

^{151}Ho α decay (35.2 s) 1995Wa31,1991To08,1987Li09

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181,1 (2022)		9-Mar-2022

Parent: ^{151}Ho : $E=0.0$; $J^\pi=(11/2^-)$; $T_{1/2}=35.2$ s I ; $Q(\alpha)=4695.0$ $I8$; $\% \alpha$ decay=22 3

^{151}Ho - $Q(\alpha)$: from 2021Wa16.

^{151}Ho - $\% \alpha$ decay: from 2009Si01 for $E\alpha=4522$, weighted average of 28% 7 (1991To08), 22% 3 (1990Po13), 22% 3 (1982Ba75), 18% 5 (1974Sc19), and 20% 5 (1963Ma17).

1995Wa31: 660-MeV protons on W at ISOL/YASNAPP-2 (JINR Dubna); used Si(Au) and HPGe detectors with disk transport; measured $E\alpha$, $I\alpha$, $\alpha\gamma$.

1991To08: 291-MeV (273-MeV at target midpoint) ^{64}Zn on ^{95}Mo (98.8%) followed by α and ε decays; used Si ΔE -E, HPGe, 1-mm-thick plastic scintillator, n-type Ge detectors with tape transport; measured $E\gamma$, $I\gamma$, $E\alpha$, $I\alpha$, $\gamma\gamma$.

1987Li09: 280-MeV ^3He on Tb at ISOCELE II mass separator (Orsay); used Ge(Li) and Si surface barrier detectors with tape transport; measured $\alpha\gamma$, $\gamma\gamma$. Also $^{96}\text{Mo}(^{58}\text{Ni},3p)$ at GSI.

Others: 1996Pa01: ($E\alpha$), 1990Po13 ($E\alpha$, $I\alpha$), 1988ScZV ($\alpha\gamma$), 1982Ba75 ($E\gamma$, $I\gamma$, deduced ^{151}Ho α branching), 1982Bo04 ($E\alpha$), 1974Sc19 ($E\alpha$, $I\alpha$, $E\gamma$, deduced ^{151}Ho α branching), 1963Ma17 ($E\alpha$, $T_{1/2}$).

 ^{147}Tb Levels

$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$T_{1/2}^\ddagger$	Comments
0.0	$(1/2^+)$	1.64 h 3	$\% \varepsilon + \% \beta^+ = 100$ $\% \varepsilon + \% \beta^+$: adopted value.
50.6 9	$(11/2^-)$	1.83 min 6	$\% \varepsilon + \% \beta^+ = 100$ $\% \varepsilon + \% \beta^+$: adopted value.
253.4	$(3/2^+)$	<1.3 ns	
354.1	$(5/2^+)$	<2 ns	

† Established by 1987Li09 from $\alpha\gamma$ study of ^{151}Ho and ^{147}Tb .

‡ Adopted values.

 α radiations

$E\alpha^\dagger$	$E(\text{level})$	$I\alpha^\#$	HF ‡	Comments
4373	354.1	0.032 6	100 24	$E\alpha$: 4220 (1987Li09), 4525 (1995Wa31). $I\alpha$: average of 0.036 4 (1987Li09) and 0.027 4 (1995Wa31).
(4321)	253.4	<0.01	>1040	$E\alpha$: 4318 (1987Li09), 4323 (1995Wa31). $I\alpha$: from 1995Wa31 and 1987Li09.
4522.1	50.6	99.943	1.52 21	$E\alpha$: 4522.1 from evaluation by 1991Ry01. Others: 4517 (1991To08,1990Po13), 4521 5 (1996Pa01). $I\alpha$: 100 from 1995Wa31 and 1987Li09, multiplied by 0.99943 for converting to $I\alpha$ per 100 decays through this decay branch.
(4568)	0.0	<0.04	>6023	$E\alpha$: 4565 (1987Li09), 4570 (1995Wa31). $I\alpha$: from 1995Wa31; other: <0.7 (1987Li09).

† Calculated from $Q(\alpha)$ and $E(\text{level})$.

‡ The nuclear radius parameter $r_0(^{147}\text{Tb})=1.5642$ 20 is deduced from interpolation (or unweighted average) of radius parameters of the adjacent even-even nuclides.

$^\#$ For absolute intensity per 100 decays, multiply by 0.22 3 .

¹⁵¹Ho α decay (35.2 s) 1995Wa31,1991To08,1987Li09 (continued)

γ(¹⁴⁷Tb)

E _γ	E _i (level)	J ^π _i	E _f	J ^π _f	Comments
101	354.1	(5/2 ⁺)	253.4	(3/2 ⁺)	E _γ : from 1995Wa31 and 1987Li09.
253.4	253.4	(3/2 ⁺)	0.0	(1/2 ⁺)	E _γ : from 1995Wa31 and 1987Li09.

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Decay Scheme

