

Abstract Submitted
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Low-threshold neutron detection for proton-transfer reactions with VANDLE¹ WILLIAM PETERS, Oak Ridge Associated Universities, R. GRZYWACZ, M. MADURGA, S. PAULAUSKAS, U. Tenn., J.A. CIZEWSKI, M.E. HOWARD, P.D. O'MALLEY, B. MANNING, E. MERINO, Rutgers, T.N. MASSEY, C. BRUNE, Ohio U., F. SARAZIN, S. ILYUSKIN, D. WALTER, Col. Sch. of Mines, J. BLACKMON, Louisiana St. U., D.W. BARDAYAN, Oak Ridge Nat. Lab, I. SPASSOVA, C. MATEI, O.R.A.U. — Proton-transfer studies with radioactive beams are a useful tool for constraining astrophysical proton-capture rates and probing the single-particle structure of exotic nuclei. Measurements from (d,n) reactions on radioactive beams require an efficient large-area neutron detector array. The Versatile Array of Neutron Detectors at Low Energy (VANDLE) is being developed at ORNL for both (d,n) and beta-delayed neutron spectroscopy measurements. Digital electronics and optimized materials make VANDLE sensitive to neutron-proton scattering for neutrons above 100 keV, and also to elastically scattered carbon from neutrons above 1 MeV. This carbon sensitivity supplements the detection efficiency at those energies. Measured efficiencies from an $^{27}\text{Al}(d,n)$ study at Ohio University and from a ^{252}Cf source will be presented, along with plans and simulated responses for (d,n) measurements of astrophysically important proton-capture reactions.

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