

β -decay measurements of r-process isotopes*

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β -decay experiments provide some of the first information to understand the nuclear structure of neutron-rich isotopes far from β -stability and nuclear data critically needed for astrophysics models. In this presentation I will focus on recent results from the Beta-Delayed Neutrons at RIKEN (BRIKEN) collaboration [1,2], which provides an example of the current reach of experiments at radioactive ion beam laboratories. BRIKEN could measure half-lives and neutron emission probabilities for many isotopes for the first time thanks to a high-efficiency neutron detector based on ^3He proportional counters and the intense secondary beams available at the Rare Isotope Beam Factory (RIBF) in RIKEN. I will present results from BRIKEN measurements of mid-shell isotopes in the $A=100$ region and along the $N=82$ shell closure [3,4], and discuss their impact in reducing the nuclear physics uncertainty in models of nucleosynthesis during the rapid neutron-capture process. I will also discuss the outlook for decay measurements with r-process isotopes at the Facility for Rare Isotope Beams (FRIB).

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1. B. C. Rasco et al, Nucl. Inst. and Meth. A 911, 79 (2018).
2. A. Tolosa-Delgado et al, Nucl. Inst. and Meth. A 925, 133 (2019).
3. O. Hall et al, Phys. Lett. B 816, 136266 (2021).
4. V. H. Phong et al, Phys. Rev. Lett., accepted for publication (2022).