

# STRUCTURE OF NEUTRON-RICH NUCLEI VIA BETA DECAY AND MASS MEASUREMENTS

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Properties of deformed, neutron-rich nuclei in the  $A \sim 160$  region are important for achieving a better understanding of the nuclear structure in this region where little is known owing to difficulties in the production of these nuclei at the present RIB facilities. These properties are also essential ingredients in the interpretation of the rare-earth peak at  $A \sim 160$  in the r-process abundance distribution, since various theoretical models depend sensitively on the nuclear structure input. Predicated on these ideas, we have initiated a new experimental program at Argonne National Laboratory. The first experiment recently took place where a combination of the CARIBU radioactive beam facility with the new SATURN decay station and the X-array clover array was performed. We focused initially on several odd-odd nuclei, where decays of both the ground state and an excited isomer were investigated. Because of the spin difference, a variety of structures in the daughter nuclei were selectively populated and characterized based on their decay properties. Results from these studies will be presented together with predictions using multi-quasiparticle blocking calculations that include the effect of the residual nucleon-nucleon interactions. Mass measurements using the Canadian Penning Trap aimed at measuring the excitation energy of the beta-decaying isomers were also carried out and new results will be also reported.