

^{151}Er ε decay (0.58 s) 1988Ba02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 110, 1 (2009)	20-Nov-2008

Parent: ^{151}Er : E=2586; $J^\pi=(27/2^-)$; $T_{1/2}=0.58$ s 2; $Q(\varepsilon)=5366$ 20; $\% \varepsilon + \% \beta^+$ decay=4.7 4

^{151}Er - $\% \varepsilon + \% \beta^+$ decay: from ratio of intensities of 597.4 γ and 789.3 γ in ^{151}Ho and summed intensities of 1548.2 γ , 1140.4 γ , 1495.3 and 801.8 γ in ^{151}Er from the decay of 0.58-s isomer, $\% I(\varepsilon + \beta^+)=4.7$ 4. Thus $\% IT=95.3$ 4 (1988Ba02).

Source produced in $^{92}\text{Mo}(^{64}\text{Zn}, \text{N4P})$ and $^{96}\text{Mo}(^{58}\text{Ni}, \text{2pn})$ reactions. Mass-separated. Measured: $\gamma\gamma$, X γ , ce, γ -ce, $\gamma(t)$.

 ^{151}Ho Levels

E(level)	J^π †
0.0	(11/2 ⁻)
789.3 2	(15/2 ⁻)
1386.7 3	(19/2 ⁻)
1683.6 4	(23/2 ⁻)
1790.3 4	(23/2 ⁻)
2097.6 4	(25/2 ⁻)
2226.4 7	(27/2 ⁻)

† From 'Adopted Levels'.

 ε, β^+ radiations

$\varepsilon + \beta^+$ feedings and $\log ft$'s are given as limits only since 1988Ba02 point out the possibility of unobserved transitions feeding these levels.

E(decay)	E(level)	$I\beta^+$ †	$I\varepsilon$ †	Log ft	$I(\varepsilon + \beta^+)$ †	Comments
(5726‡ 20)	2226.4	<0.006	<0.002	>7.1	<0.008	av $E\beta=2149.3$ 94; $\varepsilon K=0.1733$ 17; $\varepsilon L=0.0260$ 3; $\varepsilon M+=0.00767$ 8
(5854‡ 20)	2097.6	<0.022	<0.0053	>6.6	<0.027	av $E\beta=2209.9$ 95; $\varepsilon K=0.1629$ 16; $\varepsilon L=0.02443$ 24; $\varepsilon M+=0.00720$ 7
(6268‡ 20)	1683.6	<0.010	<0.0019	>7.1	<0.012	av $E\beta=2405.1$ 95; $\varepsilon K=0.1340$ 13; $\varepsilon L=0.02008$ 19; $\varepsilon M+=0.00592$ 6

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

 $\gamma(^{151}\text{Ho})$

E_γ	I_γ †#	E_i (level)	J_i^π	E_f	J_f^π	Mult. ‡	α @	Comments
128.8 5	0.39 13	2226.4	(27/2 ⁻)	2097.6	(25/2 ⁻)	M1(+E2)	1.19 8	$\alpha(K)=0.82$ 25; $\alpha(L)=0.29$ 14; $\alpha(M)=0.07$ 4; $\alpha(N+..)=0.017$ 9 $\alpha(N)=0.015$ 8; $\alpha(O)=0.0020$ 8; $\alpha(P)=4.5 \times 10^{-5}$ 21
296.9 2	3.7 3	1683.6	(23/2 ⁻)	1386.7	(19/2 ⁻)	(E2)	0.0689	$\alpha(K)=0.0509$ 8; $\alpha(L)=0.01390$ 20; $\alpha(M)=0.00323$ 5; $\alpha(N+..)=0.000834$ 12 $\alpha(N)=0.000736$ 11; $\alpha(O)=9.56 \times 10^{-5}$ 14; $\alpha(P)=2.63 \times 10^{-6}$ 4
307.2 3	0.62 20	2097.6	(25/2 ⁻)	1790.3	(23/2 ⁻)	[M1,E2]	0.09 3	$\alpha(K)=0.07$ 3; $\alpha(L)=0.0132$ 10; $\alpha(M)=0.00298$

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^{151}Er ε decay (0.58 s) **1988Ba02** (continued) $\gamma(^{151}\text{Ho})$ (continued)

E_γ	I_γ †#	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	a @	Comments
403.6 3	0.68 15	1790.3	(23/2 ⁻)	1386.7	(19/2 ⁻)			14; $\alpha(\text{N}+..)=0.00079$ 5 $\alpha(\text{N})=0.00069$ 4; $\alpha(\text{O})=9.5\times 10^{-5}$ 11; $\alpha(\text{P})=4.2\times 10^{-6}$ 18
414.0 2	2.7 3	2097.6	(25/2 ⁻)	1683.6	(23/2 ⁻)	M1+E2	0.039 14	$\alpha(\text{K})=0.032$ 12; $\alpha(\text{L})=0.0054$ 10; $\alpha(\text{M})=0.00121$ 20; $\alpha(\text{N}+..)=0.00032$ 6 $\alpha(\text{N})=0.00028$ 5; $\alpha(\text{O})=3.9\times 10^{-5}$ 9; $\alpha(\text{P})=1.9\times 10^{-6}$ 8
597.4 2	4.4 4	1386.7	(19/2 ⁻)	789.3	(15/2 ⁻)			
789.3 2	5.1 4	789.3	(15/2 ⁻)	0.0	(11/2 ⁻)			

† Photons per 100 decays of parent.

‡ From 'adopted gammas'.

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

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$
- Coincidence

