$^{140}{ m Sb}\,{eta}^{-}~{ m decay}$ 2017Mo12

		History		
Туре	Author	Citation	Literature Cutoff Date	
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018	

Parent: ¹⁴⁰Sb: E=0.0; $J^{\pi}=(3^-,4^-)$; $T_{1/2}=173$ ms 12; $Q(\beta^-)=12640$ SY; $\%\beta^-$ decay=100.0

2017Mo12 compiled for XUNDL compilation by B. Singh (McMaster).

2017Mo12: 140 Sb produced in 9 Be(238 U,F), E(238 U)=345 MeV per nucleon using BigRIPS spectrometer at RIBF-RIKEN facility. Measured reaction products using WAS3ABi system of Si detectors, E γ , I γ , $\gamma\gamma$ -coin, β , $\%\beta^-$ n and $\%\beta^-$ 2n and half-life of 140 Sb decay using EURICA HPGe cluster array. 2017Mo12 report the first measurement of half-life of 140 Sb decay.

All data and decay scheme is from 2017Mo12 unless noted otherwise.

Decay scheme is incomplete.

¹⁴⁰Te Levels

E(level)	J^{π}	Comments
0.0	0+	
422.9 3	$(2^+)^{\dagger}$	
848.2 3	$(4^+)^{\dagger}$	
4440+x		E(level): $x < Q(\beta^-) - S(n)(^{140}\text{Te})$ or $x < 8200\ 600$, where $Q(\beta^-) = 12640\ 600$ and $S(n) = 4440\ 60$, both from 2017Wa10.
7020+y		E(level): $y < Q(\beta^-) - S(2n)(^{140}Te)$ or $x < 5620\ 600$, where $Q(\beta^-) = 12640\ 600$ and $S(2n) = 7020\ 60$, both from 2017Wa10.

[†] Assigned by 2017Mo12 as most likely populated by the β^- decay.

β^- radiations

2017Mo12 found no evidence for β feeding to the g.s. of ¹⁴⁰Te from a comparison of the number of implants and the associated $\beta\gamma$ -coin events.

E(decay)	E(level)	$I\beta^{-\dagger\ddagger}$	$\text{Log } ft^{\dagger}$	Comments
(2810 [#] SY)	7020+y	7.6 10		$I\beta^-$: from %β ⁻ 2n=7.6 10 (2017Mo12), treated as a lower limit.
$(4100^{\#} SY)$	4440+x	23 4		$I\beta^-$: from $\%\beta^-$ n=23 4 (2017Mo12), treated as a lower limit.
(11791 SY)	848.2	14 <i>4</i>	6.02 16	
(12217 SY)	422.9	17 3	6.03 13	

[†] From 2017Mo12. The decay scheme normalization procedure is not clearly stated in 2017Mo12.

$$\gamma(^{140}\text{Te})$$

Iy normalization: From equating I β =14% 4 with Iy(425.3 γ)=45 12 (both values from 2017Mo12), although it is not clear how the I β feedings given in Table I of 2017Mo12 were determined from Iy values and 3701 71, the total number of detected β rays (from β -decay curve of ¹⁴⁰Sb ions). Note that total β feeding including the unbound stated adds to 62% 7, and total β feeding to the bound states adds to 31% 5.

¹⁴⁰Sb-E,J $^{\pi}$,T_{1/2}: From 2017Mo12.

¹⁴⁰Sb-Q(β^-): 12640 600 (syst,2017Wa10).

[‡] Absolute intensity per 100 decays.

[#] Estimated for a range of levels.

¹⁴⁰Sb β⁻ decay 2017Mo12 (continued)

$\gamma(^{140}\text{Te})$ (continued)

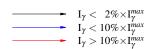
E_{γ}	I_{γ}^{\dagger}	$E_i(level)$	\mathbf{J}_i^{π}	$\mathbf{E}_f \mathbf{J}_f^{\pi}$	Mult.	α^{\ddagger}	Comments
422.9 <i>3</i> 425.3 <i>3</i> <i>x</i> 428.2	100 <i>16</i> 45 <i>12</i>	422.9 848.2	(2 ⁺) (4 ⁺)	$ \begin{array}{c c} \hline 0.0 & 0^{+} \\ 422.9 & (2^{+}) \end{array} $	[E2] [E2]		I_{γ} : absolute intensity=31 5, according to 2017Mo12. I_{γ} : absolute intensity=14 4, according to 2017Mo12. E_{γ} : γ in 140 Te or 139 Te.

[†] For absolute intensity per 100 decays, multiply by 0.31.

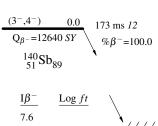
140 Sb β^- decay 2017Mo12

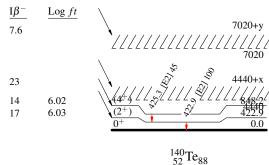
Decay Scheme

Intensities: Relative I_{γ}



Legend





 $^{^{\}ddagger}$ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

 $^{^{}x}$ γ ray not placed in level scheme.