

Abstract Submitted
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Measurement of (d,p) reactions near the doubly-magic ^{132}Sn
STEVEN PAIN, ORNL/UT, ORRUBA/RIBENS COLLABORATION — Measurements of (d,p) reactions on n-rich fission fragments yield important information on nuclear structure away from stability, and are of astrophysical interest due to the proximity to suggested r-process paths. The energies, spins and spectroscopic information of single-particle states near to shell closures are of particular importance, since they provide both an important constraint on nuclear structure models and are directly relevant to direct neutron-capture cross sections. The development of re-accelerated fission fragment beams at the HRIBF at ORNL has, for the first time, made possible the measurement of (d,p) reactions at the Coulomb barrier on nuclei around the doubly-magic ^{132}Sn nucleus. The $^{130}\text{Sn}(d,p)^{131}\text{Sn}$, $^{132}\text{Sn}(d,p)^{133}\text{Sn}$ and $^{134}\text{Te}(d,p)^{135}\text{Te}$ reactions have been measured at the HRIBF at around 4.5 MeV/A utilizing deuterated plastic targets. Proton ejectiles were detected forward and backwards of $\theta_{lab} = 90^\circ$ using an early implementation of the Oak Ridge Rutgers University Barrel Array (ORRUBA) in conjunction with the Silicon Detector Array (SIDAR). Details of the experiments and the data analysis, including excitation energies and angular distributions for the states populated, will be presented. *This work is supported in part by the U.S. Department of Energy and the National Science Foundation.

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