

$^{116}\text{Tc} \beta^-$ decay (57 ms) 2013So17

Type	Author	History Citation	Literature Cutoff Date
Update	B. Singh	ENSDF	18-Jun-2015

Parent: ^{116}Tc : $E=0.0$; $T_{1/2}=57$ ms 3; $Q(\beta^-)=12610$ SY; $\% \beta^-$ decay=100.0

^{116}Tc - $Q(\beta^-)$: 12610 300 (syst,2012Wa38).

^{116}Tc - $T_{1/2}$: Measured by 2015Lo04. Other: 56 ms +15-10 (2011Ni01).

^{116}Tc -E: Could be a mixture of two activities, a low-spin and high-spin (2013So17).

2013So17: ^{116}Tc isotope produced in $^9\text{Be}(^{238}\text{U},\text{X})$ reaction at 345 MeV/nucleon at RIBF-RIKEN facility. Fragments identified by Zero-degree spectrometer which analyzed events based on $B\rho$ -tof- ΔE . Measured $E\gamma$, $I\gamma$, $E\beta$, (fragment) γ -coin, $\beta\gamma$ -coin, $\gamma\gamma$ -coin using Euroball-RIKEN array of 12 HPGe cluster detectors and WAS3ABi particle detector array of DSSSDs. Deduced levels, J, π , bands. Comparison with interacting Boson model calculations.

 ^{116}Ru Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0	0 ⁺	204 ms 6	$T_{1/2}$: from Adopted Levels.
292.43 21	(2 ⁺)		
614.30 23	(2 ⁺)		
760.1 4	(4 ⁺)		
910.9 3	(3 ⁺)		
1150.1 3	(4 ⁺)		
1375.7 5	(6 ⁺)		
1467.9 4	(5 ⁺)		
1476.5 3	(4 ⁺)		
1502.5 4			
1760.7 4			
1836.7 5	(6 ⁺)		
1850.4 5			
1867.4 4	(5 ⁺)		
2166.4 6			

[†] From least-squares fit to $E\gamma$ values.

[‡] From Adopted Levels, based essentially on systematics of e-e nuclei for first 2⁺ and 4⁺ states, and from comparisons with IBM-1 model calculations for higher states (2013So17).

 $\gamma(^{116}\text{Ru})$

$I\gamma$ normalization: The decay scheme is likely to be incomplete in view of high Q value, thus no normalization can be deduced.

E_γ	I_γ	$E_i(\text{level})$	J^π_i	E_f	J^π_f	E_γ	I_γ	$E_i(\text{level})$	J^π_i	E_f	J^π_f
292.43 25	100 10	292.43	(2 ⁺)	0.0	0 ⁺	591.63 31	2.5 7	1502.5		910.9	(3 ⁺)
296.65 26	16.3 21	910.9	(3 ⁺)	614.30	(2 ⁺)	614.29 33	19.2 27	614.30	(2 ⁺)	0.0	0 ⁺
318.14 [†] 32	3.4 10	1467.9	(5 ⁺)	1150.1	(4 ⁺)	615.59 25	13.6 20	1375.7	(6 ⁺)	760.1	(4 ⁺)
321.76 25	32 4	614.30	(2 ⁺)	292.43	(2 ⁺)	618.57 27	10.4 17	910.9	(3 ⁺)	292.43	(2 ⁺)
325.73 27	6.9 13	1476.5	(4 ⁺)	1150.1	(4 ⁺)	686.66 28	4.9 10	1836.7	(6 ⁺)	1150.1	(4 ⁺)
389.8 [†] 5	2.6 18	1150.1	(4 ⁺)	760.1	(4 ⁺)	698.50 36	2.6 11	2166.4		1467.9	(5 ⁺)
390.04 [†] 39	2.1 14	1867.4	(5 ⁺)	1476.5	(4 ⁺)	849.81 30	1.9 9	1760.7		910.9	(3 ⁺)
467.68 25	35 4	760.1	(4 ⁺)	292.43	(2 ⁺)	862.66 29	5.6 11	1476.5	(4 ⁺)	614.30	(2 ⁺)
535.17 26	11.9 17	1150.1	(4 ⁺)	614.30	(2 ⁺)	939.50 42	2.8 9	1850.4		910.9	(3 ⁺)
557.04 25	10.9 16	1467.9	(5 ⁺)	910.9	(3 ⁺)	956.57 28	5.8 13	1867.4	(5 ⁺)	910.9	(3 ⁺)
565.82 29	3.9 10	1476.5	(4 ⁺)	910.9	(3 ⁺)						

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

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Decay Scheme

Intensities: Relative I_γ

Legend

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

