

**Adopted Levels**

<u>Type</u>	<u>Author</u>	<u>History Citation</u>	<u>Literature Cutoff Date</u>
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

$Q(\beta^-)=8850$  SY;  $S(n)=4840$  SY;  $S(p)=11640$  SY;  $Q(\alpha)=-5230$  SY [2017Wa10](#)

Estimated uncertainties ([2017Wa10](#)):  $\Delta Q(\beta^-)=360$ ,  $\Delta S(n)=420$ ,  $\Delta S(p)=500$ ,  $\Delta S(\alpha)=500$ .

$S(2n)=8890$  530,  $S(2p)=26410$  580,  $Q(\beta^-n)=4850$  360, from [2017Wa10](#) (based on syst).

Data set first introduced in ENSDF database by F.G. Kondev based on the XUNDL compilation of [2017Wu04](#) also done by F.G.

Kondev (ANL) (including *Supplemental Material* table of 94 measured  $\beta$ -decay half-lives).

[2017Wu04](#), [2020Wu04](#): The <sup>153</sup>Ba 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. 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 about 100 ions/s. Measured: implanted ion- $\beta^-$ -t, implanted ion- $\beta^-$ - $\gamma$ -t and implanted ions- $\gamma$ -t correlations. Deduced:  $T_{1/2}$ .

[2017Wu04](#) gave the first positive identification of <sup>153</sup>Ba nuclide and  $T_{1/2}$  measurement. [2020Wu04](#) (same group) reconfirm <sup>153</sup>Ba production and retrieve consistent  $T_{1/2}$  value at higher uncertainty.

[1994Be24](#): Identification in reaction: Pb(<sup>238</sup>U,F) at 750 MeV/nucleon. Residual products Fragment Recoil Separator (FRS), time-of-flight technique.

<sup>153</sup>La Levels

<u>E(level)</u>	<u>T<sub>1/2</sub></u>	<u>Comments</u>
0.0	0.245 s 18	$\% \beta^- = 100$ ; $\% \beta^- n = ?$ $\% \beta^-$ : Only $\beta^-$ decay mode is expected. $J^\pi$ : (1/2 <sup>+</sup> ) can be tentatively quoted from systematics of known quasiparticle states in neighboring nuclei and the proposed configuration (by the evaluator). $T_{1/2}$ : From <a href="#">2017Wu04</a> fit to the implanted ion- $\beta^-$ -t spectrum using the least-squares and maximum-likelihood methods. Other: 0.210 ms 120 ( <a href="#">2020Wu04</a> ), same basic method. Data analysis included contributions from the parent, daughter and grand-daughter. configuration: $\pi 1/2[420]$ ( $d_{5/2}$ ) Nilsson orbital, expected from systematics of well-deformed nuclei in the region. The assignment is tentative.