56 Sc β^- decay (75 ms) 2010Cr02

	History			
Туре	Author	Citation	Literature Cutoff Date	
Full Evaluation	Balraj Singh	ENSDF	25-Mar-2022	

Parent: ⁵⁶Sc: E=0+x; $J^{\pi}=(5^+,6^+)$; $T_{1/2}=75$ ms 6; $Q(\beta^-)=1391\times10^1$ 28; $\%\beta^-$ decay=100.0 ⁵⁶Sc-E, J^{π} : From ⁵⁶Sc Adopted Levels.

 56 Sc-T_{1/2}: Measured by fitting the implants-correlated isomeric transition decay curve to a single exponential function with a constant background (2010Cr02).

⁵⁶Sc-Q(β^{-}): From 2021Wa16.

⁵⁶Sc-%β[−] decay: Delayed neutron decay branch is estimated as ≥14% 2 (2010Cr02).

2010Cr02: ⁵⁶Sc activity was produced in ⁹Be(⁷⁶Ge,X) at E⁷⁶Ge) of 130 MeV/nucleon provided by the K500 and K1200 cyclotrons at NSCL, followed by fragment separation using A1900 fragment separator, and time-of-flight technique. Fully stripped secondary fragments were sent to Beta Counting System (BCS) of three Si PIN detectors, a double-sided silicon strip detector, six single sided silicon strip detectors, and 16 HPGe detectors of the Segmented Germanium Array (SeGA). Measured E γ , I γ , $\gamma\gamma$ -coin, and T_{1/2} of ⁵⁶Sc decay.

⁵⁶Ti Levels

E(level) [†]	$J^{\pi \ddagger}$	T _{1/2} ‡	Comments
0.0	0^{+}	200 ms 5	
1128.7 <i>3</i>	2^{+}		
2289.3 4	(4^{+})		
2978.9 5	(6^{+})		
4473.7 6			
5660+y			E(level): $S(n)({}^{56}Ti)+y$, where y<8250 300, from $Q(\beta^{-})({}^{56}Sc)-S(n)({}^{56}Ti)$; $Q(\beta^{-})=13910$ 300, $S(n)=5660$ 100.

[†] From $E\gamma$ values.

[‡] From the Adopted Levels.

β^{-} radiations

The decay scheme is likely incomplete as only apparent I β feedings are given, and in view of large Q value of 13.9 MeV and highest level in ⁵⁶Ti populated at 4474 keV in this decay. Thus, no log *ft* values are deduced.

E(decay)	E(level)	Iβ ^{-†‡}		Comments
		≥14	<i>I</i> β [−] : measured %β [−] n≥14 2 (2010Cr02).	
$(9.4 \times 10^3 \ 3)$	4473.7	3 1		
$(1.09 \times 10^4 \ 3)$	2978.9	15 2		
$(1.16 \times 10^4 \ 3)$	2289.3	12 4		

[†] Apparent β feedings from transition intensity balances.

[‡] Absolute intensity per 100 decays.

[#] Estimated for a range of levels.

⁵⁶Sc β^- decay (75 ms) 2010Cr02 (continued)

$\gamma(^{56}\text{Ti})$

I γ normalization: Absolute γ intensities are given in 2010Cr02.

E_{γ}^{\dagger}	$I_{\gamma}^{\dagger \ddagger}$	E _i (level)	\mathbf{J}_i^{π}	E_f	\mathbf{J}_f^{π}	Comments
689.6 <i>3</i>	18 2	2978.9	(6^{+})	2289.3	(4^{+})	
1128.7 <i>3</i>	30 <i>3</i>	1128.7	2+	0.0	0^{+}	Total observed intensity= $48 \ 4 \ (2010 \ Cr02)$ from the two activities.
1160.6 <i>3</i>	30 <i>3</i>	2289.3	(4^{+})	1128.7	2^{+}	
^x 1466.8 3	61					
1494.8 <i>3</i>	3 1	4473.7		2978.9	(6^{+})	

[†] From 2010Cr02.

 ‡ Absolute intensity per 100 decays.

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

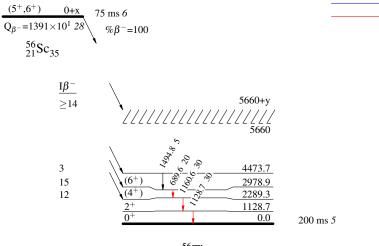
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Decay Scheme

Intensities: I_{γ} per 100 parent decays

 $\begin{array}{c|c} & I_{\gamma} < 2\% \times I_{\gamma}^{max} \\ & I_{\gamma} < 10\% \times I_{\gamma}^{max} \\ & I_{\gamma} > 10\% \times I_{\gamma}^{max} \end{array}$

Legend



56 22 Ti₃₄