

Abstract Submitted
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Development of New Barrel Array Design for Transfer Reactions with Fast Beams¹ F. CORRADO, Allegheny College, Rutgers University, D. WALTER, Rutgers University, S.D. PAIN, Oak Ridge National Laboratory, J.A. CIZEWSKI, Rutgers University — Single-nucleon transfer reactions allow for extraction of spectroscopic information on unstable and exotic nuclei, providing details for understanding the rapid neutron capture process (r-process). To study exotic, neutron-rich isotopes, inverse kinematics is needed with light targets and beams of heavy projectiles. Measurement of the $^{84}\text{Se}(d,p)^{85}\text{Se}$ reaction at 45MeV/u will be conducted at the NSCL in December 2017 to extract spectroscopic information on the ^{85}Se nucleus. Single-particle transfer reactions in inverse kinematics at high energy – such as that for the $^{84}\text{Se}(d,p)$ – are uncommon and require new designs and techniques to be developed. A modification to the current ORRUBA barrel design is needed to accommodate such changes. Features of this design include: a modular barrel able to cover a large desired angular range and detector coverage at backward angles in the lab, as well as allow for easy access to detectors without affecting the rest of the configuration. Improvements to the current design will be presented, including discussion of use in future transfer reactions with fast beams.

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