

**Adopted Levels**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 156, 70 (2019)	31-Jan-2019

$Q(\beta^-) = -650$  SY;  $S(n) = 5300$  SY;  $S(p) = 3050$  SY;  $Q(\alpha) = 9630$  50 [2017Wa10](#)

Estimated uncertainties ([2017Wa10](#)):  $\Delta Q(\beta^-) = 880$ ,  $\Delta S(n) = 940$ ,  $\Delta S(p) = 820$ .

$S(2n) = 11720$  820 (syst, [2017Wa10](#)).  $S(2p) = 8010$  (theory, [1997Mo25](#)).

Others: 9580 keV 30 ([2017Og01](#) review) from  $E\alpha = 9.38-9.55$  MeV.

[2010Og01](#), [2011Og04](#): <sup>278</sup>Mt from  $\alpha$  decay chain: <sup>294</sup>Ts  $\rightarrow$  <sup>290</sup>Mc  $\rightarrow$  <sup>286</sup>Nh  $\rightarrow$  <sup>282</sup>Rg  $\rightarrow$  <sup>278</sup>Mt. <sup>294</sup>Ts formed and identified in reaction <sup>249</sup>Bk(<sup>48</sup>Ca,3n),  $E = 247$  MeV at FLNR-JINR-Dubna using Dubna gas-filled recoil separator (DGFRS). Measured  $E\alpha$ , half-lives,  $\alpha$ - $\alpha$  correlations. One decay chain was assigned to the decay of <sup>294</sup>Ts. See details in <sup>294</sup>Ts Adopted Levels.

[2012Og06](#), [2013Og04](#), [2013Og01](#): <sup>278</sup>Mt formed in the decay chain of <sup>294</sup>Ts as above in [2011Og04](#). See details in <sup>294</sup>Ts Adopted Levels. Three decay chains were reported.

[2014Kh04](#): <sup>278</sup>Mt from  $\alpha$  decay chain: <sup>294</sup>Ts  $\rightarrow$  <sup>290</sup>Mc  $\rightarrow$  <sup>286</sup>Nh  $\rightarrow$  <sup>282</sup>Rg  $\rightarrow$  <sup>278</sup>Mt; <sup>294</sup>Ts formed and identified in reaction <sup>249</sup>Bk(<sup>48</sup>Ca,3n),  $E = 252.1, 254.0, 258.0$  MeV at GSI using Gas-filled Trans-Actinide Separator and Chemistry Apparatus (TASCA). Four decay chains were assigned to the decay of <sup>294</sup>Ts, but only two reported in the paper. See details for <sup>294</sup>Ts Adopted Levels.

One EVR- $\alpha$ -SF correlated decay chain reported by [2011Og04](#), three by [2013Og04](#) and [2012Og06](#), and two by [2014Kh04](#), all starting with the decay of <sup>294</sup>Ts and ending in SF-decaying <sup>270</sup>Db nuclide in Dubna work ([2013Og04](#), [2011Og04](#)) and in SF-decaying <sup>266</sup>Lr in GSI work ([2014Kh04](#)). [2011Og07](#) and [2012OgZZ](#) are also related reports for the Dubna work. See Adopted Levels for <sup>294</sup>Ts for details of above three studies.

For theoretical studies, consult Nuclear Science References (NSR) database at NNDC, BNL for 47 primary references dealing with the half-lives and other aspects of nuclear structure in this mass region.

<sup>278</sup>Mt Levels

Cross Reference (XREF) Flags

**A** <sup>282</sup>Rg  $\alpha$  decay (100 s)

E(level)	T <sub>1/2</sub>	XREF	Comments
0	4.5 s +35-13	<b>A</b>	<p><math>\% \alpha \approx 100</math>; <math>\% \text{SF} = ?</math></p> <p>Only the <math>\alpha</math> decay mode observed with no SF events detected.</p> <p>E(level): the observed <math>\alpha</math> activity is assumed to correspond to the ground state of <sup>278</sup>Mt.</p> <p>T<sub>1/2</sub>: from <a href="#">2017Og01</a> and <a href="#">2015Og05</a> reviews. Measurements: 7.7 s +370-35 (<a href="#">2011Og04</a>, <a href="#">2011Og07</a>, <a href="#">2012OgZZ</a>, from one decay chain); 5.2 s +62-18 (<a href="#">2012Og06</a>, <a href="#">2013Og04</a>, <a href="#">2013Og01</a>, from three out of four decay chains observed); 3.6 s +65-14 (<a href="#">2014Kh04</a> from four decay chains, also report 4.4 s +36-14 by combining their data with those from <a href="#">2013Og04</a>).</p> <p>J<sup>π</sup>: 3<sup>-</sup>, 6<sup>-</sup> from <math>\Omega(\text{proton}) = 9/2^-</math>, <math>\Omega(\text{neutron}) = 3/2^+</math> (<a href="#">1997Mo25</a>, theory).</p> <p><math>E\alpha = 9.38-9.55</math> MeV (<a href="#">2017Og01</a>, <a href="#">2015Og05</a> reviews) from decay of <sup>278</sup>Mt. Measured <math>E\alpha = 9.55</math> MeV 19 (<a href="#">2010Og01</a>, <a href="#">2011Og04</a>, <a href="#">2011Og07</a>, <a href="#">2012OgZZ</a>); 9.38-9.55 MeV (<a href="#">2013Og04</a>, <a href="#">2012Og06</a>; from decay of <sup>278</sup>Mt for three events out of a total of 4 events observed); 9.45 MeV 3 (<a href="#">2014Kh04</a>).</p>