

Adopted Levels

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, Balraj Singh		NDS 142, 1 (2017)	15-Apr-2017

$Q(\beta^-)=3790$ SY; $S(n)=6290$ SY; $S(p)=8240$ SY; $Q(\alpha)=-370$ SY [2017Wa10](#)

Estimated uncertainties ([2017Wa10](#)): 200 for $Q(\beta^-)$ and $S(n)$, 360 for $S(p)$ and $Q(\alpha)$.

$S(2n)=11080$ 200, $S(2p)=18830$ 450 (syst,[2017Wa10](#)).

[1999Be63](#): ¹⁸⁹Ta produced and identified in projectile fission of ¹⁹⁷Au impinging on ⁹Be target at 950 MeV/nucleon using FRS fragment separator at GSI facility. Determined production cross section to be 10 nb.

[2000PoZY](#): produced by projectile fragmentation of ²⁰⁸Pb impinging on a 1.6 g/cm² ⁹Be target at 1 GeV/nucleon, fragment separator FRS.

[Additional information 1.](#)

¹⁸⁹Ta Levels

Cross Reference (XREF) Flags

A ¹⁸⁹Ta IT decay (0.58 μs)

<u>E(level)</u>	<u>T_{1/2}</u>	<u>XREF</u>	<u>Comments</u>
0			<p>$\% \beta^- = 100$ While no decay mode has been experimentally observed, evaluators assign $\% \beta^- = 100$ by inference, as β^- is the only decay mode energetically possible. E(level): the observed fragments are assumed to be in the ground state of ¹⁸⁹Ta nuclei. J^π: 7/2⁺ from systematic trend (2017Au03) and theoretical considerations (1997Mo25). T_{1/2}: no experimental value has been reported. A lower limit of 300 ns is implied from time of flight through the FRS separator (1999Be63). Assuming a systematic decreasing trend of half-lives in neutron-rich nuclei, as the neutron number increases, an upper limit of 5 min is suggested from the known half-lives of 49.4 min, 10.5 min and 2.3 min for ¹⁸⁵Ta, ¹⁸⁶Ta and fully-stripped ¹⁸⁷Ta ion, respectively. 2017Au03 in NUBASE list 3 s from a certain systematic trend. Theoretical β^- decay half-lives: 97 s (2003Mo09) and 62.7 s (2016Ma12).</p>
0+x	0.58 μs 22	A	<p>$\%IT=100$ Only the IT decay mode has been reported. The β^- decay mode is less likely in view of the short half-life. E(level): $x=1600$ 400 suggested in 2017Au03 from systematics. According to 2011St21, there may be another μs isomer, possibly with T_{1/2}=1.6 μs 2 reported by 2009A130. T_{1/2}: from $\gamma(t)$ (2011St21). Other: 1.6 μs 2 (2009A130,$\gamma(t)$). It is suggested by 2011St21 that there may be two isomeric levels here. 153.9-, 283.7-, 342.5-, 388.7-, and 481.6-keV gamma rays deexcite this isomer (2011St21), but the decay scheme is unknown. 2009A130 report several additional weak γ rays of 57, 83, 134, 199 and 246 keV associated with the decay of the isomer.</p>