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Decay spectroscopy of N ~ Z nuclei in the vicinity of 100Sn

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(On behalf of the EURICA collaboration)

The structure of magic nuclei far away from stability provides vital information on modern shell models. In particular, the doubly magic ^{100}Sn and proton-rich nuclei in its vicinity contains many topics of interest: the limit of proton binding in this mass region, the robustness of the $N = Z = 50$ shell closures, and isospin symmetry among many others. Experimental properties of these nuclei are also relevant for precise predictions of the end stages of the rapid proton-capture process of nuclear astrophysics.

A decay spectroscopy experiment on ^{100}Sn and other $N \sim Z \sim 50$ nuclei was performed at RIKEN Nishina Center, where a 345-MeV/u ^{124}Xe beam was fragmented on a ^{9}Be target. The isotopes of interest were identified and implanted on a set of Si detectors, which measured the positrons and protons from subsequent β decays. γ rays emitted from excited states were measured by HPGe detectors placed around the implantation detectors.

A summary of new and more precise experimental results will be presented. Highlights include the discovery of new isotopes, β-decay properties of the heaviest bound $N = Z - 1$ nuclei, an update on the superallowed Gamow-Teller decay of ^{100}Sn, and the structure of ^{96}Cd.

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