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Validation of (\mathbf{n},γ) Surrogate Reactions: ⁹⁵Mo $(\mathbf{d},\mathbf{p}\gamma)$ Studies A. RATKIEWICZ, J.A. CIZEWSKI, S. BURCHER, M.E. HOWARD, B. MANNING, S. RICE, Rutgers University, C. SHAND, Rutgers University and University of Surrey, J.T. BURKE, R.J. CASPERSON, N. SCIELZO, LLNL, R.A.E. AUSTIN, St. Marys, R.O. HUGHES, T.J. ROSS, Univ. Richmond, M. MCCLESKY, TAMU, W.A. PETERS, ORAU — The importance of neutron capture on exotic nuclei to nucleosynthesis and applications of nuclear physics has been the subject of much recent discussion. Due to the difficulty of performing direct measurements of the (n,γ) reaction with exotic nuclei, the $(d,p\gamma)$ reaction was proposed as a surrogate reaction for (n,γ) . The $(d,p\gamma)$ reaction at low energies is a promising surrogate for neutron capture, as both reactions transfer relatively little angular momentum to the system. We have initiated a campaign to validate $(d,p\gamma)$ as a surrogate for neutron capture using ⁹⁵Mo as a target and measuring the intensity of transitions from states in ⁹⁶Mo populated in the ⁹⁵Mo(d,p γ) reaction. We present preliminary results from measurements conducted with the STARLiTe detector system at TAMU and discuss the status of the program to validate the $(d,p\gamma)$ reaction in normal and inverse kinematics as a surrogate for neutron capture. This work is supported in part by the U.S. D.O.E.

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