† From 1993KlZZ. Full details of this study are not available.
‡ From the Adopted Gammas.
# For absolute intensity per 100 decays, multiply by 0.007 *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.

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Decay Scheme

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