

Abstract Submitted  
for the DNP12 Meeting of  
The American Physical Society

**SuperORRUBA Test Results**<sup>1</sup> A.J. BURKHART, TTU, S. AHN, UTK, D.W. BARDAYAN, ORNL, R.L. KOZUB, TTU, S.D. PAIN, ORNL — Transfer reactions in inverse kinematics with radioactive ion beams are needed to provide nuclear structure information far from stability to aid in the development of nuclear models and in the understanding of astrophysical processes. Highly granular, low threshold detector arrays are needed to perform such experiments. The SuperORRUBA (Oak Ridge Rutgers University Barrel Array) was created to measure lower threshold reactions with better energy resolution than the original ORRUBA detectors. The new array consists of 18 silicon detectors, each with a 64 non-resistive strip front side and a 4 non-resistive strip back side. To collect the data from these 1224 channels, the ASICs (Application-Specific Integrated Circuits) are used for timing, triggering, shaping, and digitizing the signals, with each chip handling 32 channels. Utilizing the ASICs system and a triple-alpha source, SuperORRUBA detectors were tested to ensure proper function. In addition, all preamps and ASICs elements were tested. The depletion voltage of each detector was found, and the detectors were tested for any shift in gain over time. Finally, issues with crosstalk causing poor resolution on particular channels were investigated. A detailed description of the system and the test results will be presented.

<sup>1</sup>Research supported by the USDOE.

Raymond Kozub  
Tennessee Technological University

Date submitted: 03 Aug 2012

Electronic form version 1.4