

# Decay Spectroscopy of Neutron-Rich Nuclei at CARIBU\*

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The properties of neutron-rich nuclei are of significant interest for elucidating the structure of nuclei away from the line of stability. They are an essential ingredient in the interpretation of the r-process nucleosynthesis and are needed in fission-like applications since theoretical models depend sensitively on the nuclear structure input.

Predicated on these ideas, we have initiated a dedicated decay spectroscopy experimental program at Argonne National Laboratory, by combining the CARIBU radioactive beam facility with the Canadian Penning Trap and the X-Array spectrometers. The initial focus was on several deformed odd-odd nuclei, where  $\beta^-$  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, which in turn provided information about the structure of the parent isomers.

Results from these measurements will be presented, together with predictions based on deformed shell model that includes effects of pairing and spin-dependent, nucleon-nucleon interactions. The newly commissioned, beta-decay station at Gammasphere will also be discussed and results from recent experimental campaigns will be presented.

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