

¹⁵⁹Re p decay (20 μ s) 2006Jo10

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	B. Singh and N. Nica	ENSDF	31-Dec-2017

Parent: ¹⁵⁹Re: E=0+x; J ^{π} =(11/2⁻); T_{1/2}=20 μ s 4; Q(p)=1816 20; %p decay=92.5 35

¹⁵⁹Re-E,J ^{π} ,T_{1/2}: From ¹⁵⁹Re Adopted Levels (2012Re02), where half-life is weighted of 21 μ s 4 (2006Jo10, proton-decay curve) and 16 μ s 9 (2007Pa27, alpha-decay curve). The measured half-life of 20 μ s is consistent with only the h_{11/2} proton orbital from WKB calculations using two different sets of optical model potentials. From systematics presented by 2006Jo10, x $\approx$ 120 relative to the π s_{1/2} ground state of ¹⁵⁹Re. 2017Au03 give x=210 50 from systematics.

¹⁵⁹Re-Q(p): From E(p)=1805 20 (2006Jo10). This proton peak is correlated with E α =6445 3 from ¹⁵⁸W α decay with half-life of 1.25 ms 21. 2017Wa10 give S(p)=-1600 50 from syst.

¹⁵⁹Re-%p decay: %P=92.5 35 \$ %A=7.5 35 (2007Pa27). The calculated T_{1/2} for β decay is $\approx$ 0.24 s (1997Mo25), which suggests that β decay does not contribute significantly to the decay of the (11/2⁻) isomer.

¹⁵⁹Re p decay (21 μ s)=¹⁵⁹Re p decay (21 μ s).

2006Jo10: ¹⁵⁹Re isotope produced and identified in ¹⁰⁶Cd(⁵⁸Ni,p4n) reaction at E=300 MeV. The reaction products were separated by the gas-filled recoil separator RITU at Jyvaskyla facility, and implanted into double-sided silicon strip detectors (DSSD) of the GREAT spectrometer. Measured α , protons, α and proton correlations with the implanted nuclei, (recoil) α coin. The ¹⁵⁹Re nuclide was identified through correlations with 6445 keV 3 α peak from 1.5 ms 2 activity of ¹⁵⁸W produced as daughter of proton decay of ¹⁵⁹Re. Deduced half-life of ¹⁵⁹Re isomer. The ground state is not yet identified.

2007Pa27: α decay mode measured by 2007Pa27 through correlations with proton decay of ¹⁵⁵Ta.

¹⁵⁸W Levels

E(level)	J ^{π}
0.0	0 ⁺

Protons (¹⁵⁸W)

E(p)	E(¹⁵⁸ W)	I(p)
1805 20	0.0	100