

Isomer and beta decay spectroscopy in the ^{132}Sn region with EURICA

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The first EURICA campaign with high intensity Uranium beams took place at RIKEN in November/December 2012. Within this campaign experiment NP1112-RIBF85 was performed dedicated to the study of the isomeric and beta decays of neutron-rich Cd, In, Sn and Sb isotopes beyond the N=82 neutron shell closure. The exotic nuclei (compare Fig. 1) produced in the projectile fission of a Uranium beam with energy around 345 MeV/u were implanted and their beta decays detected in the WASABI Si array consisting of a stack of eight DSSSD. The γ -rays emitted from isomeric states or after beta decay were measured with the EURICA array consisting of 12 Cluster detectors of the former EUROBALL array (in total 84 Ge crystals).

The combination of the unprecedented high intensity of the primary U beam (on average 8-10 pA) and the high efficiency of the setup for both the detection of γ -rays and particles allowed to perform detailed decay spectroscopy in a region of the chart of nuclides which has not been accessible for this type of studies before. As one example we mention the observation of a new isomeric state in ^{136}Sn . In this contribution we will briefly introduce the EURICA project, then present first experimental results from NP1112-RIBF85 and finally discuss why we believe that they present real challenges to modern shell model theory in this neutron-rich region.

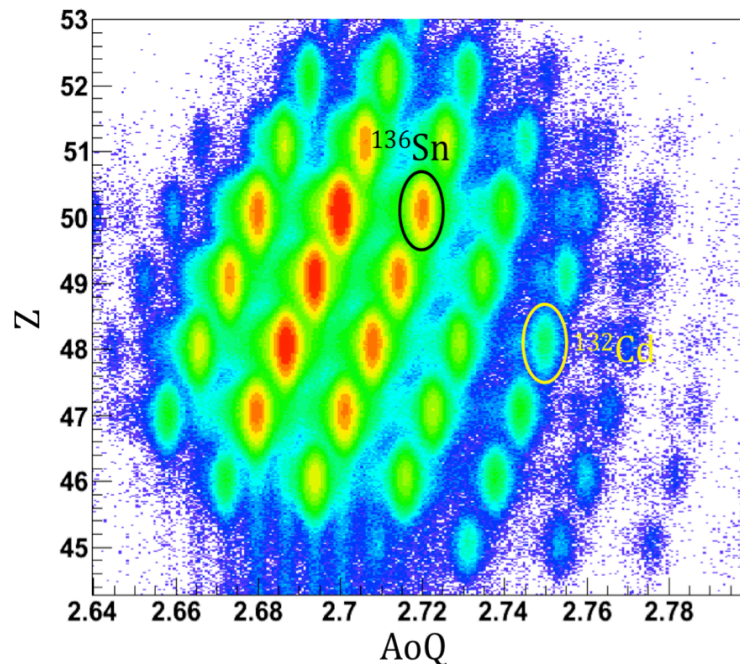


Figure 1: Preliminary fragment identification plot from BigRIPS for experiment NP1112-RIBF85.