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Benchmarking a surrogate reaction for neutron capture using 171,173 Yb $(d, p\gamma)^1$ R. HATARIK, J.A. CIZEWSKI, P.D. O'MALLEY, T. SWAN, Rutgers University, L.A. BERNSTEIN, J.T. BURKE, Lawrence Livermore National Laboratory, J. GIBELIN, L. PHAIR, Lawrence Berkeley National Laboratory — The surrogate reaction technique is an indirect way to determine cross sections by measuring a reaction that proceeds through the same compound nucleus. A neutron transfer reaction, such as (d, p) has the advantage over a direct (n, γ) measurement since it can be measured in inverse kinematics. To test the feasibility of using a $(d, p\gamma)$ reaction as a surrogate for neutron capture, a benchmark experiment has been carried out with the goal to reproduce the known [1] neutron capture cross section ratio of 171 Yb and 173 Yb. The 171,173 Yb $(d, p\gamma)$ reactions were measured using the Si detector array STARS and coincident γ -rays were detected using 6 Ge Clover detectors (LiBerACE). Preliminary results comparing surrogate ratio with the measured (n, γ) cross section will be presented.

[1] K. Wisshak et al, Phys. Rev. C **61**, (2000) 065801.

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Robert Hatarik Rutgers University

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