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Single particle gaps and the structure of neutron-rich nuclei above ⁴⁸Ca C.J. (KIM) LISTER, Physics Division, Argonne National Laboratory

Recent investigations have shown that single-particle level spacing and residual interactions in very neutron rich nuclei may significantly differ from those inferred from many years of studies of nuclei near the valley of stability. This presentation will focus on the region of neutron-rich nuclei above ⁴⁸Ca and explore issues such as the appearance of new shell gaps and the onset of deformation in the Ca-Ti-Cr region. The nuclei of interest are extremely difficult to produce and our understanding is only emerging by combing data from experiments using very different techniques ranging from beta decay of fragmentation products to gamma-ray studies following deep-inelastic reactions, and from fusion-evaporation with radioactive targets to Coulomb excitation at relativistic energies. This symbiotic relationship is a template for future exploration far from stability.