Abstract Submitted
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Validation of (n,gamma) surrogate methods and the 95Mo(n,gamma) reaction[1] J.A. CIZEWSKI, A.S. ADEKOLA, M.E. HOWARD, B. MANNING, A. RATKIEWICZ, Rutgers, A.J. COUTURE, M. DEVLIN, N. FOTIADES, R.O. NELSON, J.M. O'DONNELL, LANL, W.A. PETERS, ORAU, J.T. BURKE, J.E. ESCHER, R. HATARIK, N.D. SCIELZO, LLNL — Neutron capture on unstable isotopes is important for the synthesis of heavy elements through both the r and s processes and so for nuclear energy and stockpile stewardship science. However, it is difficult to measure these cross sections directly with neutrons on targets that live less than about 100 days. Therefore, there has been a concerted effort by many groups [J.E. Escher RMP 84, 353 (2012) and references therein] to develop a validated surrogate reaction for neutron capture, a reaction that predominantly occurs at relatively low neutron energies where the angular momentum dependence needs to be taken into account. Many of the surrogate approaches use partial cross sections of discrete low-lying gamma-ray transitions to deduce the decay of the compound nucleus. Yet there have been very few measurements of the intensity of these discrete transitions in (n,g) as a function of neutron energy up to 200 keV. As part of the program to validate (d,pg) as a surrogate for neutron capture, we have recently measured the intensity of yrast transitions in 96Mo populated by the 95Mo(n,g) reaction with a small array of HPGe detectors on FP12 at the Lujan Center of LANSCE. Preliminary results of these measurements and the status of the (d,pg) validation program with 95Mo targets will be presented.

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