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Spectroscopy of Low-Lying Proton-Resonances using the (d, n) Reaction in Inverse Kinematics[1] INGO WIEDENHOEVER, LAGY T. BABY, SEAN KUVIN, JESSICA BAKER, Florida State University, JEFF BLACKMON, CATHERINE DEIBEL, KEVIN MACON, Louisiana State University, DENNIS GAY, KAYLA COLBERT, NATHAN QUAILS, University of North Florida, FLORIDA STATE UNIVERSITY TEAM, LOUISIANA STATE UNIVERSITY TEAM, UNIVERSITY OF NORTH FLORIDA TEAM — 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. 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. At the RESOLUT in-flight radioactive beam facility, we have used the new detector system to investigate the $l = 0$ and $l = 1$ resonance spectrum in ^{18}Ne and ^{26}Si. Results from these experiments and the implications on proton-induced nucleosynthesis rates will be discussed.

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