

Abstract Submitted  
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**Benchmarking  $(d, p\gamma)$  as surrogate reaction for  $(n, \gamma)$** <sup>1</sup> R. HATARIK, J.A. CIZEWSKI, K. JONES, S.D. PAIN, T. SWAN, Rutgers University, D.W. BAR-DAYAN, J.C. BLACKMON, Oak Ridge National Laboratory, L.A. BERNSTEIN, J.T. BURKE, F.S. DIETRICH, J.E. ESCHER, M.S. JOHNSON, Lawrence Livermore Natl Laboratory, R. KOZUB, Tennessee Tech University, A. KRONENBERG, Oak Ridge Associated Universities — Neutron capture cross sections on unstable nuclei are important for many applications in nuclear structure and astrophysics. Measuring these cross sections directly is a major challenge and often impossible. In the surrogate reaction technique a desired cross section can be extracted by measuring a different (surrogate) reaction that produces the same compound nucleus. In contrast to neutron capture, a neutron transfer cross section can be measured in inverse kinematics, which allows to measurements of cross sections on short lived-species. To test the feasibility of using a  $(d, p\gamma)$  reaction as a surrogate for  $(n, \gamma)$ , <sup>143</sup>Nd and <sup>145</sup>Nd have been chosen. The goal of this benchmark experiment is to reproduce the known neutron capture cross sections ratio of these isotopes.

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