

$^{113}\text{Tc} \beta^-$ decay:160 ms [1998Ku17,2007Ku23](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 1471 (2010)	1-May-2009

Parent: ^{113}Tc : E=0; $J^\pi=(5/2^-)$; $T_{1/2}=160$ ms +50-40; $Q(\beta^-)=8480$ SY; $\% \beta^-$ decay=100.0

^{113}Tc - $T_{1/2}$: from [2009Pe06](#).

^{113}Tc - J^π : From [2007Ku23](#).

^{113}Tc - $\% \beta^-$ decay: $\% \beta^-$ n=2.1 3 ([1999Wa09](#)).

[1998Ku17](#): ^{113}Tc produced in the proton induced fission of ^{238}U using 25 MeV protons delivered by the K-130 cyclotron at Jyvaskyla. Mass separator IGISOL used. Measured E_γ , I_γ , $\gamma\gamma$ using LEGe array of Ge detectors and a BGO shield.

[2007Ku23](#): Reanalysis of data in [1998Ku17](#).

 ^{113}Ru Levels

E(level) [†]	J^π	$T_{1/2}$
0	(1/2 ⁺)	0.80 s 5
98.27 23	(3/2 ⁺)	
164.1 3	(5/2 ⁺)	
294.9 3	(5/2 ⁺ , 7/2 ⁺)	
433.6 3		
688.1 3		
963.0? 5		
1618.4? 5		

[†] From least-squares fit to E_γ 's, assuming an uncertainty of 0.4 keV.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ [‡]	$\text{Log } ft$ [†]	Comments
(6861 SY)	1618.4?	12.0 4	4.8	av $E\beta=3.10 \times 10^3$ 15
(7791 SY)	688.1	9.1 3	5.2	av $E\beta=3.54 \times 10^3$ 15
(8046 SY)	433.6	30.3 8	4.7	av $E\beta=3.67 \times 10^3$ 15
(8185 SY)	294.9	25.0 6	4.8	av $E\beta=3.73 \times 10^3$ 15
(8315 SY)	164.1	22.1 8	4.9	av $E\beta=3.79 \times 10^3$ 15
(8381 [#] SY)	98.27	1.4 16	6.1	av $E\beta=3.83 \times 10^3$ 15

[†] From [2007Ku23](#), values should be considered as approximate due to the complex nature of the level scheme and observation of no levels above 1620 keV whereas the Q value is ≈ 8500 .

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

 $\gamma(^{113}\text{Ru})$

E_γ	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
65.8	8	164.1	(5/2 ⁺)	98.27	(3/2 ⁺)		
98.5	100	98.27	(3/2 ⁺)	0	(1/2 ⁺)	D	$\alpha(K)\text{exp}=0.24$ 12
^x 113.2	12						
131.1	16	294.9	(5/2 ⁺ , 7/2 ⁺)	164.1	(5/2 ⁺)		
^x 147.1	≈ 0						
164.3	54	164.1	(5/2 ⁺)	0	(1/2 ⁺)		
197.1 [†]	12	294.9	(5/2 ⁺ , 7/2 ⁺)	98.27	(3/2 ⁺)		

Continued on next page (footnotes at end of table)

$^{113}\text{Tc } \beta^- \text{ decay: 160 ms } \quad \text{1998Ku17, 2007Ku23 (continued)}$ $\gamma(^{113}\text{Ru})$ (continued)

E_γ	$I_\gamma^{\ddagger}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
$^x 274.7^\dagger$	≈ 5				
294.3 [#]	24	294.9	(5/2 ⁺ , 7/2 ⁺)	0	(1/2 ⁺)
335.5	33	433.6		98.27	(3/2 ⁺)
433.4 [#]	30	433.6		0	(1/2 ⁺)
589.5	19	688.1		98.27	(3/2 ⁺)
668.1 [†]		963.0?		294.9	(5/2 ⁺ , 7/2 ⁺)
688.5 ^{†#}		688.1		0	(1/2 ⁺)
1520.1	25	1618.4?		98.27	(3/2 ⁺)

[†] The γ ray is also from ^{113}Rh decay.

[‡] For absolute intensity per 100 decays, multiply by ≈ 0.5 .

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

^x γ ray not placed in level scheme.

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