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Highlights of EURICA decay spectroscopy at RIBF

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Gamma-ray spectroscopy following the β decay is an effective tool for probing low-lying yrast and non-yrast states, from which key information on nuclear structure, such as shape transitions/coexistence and single-particle orbits, can be obtained. For the study of rare isotopes, especially when the nucleus of interest lies at the boundaries of availability for spectroscopic studies, isomeric decays are likely to be a more useful means than β decays to populate excited levels. The combined β-γ and isomeric-decay measurements at RIBF, which has the capability of providing the world's strongest RI beams, are at the forefront of exploration of exotic nuclei far from stability. Research opportunities for decay spectroscopy at RIBF can be expanded in the EURICA (EUROBALL-RIKEN Cluster Array) project. The main body of EURICA consists of 12 Cluster-type HPGe detectors, surrounding a highly segmented silicon stopper system named WAS3ABi. In addition to the normal EURICA setup, 18 $LaBr_3$ detectors and plastic scintillators are installed for the fast-timing measurement of γ and β rays, respectively. The aim of EURICA is to pin down currently controversial subjects in nuclear physics and nuclear astrophysics, such as the evolution of shell structures that can lead to the appearance or disappearance of the *spherical* magic numbers, the effect of weak binding and pairing in largely diffused neutron densities, search for stable oblate, triaxial, and higher-order deformations at low excitation energy, and the decay properties of neutron-rich isotopes relevant to the r-process nucleosynthesis. A wide range of unstable nuclei on the Segre chart are within the scope of EURICA. In this presentation, the results of the EURICA experimental campaigns in 2012-2013 will be introduced, highlighting γ-ray spectroscopy of exotic nuclei in the vicinity of doubly magic ^{78}Ni and ^{100,132}Sn, and neutron-rich mid-shell ^{110}Zr and Z $\approx$ 60.