

Adopted Levels

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	20-Jul-2015

$Q(\beta^-)=12020$ SY; $S(n)=5110$ SY; $S(p)=15080$ SY; $Q(\alpha)=-12440$ CA [2012Wa38,1997Mo25](#)

$Q(\beta^-)$, $S(n)$ and $S(p)$ from [2012Wa38](#); $Q(\alpha)$ from [1997Mo25](#).

Estimated uncertainties ([2012Wa38](#)): 640 for $Q(\beta^-)$ and $S(n)$, 780 for $S(p)$.

$S(2n)=8840$ 640, $Q(\beta^-n)=8280$ 590 (syst,[2012Wa38](#)). $S(2p)=33780$ ([1997Mo25](#),theory).

[2010Oh02](#): ^{125}Rh nuclide identified in $\text{Be}(^{238}\text{U},\text{F})$ and $\text{Pb}(^{238}\text{U},\text{F})$ reactions with a $^{238}\text{U}^{86+}$ beam energy of 345 MeV/nucleon produced by the cascade operation of the RBIF accelerator complex of the linear accelerator RILAC and four cyclotrons RRC, fRC, IRC and SRC. Identification of ^{125}Rh nuclei was made on the basis of magnetic rigidity, time-of-flight and energy loss of the fragments using BigRIPS fragment separator. Experiments performed at RIKEN facility. Based on A/Q spectrum and Z versus A/Q plot, 13 counts were assigned to ^{125}Rh isotope (Q=charge state).

[2015Lo04](#): ^{125}Rh nuclide produced at RIBF-RIKEN facility in $^9\text{Be}(^{238}\text{U},\text{F})$ reaction at $E=345$ MeV/nucleon with an average intensity of 6×10^{10} ions/s. Identification of ^{125}Rh was made by determining atomic Z and mass-to-charge ratio A/Q, where Q=charge state of the ions. The selectivity of ions was based on magnetic rigidity, time-of-flight and energy loss. The separated nuclei were implanted at a rate of 50 ions/s in a stack of eight double-sided silicon-strip detector (WAS3ABi), surrounded by EURICA array of 84 HPGe detectors. Correlations were recorded between the implanted ions and β rays. The half-life of ^{125}Rh isotope was measured from the correlated ion- β decay curves and maximum likelihood analysis technique as described in [2014Xu07](#). Comparison of measured half-lives with FRDM+QRPA, KTUY+GT2 and DF3+QRPA theoretical calculations.

[2013Fa08](#): theoretical calculations of $T_{1/2}$ and $\% \beta^-n$.

[Additional information 1](#).

 ^{125}Rh Levels

E(level)	$T_{1/2}$	Comments
0	26.5 ms 20	<p>$\% \beta^- = 100$; $\% \beta^-n = ?$; $\% \beta^-2n = ?$ Theoretical $T_{1/2} = 25.3$ ms, $\% \beta^-n = 23.4$, $\% \beta^-2n = 0.04$ (2003Mo09). Measured $\sigma = 11$ pb (2010Oh02), systematic uncertainty $\approx 40\%$. Probability of misidentification of ^{125}Rh isotope $< 0.001\%$ (2010Oh02). E(level): measured half-life is assumed to correspond to the ground state of ^{125}Rh. J^π: $7/2^+$ from systematic trends (2012Au07); $5/2^+$ predicted in calculations of 1997Mo25. $T_{1/2}$: measured by 2015Lo04 from (implanted ions)β correlated curves in time and position using maximum likelihood method. See 2015Lo04 for comparison of their experimental value with theoretical values.</p>