### <sup>158</sup>Yb ε decay **1976Gi15,1980Al14,1990AbZW**

		History			
Туре	Author	Citation	Literature Cutoff Date		
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017		

Parent: <sup>158</sup>Yb: E=0.0;  $J^{\pi}=0^+$ ;  $T_{1/2}=1.49 \text{ min } 13$ ;  $Q(\varepsilon)=2693 \ 26$ ;  $\%\varepsilon+\%\beta^+$  decay=100.0 Sources produced by spallation of Ta with 660-MeV protons followed by mass separation. With a Q value of 2730 keV, the evaluator assumes that the present decay scheme is very incomplete.

# <sup>158</sup>Tm Levels

E(level)	$J^{\pi \dagger}$	T <sub>1/2</sub> ‡	Comments
0.0 74.10 <i>10</i>	$\frac{2^{-}}{(1)^{+}}$		T <sub>1/2</sub> : from Adopted Levels. J <sup><math>\pi</math></sup> : 1 <sup>+</sup> ,2 <sup>+</sup> ,3 <sup>+</sup> from E1 $\gamma$ to 2 <sup>-</sup> ; 2 <sup>+</sup> ,3 <sup>+</sup> less likely from estimated strong population in $\varepsilon$ decay from
	(-)		$0^+$ of $^{158}$ Yb parent (see comment on normalization).

<sup>†</sup> From <sup>158</sup>Tm Adopted Levels.

<sup>‡</sup> From 1990AbZW ( $\gamma$ (t)) unless noted otherwise.

#### $\varepsilon, \beta^+$ radiations

E(decay)	E(level)	$I\beta^+$ <sup>†</sup>	$\mathrm{I}\varepsilon^{\dagger}$	Log ft	$\mathrm{I}(\varepsilon + \beta^+)^{\dagger}$	Comments
$(2.62 \times 10^3 \ 3)$ $(2.69 \times 10^3 \ 3)$	74.10 0.0	<0.008	<0.2	>8.1 <sup>1</sup> <i>u</i>	<0.2	av Eβ=724 12 av Eβ=765 12; εK=0.7923 18; εL=0.1289 4; εM+=0.03892 12 I(ε+β <sup>+</sup> ): Limit is from β-decay systematics (1998Si17) for masses >125.

<sup>†</sup> Absolute intensity per 100 decays.

#### $\gamma(^{158}\text{Tm})$

I $\gamma$  normalization: because the level scheme is vastly unknown the normalization cannot be properly estimated so no value is adopted. However if one allows for feeding of the ground state by the observed, but unplaced,  $\gamma$ 's, and feeding of the 74-keV level by observed, but unplaced  $\gamma$ 's, then about 94% of the decays would feed the 74-keV level (which gives a normalization factor of about 0.54).

$E_{\gamma}^{\ddagger}$	$I_{\gamma}^{\ddagger}$	E <sub>i</sub> (level)	$\mathbf{J}_i^{\pi}$	$E_f  J_f^{\pi}$	Mult.	$\alpha^{\dagger}$	Comments
74.1 <i>1</i>	100	74.10	(1)+	0.0 2-	E1	0.731	$\alpha(K)=0.599 \ 9; \ \alpha(L)=0.1030 \ 15; \ \alpha(M)=0.0230 \ 4$ $\alpha(N)=0.00525 \ 8; \ \alpha(O)=0.000681 \ 10; \ \alpha(P)=2.56\times10^{-5} \ 4$ Mult.: From measured $\alpha(K)exp = I_{Kx}/I_{\gamma} = 1.5 \ 5 \ (1976Gi15)$ with estimated contribution to $I_{Kx}$ from $\varepsilon$ decay.
<sup>x</sup> 147.7 1	1.7 4						
<sup>x</sup> 160.3 1	2.1 4						
x252.6 2	3.3 6						
† Additi	onal inform	nation 1.					

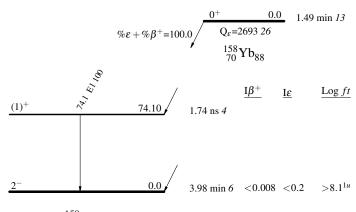
<sup>‡</sup> From 1980Al14.

 $x \gamma$  ray not placed in level scheme.

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# Decay Scheme

#### Intensities: Relative $I_{\gamma}$



<sup>158</sup><sub>69</sub>Tm<sub>89</sub>