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Testing the Absolute Surrogate Technique for Astrophysics[1] D.L. BLEUEL, R.M. CLARK, P. FALLON, J.D. GIBELIN, I-Y. LEE, A.O. MACCHIAVELLI, M.A. MCMAHAN, L. PHAIR, E. RODRIGUEZ-VIEITEZ, M. WIEDEKING, Lawrence Berkeley National Laboratory, L.A. BERNSTEIN, J.T. BURKE, R.D. HOFFMAN, B.F. LYLES, E.B. NORMAN, Lawrence Livermore National Laboratory — Neutron-induced reaction cross-sections on unstable nuclei are difficult to impossible to measure. However many of these reactions are of central importance to the understanding of stellar nucleosynthesis and the interpretation of radiochemical data from nuclear tests. In this talk we will present results from an experiment designed to "benchmark" the use of the absolute probability surrogate method to determine (n,xnγ) cross sections. Furthermore, ^{157}Gd(^{3}He,αxnγ) probabilities will be compared to ^{155}Gd(n,xnγ) cross sections calculated using the STAPRE reaction model. The ^{157}Gd(^{3}He,^{3}He/α) reaction was performed at the 88-inch Cyclotron at Lawrence Berkeley National Laboratory, as a surrogate for ^{155}Gd(n,γ), ^{154}Gd(n,2nγ), and ^{154}Gd(n,n$'\gamma$) reactions. In conjunction with a future-planned ^{155}Gd(^{3}He,α) experiment, the ^{153}Gd(n,γ) cross section, an important s-process branch point reaction, will be determined through use of the ratio method.

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