

Adopted Levels

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	12-Apr-2010

$Q(\beta^-)=1.04\times 10^4$ 4; $S(n)=2.7\times 10^3$ 3; $S(p)=1.64\times 10^4$ syst; $Q(\alpha)=-7.8\times 10^3$ syst [2012Wa38](#)

Note: Current evaluation has used the following Q record 10.64E3 51 2.68E3 50 15560 syst-8070 syst [2009AuZZ,2003Au03](#).

$\Delta S(p)=830$, $\Delta Q(\alpha)=680$ (syst,[2009AuZZ,2003Au03](#)).

$Q(\beta^-n)=4460$ 500, $S(2n)=8020$ 480, $S(2p)=30000$ 830 (syst) ([2009AuZZ,2003Au03](#)).

[1985Gu14](#): activity produced by fragmentation of 33 MeV/nucleon ^{86}Kr beam on thick Ti and Ta targets and subsequent particle analysis with a spectrometer having a charge resolution $\Delta Z/Z < 1.5\%$ and mass resolution $\Delta A/a < 1\%$. Obtained mass histograms.

[1990Tu01](#): activity produced by 800 MeV proton-induced fission and fragmentation using natural Th target and subsequent particle analysis with a tof isochronous spectrometer.

[1998Am04](#) (also [1997AmZZ](#) thesis): ^{57}Ti activity produced by fragmentation of a 500 MeV/nucleon beam of ^{86}Kr on a thick ^9Be target and subsequent mass separation in the FRS spectrometer at GSI . facility. Measured $T_{1/2}$.

[Additional information 1.](#)

[1996Do23](#): activity produced by fragmentation of a 64.5 MeV/nucleon beam of ^{65}Cu on a ^9Be target and subsequent mass separation in the LISE3 spectrometer at GANIL facility. Measured $T_{1/2}$ using β and $\beta\gamma$ coincidences.

[1998Am04](#): ^{57}Ti produced in the fragmentation of 500 MeV/nucleon ^{86}Kr beam on a ^9Be target and subsequent mass separation using the FRS spectrometer at GSI. Measured $T_{1/2}$. See also [1997AmZZ](#) thesis.

[1999So20](#) (also [1999Le67](#)): ^{57}Ti produced at GANIL in fragmentation of $^{86}\text{Kr}^{34+}$ beam with ^{58}Ni target followed by separation of fragments using LISE3 spectrometer. Measured half-life of g.s. from β and γ -ray studies.

[2005Li53](#): ^{57}Ti isotope produced in fragmentation of $^{86}\text{Kr}^{34+}$ beam on a ^9Be target. Secondary fragments were selected using the A1900 fragment separator. Fragment identification was performed by a combination of multiple energy-loss signals and time of flight method. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma\beta(t)$, lifetime with 12 Ge detectors from the MSU segmented Ge array and double-sided Si microstrip detector.

 ^{57}Ti LevelsCross Reference (XREF) Flags

A ^{57}Sc β^- decay (13 ms)

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	(5/2 ⁻)	98 ms 5	A	$\% \beta^- = 100$; $\% \beta^- n = ?$ $\% \beta^- n$: 0.04 (1997Mo25), ≈ 0.6 (1996Do23); both are from theoretical calculations. J^π: prediction from shell-model calculations using GXPF1 interaction in full pf model space (2005Li53). Possible allowed β feeding to (7/2⁻) in ^{57}V is consistent. Others: 5/2⁻ proposed from systematics (2003Au02); 3/2⁻ from calculations (1997Mo25). $T_{1/2}$: from 2005Li53, deduced from fit of the fragment-β-decay curve considering the exponential decay of the parent, exponential growth, and decay of the daughter ^{57}V, and a linear background term. The value obtained was compared with that obtained from fragment-β-γ decay curves for each of the γ rays assigned to the decay of ^{57}Ti. The values were consistent with 98 ms, within the uncertainties. Others: 67 ms 25 (1999So20, 55 ms 20 in earlier 1995SoZX report), 180 ms 30 (1998Am04, 0.18 s 4 in earlier 1995AmZX report); 56 ms 20 (1996Do23). Weighted average of values from 2005Li53, 1999So20, 1998Am04 and 1996Do23 is 97 ms 10 with reduced $\chi^2=4.4$. See 1998Am04 and 1996Do23 for a comparison of their measurements of $T_{1/2}$ with theoretical estimates using different models.