

DNP15-2015-000034

Abstract for an Invited Paper
for the DNP15 Meeting of
the American Physical Society

Studies of Neutron-Rich Nuclei with 3-MeV/u Beams¹

J.M. ALLMOND, Physics Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831

The study of shapes and collectivity in atomic nuclei has been a major focus of nuclear structure ever since the observation of large electric quadrupole moments in the first half of the 20th century. A leading challenge has been to experimentally establish regions of spherical shape and regions of prolate, triaxial, and oblate deformed shapes, with the latter being very limited. Another challenge has been to understand the evolution of shell structure, the emergence of collectivity, and their connection to shapes. Radioactive beams have and will continue to expand these inquiries and our understanding of nuclear structure. A survey of equipment, techniques, and results from recent experiments in the Sn-132 and Mo-Ru neutron-rich regions will be presented. These experiments were conducted at the HRIBF-ORNL and CARIBU-ANL facilities using CLARION-BAREBALL and GRETINA-CHICO2, respectively. Furthermore, an outlook towards ReA3-NSCL will be given. An emphasis will be placed on unique opportunities with 3-MeV/u beams.

¹This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics.