

Adopted Levels, Gammas

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

$Q(\beta^-)=10260$ SY; $S(n)=3380$ SY; $S(p)=16060$ SY; $Q(\alpha)=-10240$ SY [2012Wa38](#)

Estimated uncertainties ([2012Wa38](#)): 300 for $Q(\beta^-)$, 420 for $S(n)$, 500 for $S(p)$ and $Q(\alpha)$.

$S(2n)=9190$ 600, $S(2p)=30970$ 580, $Q(\beta^-n)=4250$ 300 ([2012Wa38](#)).

[1997Be70](#): ^{119}Ru produced and in $^9\text{Be}(^{238}\text{U},\text{F})$ reaction at 750 MeV/nucleon, and identified event-by-event by measurements of energy loss, Time-of-flight (ToF), trajectory and magnetic rigidity. A total of five counts were assigned to ^{119}Ru with a cross-section of 14 nb. Earlier report from the same group: [1995CzZZ](#).

Additional information 1.

[2015Lo04](#): ^{119}Ru 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 ^{119}Ru 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 ^{119}Ru 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+CQRPA theoretical calculations.

 ^{119}Ru LevelsCross Reference (XREF) Flags

A ^{119}Ru IT decay (0.383 μs)

E(level)	$T_{1/2}$	XREF	Comments
0.0	69.5 ms 20	A	$\% \beta^- = 100$; $\% \beta^- n = ?$; $\% \beta^- 2n = ?$ Theoretical $T_{1/2} = 165.6$ ms, $\% \beta^- n = 2.9$, $\% \beta^- 2n = 0.0$ (2003Mo09). E(level): measured half-life is assumed to correspond to the ground state of ^{119}Ru . J^π : $5/2^-$ in theoretical calculations (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.
136.3? 5		A	E(level): reverse ordering of the 90.8-136.3 γ cascade is also possible, which will give a level at 90.8 keV, instead of 136.3.
227.1 7	0.383 μs +22-21	A	$\% \text{IT} = 100$ $T_{1/2}$: from $\gamma(t)$ method (2012Ka36).

 $\gamma(^{119}\text{Ru})$

$E_i(\text{level})$	E_γ	I_γ	E_f	Mult.	$\alpha^\ddagger$	Comments
136.3?	136.3 [†] 5	100	0.0			$\alpha = 0.24$ 18 overlaps mult=E1, M1 or E2.
227.1	90.8 [†] 5	100	136.3?	(D,E2)	1.0 8	Mult.: from intensity balance. α : overlaps E1, M1 or E2.

[†] Reverse ordering of the 90.8-136.3 γ cascade is also possible.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

Adopted Levels, Gammas**Level Scheme**

Intensities: Relative photon branching from each level

