Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Experimental techniques to use the (d,n) reaction for spectroscopy of low-lying proton-resonances SEAN KUVIN, INGO WIEDENHÖVER, LAGY T. BABY, JESSICA BAKER, DANIEL SANTIAGO, Florida State University, GEORGIOS PERDIKAKIS, National Superconducting Cyclotron Laboratory, DENNIS GAY, IMEH EBONG, University of North Florida
— Studies of rp-process nucleosynthesis in stellar explosions show that establishing the lowest $l = 0$ and $l = 1$ resonances is the most important step to determine reaction rates in the astrophysical rp–process path. At the RESOLUT facility, we have used the (d, n) reaction to populate the lowest p– resonances in ^{26}Si, and demonstrated the usefulness of this approach to populate the resonances of astrophysical interest [1]. In order to establish the (d, n) reaction as a standard technique for the spectroscopy of astrophysical resonances, we have developed a compact setup of low-energy Neutron-detectors, ResoNEUT and tested it with the stable beam reaction ^{12}C(d, n)^{13}N in inverse kinematics. Most recently, the detectors were included in a study of the radioactive beam reaction ^{17}F(d, n)^{18}Ne in inverse kinematics. Performance data from these experiments will be presented.

[1] P.N. Peplowski *et al.* Phys.Rev.**C 79**, 032801 (2009)

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Date submitted: 10 Jan 2014 Electronic form version 1.4