

Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 200,2 (2025)	22-Aug-2022

$Q(\beta^-)=10690$  *syst*;  $S(n)=3540$  *syst*;  $S(p)=12350$  *syst*;  $Q(\alpha)=-5790$  *syst*    [2021Wa16](#)

$\Delta Q(\beta^-)=360$ ,  $\Delta S(n)=420$ ,  $\Delta S(p)=500$ ,  $\Delta Q(\alpha)=500$  (*syst*,[2021Wa16](#)).

$S(2n)=8380$  *420*,  $S(2p)=26980$  *580*,  $Q(\beta^-n)=5310$  *360* (*syst*,[2021Wa16](#)).

[2017Wu04](#) compiled for XUNDL database by F. Kondev, ANL.

[2020Wu04](#) compiled for XUNDL database by B. Singh, McMaster.

[2017Wu04](#): The <sup>154</sup>La nuclide was produced at the RIBF-RIKEN facility using the <sup>9</sup>Be(<sup>238</sup>U,F) reaction at E=345 MeV/nucleon.

Two experiments, optimized for the transmission of <sup>158</sup>Nd and <sup>170</sup>Dy ions, were carried out with average beam intensities of 7 pnA and 12 pnA, respectively. The identification of the nuclide of interest was made in the BigRIPS separator by determining the atomic number and the mass-to-charge ratio of the ion using the tof-B $\rho$ - $\Delta E$  method. The reaction products were transported through the ZeroDegree Spectrometer and implanted into the beta-counting system WAS3ABi that was surrounded by the EURICA array comprising of 84 HPGe detectors. The typical implantation rate was 100 ions/s. Measured: implanted ion- $\beta^-$ -t, implanted ion- $\beta^-$ - $\gamma$ -t and implanted ions- $\gamma$ -t correlations. Deduced: T<sub>1/2</sub>.

[2020Wu04](#): <sup>154</sup>La nuclide produced at the RIBF-RIKEN facility by <sup>9</sup>Be(<sup>238</sup>U,F) reaction at E=345 MeV/nucleon and an intensity of 5 pnA. Identification of fission fragments of interest was made based on time-of-flight (tof), magnetic rigidity (B $\rho$ ), and energy loss ( $\Delta E$ ) using the BigRIPS spectrometer, determining atomic Z and mass-to-charge ratio A/Q, where Q=charge state of the ions. The separated nuclei were implanted at a rate of 100 ions/s in the beta counting system of the Wide range Active Silicon-Strip Stopper Array for Beta and ion detection (WAS3ABi), which included a stack of five Double Sided Silicon Strip Detectors (DSSSDs). The WAS3ABi setup was surrounded by Euroball Riken Cluster Array (EURICA) array of 84 HPGe detectors for  $\gamma$  detection. Half-life of the separated and implanted ions was determined by fitting the time distribution of  $\beta$ (implants)- and/or  $\beta\gamma$ (implants)-correlated decay curves to the sum of activities of parent nuclei, daughter nuclei, grand-daughter nuclei,  $\beta$ -delayed neutron daughter and grand-daughter nuclei, and a constant background. Comparison of measured half-lives with FRDM+QRPA (2003), FRDM+QRPA (2019), KTUY+GT2, RHB+pn-RQRPA, and DF+CQRPA theoretical calculations.

Others: [2018Fu08](#), [2018Sh11](#).

<sup>154</sup>La Levels

E(level)	J $^\pi$	T <sub>1/2</sub>	Comments
0.0	(2 <sup>-</sup> )	161 ms <i>15</i>	<p><math>\% \beta^- = 100</math>; <math>\% \beta^- n = ?</math>  <math>\% \beta^-</math>: Only <math>\beta^-</math> decay mode is expected.                      J<math>^\pi</math>: From systematics of known quasiparticle states in neighboring nuclei and the proposed configuration (by the evaluator). The assignment is tentative.                      T<sub>1/2</sub>: from <a href="#">2017Wu04</a>, by using a fit to the implanted ion-<math>\beta^-</math>-t spectrum using the least-squares and maximum-likelihood methods. The data analysis included contributions from the parent, daughter and grand-daughter decays, as well as a constant background. Other result: 221 ms <i>89</i> (<a href="#">2020Wu04</a>), assumed to correspond to <sup>154</sup>La g.s., by fitting the time distribution of (implanted ions)<math>\beta</math>-correlated decay curves to the sum of activities of parent nuclei, daughter nuclei, grand-daughter nuclei, <math>\beta^-n</math> daughter and grand-daughter nuclei, and a constant background. The production of <sup>154</sup>La of <a href="#">2017Wu04</a> is about 100 stronger compared to <a href="#">2020Wu04</a> leading to the more precise measurement that was adopted.                      configuration: From systematics of well-deformed nuclei in this mass region, the <math>\pi 1/2[420]</math> and <math>\nu 5/2[523]</math> Nilsson orbitals are expected near the proton and neutron Fermi surfaces, respectively. Thus, using the Gallagher-Moszkowski rule, one may expect the <math>K^\pi = 2^-</math>, <math>\pi 1/2[420] \otimes \nu 5/2[523]</math> configuration for the ground state. The assignment is tentative and it is made by the evaluator.  <a href="#">2018Fu08</a>: 2080 <sup>154</sup>La counts; <a href="#">2018Sh11</a> 141 <sup>154</sup>La counts.</p>