^{153}Tm ε decay (2.5 s)   **1989Ko02,1988ScZV**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

Parent: ^{153}Tm: E=43.2; J^{π}=(1/2$^+$); $T_{1/2}$=2.5 s 2; Q(ε)=6495 13; %ε+%β^+ decay=8 3

^{153}Tm-E: From ^{153}Tm Adopted Levels and based on Eα from this isomer and the ^{153}Tm ground state.

^{153}Tm-%ε+%β^+ decay: From 1989Ko02; this assumes that the 266-keV γ represents 100% of these ε+β^+ decays and a 1035-keV γ in ^{149}Dy following the α decay of ^{153}Tm and the ε decay of ^{149}Ho represents 100% of the α decays. The presence of other ε+β^+ branches, which bypass these γ's will change this value. From gross β decay calculations, 2019Mo01 suggest %ε+%β^+ $\approx$ 8 in excellent agreement.

Source produced in ^{92}Mo(^{64}Zn,n2p)^{153}Yb(ε) and (^{64}Zn,3p) followed by mass separation. Measured event-mode coincidence of particles, γ rays, x rays and β+ tagged with time.

^{153}Er Levels

Since the decay energy is over 6 MeV, this decay scheme with only one γ ray is certainly not complete.

E(level)	$J^{\pi\dagger}$
0.0	(7/2$^-$)
266.5 1	(3/2$^-$)

† From Adopted Levels.

$\gamma(^{153}$Er)

E_i(level)	J_i^{π}	E_γ	I_γ	E_f	J_f^{π}	Mult.	$\alpha^{\dagger}$	Comments
266.5	(3/2$^-$)	266.5 1	100	0.0	(7/2$^-$)	[E2]	0.0995	α(K)=0.0707 10; α(L)=0.0222 4; α(M)=0.00522 8 α(N)=0.001194 17; α(O)=0.0001516 22; α(P)=3.56×10^{-6} 5

† Additional information 1.

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<u>Decay Scheme</u>

Intensities: Relative photon branching from each level

$(1/2^+)$ 43.2   2.5 s *2*

$\%\varepsilon + \%\beta^+ = 8$

$Q_\varepsilon = 6495$ *13*

$^{153}_{69}$Tm$_{84}$

266.5 [E2] 100

$(3/2^-)$ 266.5

$(7/2^-)$ 0.0

$^{153}_{68}$Er$_{85}$