^{150}Tm εp decay:mixed 1988Ni02

History

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

Parent: ^{150}Tm: E=0+x; J^π=(1$^+$); Q(εp)=7870 *SY*; %εp decay=1.2 *3*

Parent: ^{150}Tm: E=0+y; J^π=(6$^-$); $T_{1/2}$=2.20 s *6*; Q(εp)=7870 *SY*; %εp decay=1.2 *3*

^{150}Tm(0+x)-J^π,$T_{1/2}$: from 2021Ko07, where half-life of ≈3 s is from systematic trend.

^{150}Tm(0+x)-Q(εp): 7870 *200* (syst,2021Wa16), J^π assignment is cited from 1988Ni02 by 2021Ko07.

^{150}Tm(0+x)-%εp decay: %εp=1.2 *+2−4* (1988Ni02) for the decay of both the states of ^{150}Tm, with authors′ estimated 80% contribution from the (6$^-$) state and 20% from the (1$^+$) state.

^{150}Tm(0+y)-Q(εp): 7870 *200* (syst,2021Wa16).

^{150}Tm(0+y)-J^π,$T_{1/2}$: From ^{150}Tm Adopted Levels in the ENSDF database (April 2013 update).

Includes decay of two states (6$^-$ and 1$^+$). $T_{1/2}$=2.20 s for high-spin isomer but $T_{1/2}$ of low-spin state is not known. According to 2021Ko07 compilation, 1$^+$ is expected to be the g.s. of ^{150}Tm.

1988Ni02: ^{150}Tm ions were produced via ^{96}Ru(^{58}Ni,3pn) with E=267 MeV ^{58}Ni beam from the Lawrence Berkeley SuperHILAC, separated by the online mass separator OASIS, and implanted in a Mylar tape. Charged particles were detected with a Si ΔE-E telescope and a plastic scintillator; γ rays were detected with Ge detectors. Measured Eγ, E(x-ray), β-delayed protons, β^+ in singles and various coincidence modes. Deduced levels, β-delayed proton emission probabilities. Comparisons with theoretical calculations. Proton spectra measured from 2.5-7 MeV. The delayed proton decay is from both isomers; 1988Ni02 estimate that contribution to total proton spectra is ≈80% from high-spin (6$^-$) isomer and ≈20% from low-spin (1$^+$) isomer.

^{149}Ho Levels

E(level)†	J^π‡	$T_{1/2}$‡	Comments
0	(11/2$^-$)	21.0 s *2*	
48.8	(1/2$^+$)	56 s *3*	%ε+%β^+=100
220.0	(3/2$^+$)		
563.9	(5/2$^+$)		
1000.8	(7/2$^+$)		
1380	(15/2$^+$)		
1560	(15/2$^-$)		

† As given in 1988Ni02.

‡ From the Adopted Levels.

γ(^{149}Ho)

E_γ†	E_i(level)	J^π_i	E_f	J^π_f
171.2	220.0	(3/2$^+$)	48.8	(1/2$^+$)
343.9	563.9	(5/2$^+$)	220.0	(3/2$^+$)
436.9	1000.8	(7/2$^+$)	563.9	(5/2$^+$)

† From 1988Ni02.

Delayed Protons (^{149}Ho)

%εp=1.2 *+2−4* (1988Ni02) for the decay of both the states, but the main contribution is expected from the decay of the (6$^-$) state.

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^{150}Tm εp decay:mixed 1988Ni02 (continued)

Delayed Protons (^{149}Ho) (continued)

E(^{149}Ho)	I(p)[†]	Comments
0	78[‡] *5*	Intensity/100 decays of mixed activities ≈ 0.94.
48.8		
220.0	6.5 *24*	Intensity/100 decays of mixed activities ≈ 0.078.
563.9	4.3 *19*	Intensity/100 decays of mixed activities ≈ 0.052.
1000.8	4.5 *13*	Intensity/100 decays of mixed activities ≈ 0.054.
1380	5.4 *27*	Intensity/100 decays of mixed activities ≈ 0.065.
1560	1.2 *12*	Intensity/100 decays of mixed activities ≈ 0.014.

[†] Intensities in percent of total proton intensity from 1988Ni02, with authors′ estimated 80% contribution from the (6$^-$) state and 20% from the (1$^+$) state.
[‡] Combined for 0+49 levels.

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Decay Scheme