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Exploring the Structure of Neutron-rich A~130 Nuclei at the HRIBF

J.R. BEENE, Physics Division, Oak Ridge National Laboratory¹ — The world's first post-accelerated beams of heavy neutron-rich nuclei are now available at the Holifield Radioactive Ion Beam Facility (HRIBF) at ORNL. these beams offer us the possibility to begin the experimental exploration of the effects of neutron excess on nuclear structure in the region of the $Z = 50$ $N = 82$ double closed shell. The recent development of very high purity beams of neutron-rich Sn and Ge radioactive ion beams has enhanced the scope for this exploration.

Over the past year, we have completed a series of Coulomb excitation measurements of five neutron-rich isotopes of Sn and Te, and single neutron transfer measurements on ^{134}Te , populating states in ^{135}Te . Even this limited set of data has produced surprising results, which challenge our understanding of the systematics of $B(E2)$ values for excitation of lowest lying 2^+ states in the vicinity of the $N = 82$ shell closure. The techniques used for these measurements will be discussed, along with plans (or perhaps results) for measurements on ^{132}Sn and other systems.

While the results obtained to date may have little direct relevance to nuclear astrophysics, they represent the beginning of the experimental study of the evolution of nuclear structure subject to weak binding in heavy nuclei, which is of considerable interest to both the nuclear structure and nuclear astrophysics communities.

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