

$^{177}\text{Tm} \beta^-$ decay 1989Ry04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

Parent: ^{177}Tm : $E=0.0$; $J^\pi=(1/2^+)$; $T_{1/2}=95$ s 7; $Q(\beta^-)=3517$ SY; $\% \beta^-$ decay=100.0

Parent: ^{177}Tm : $E=0.0+x$; $J^\pi=(7/2^-)$; $T_{1/2}=77$ s 11; $Q(\beta^-)=3517$ SY; $\% \beta^-$ decay \leq 100.0

Mass-separated ^{177}Tm activity was produced by ^{136}Xe (1.22, 1.59 GeV), ^{186}W (2.17, 2.79 GeV), and ^{238}U (2.71 GeV)

projectiles on targets of natural tungsten and tantalum. Assignment of this activity to ^{177}Tm was based on the observation of previously known 104.5 γ and 227.0 γ in ^{177}Yb . Measured E_γ , I_γ , $\beta\gamma$ coin, $\gamma\gamma$ coin, $T_{1/2}$. Detectors: plastic scintillator for β^- , Ge(Li) for γ rays and x rays.

^{177}Yb Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]	Comments
0.0 [#]	9/2 ⁺	1.911 h 3	
104.5 [@] 3	7/2 ⁻	4.48 ns 8	
150.0?			
331.5 ^{&} 6	1/2 ⁻	6.41 s 2	E(level): It is not clear from 1989Ry04 whether this level is produced in β^- decay of ^{177}Tm or directly in multi-nucleon transfer reactions.
622.0 4			

[†] From least-squares fit to E_γ .

[‡] From Adopted Levels.

[#] $K^\pi=9/2^+$, $\nu 9/2[624]$.

[@] $K^\pi=7/2^-$, $\nu 7/2[514]$.

[&] $K^\pi=1/2^-$, $\nu 1/2[510]$.

$\gamma(^{177}\text{Yb})$

I_γ normalization: The decay scheme is incomplete and no normalization to absolute γ -ray intensities was carried out.

E_γ [†]	I_γ [†]	E_i (level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
44.5 [@] 5	45	150.0?		104.5	7/2 ⁻		E_γ : In prompt coincidence with 104.5 γ .
104.5 3	4.5 $\times 10^2$ 10	104.5	7/2 ⁻	0.0	9/2 ⁺	E1	E_γ : In prompt coincidence with 44.5 γ and 517.5 γ .
227.0 5		331.5	1/2 ⁻	104.5	7/2 ⁻	M3	E_γ : Observed only in coincidence with 104.5 γ . Uncertainty assigned by the evaluator.
^x 500.0 [#] 1	22 7						
517.5 5	100 10	622.0		104.5	7/2 ⁻		E_γ : In prompt coincidence with 104.5 γ .
^x 589.0 [#] 1	40 10						
622.0 5	35 13	622.0		0.0	9/2 ⁺		

[†] From 1989Ry04.

[‡] From adopted gammas.

[#] Tentatively assigned to $^{177}\text{Tm} \beta^-$ decay.

[@] Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

^{177}Tm β^- decay 1989Ry04

Decay Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - γ Decay (Uncertain)

