Abstract Submitted
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Validating a surrogate for neutron capture on short-lived nuclei: intensities of discrete transitions as a function of neutron energy[1] J.A. CIZEWSKI, A. ADEKOLA, S. BURCHER, M.E. HOWARD, B. MANNING, A. RATKIEWICZ, C. SHAND, Rutgers, A.J. COUTURE, M. DEVLIN, N. FOTIADES, M. JANDEL, R.O. NELSON, J.M. O'DONNELL, D.J. VIEIRA, LANL, J.T. BURKE, J.E. ESCHER, R. HATARIK, N.D. SCIELZO, S.A. SHEETS, LLNL, W.A. PETERS, ORAU, S. ILYUSHKIN, P.D. O'MALLEY, Mines, K. KOEHLER, WMU — Neutron capture is responsible for the synthesis of most of the elements heavier than iron, with about half produced in the rapid neutron capture process that takes place far from stability. Understanding neutron capture rates on short-lived nuclei requires a valid surrogate measurement that uses radioactive ion beams on light targets with gamma rays and light reaction products measured in coincidence. Much of the surrogate reaction efforts [1] have used the high-intensity discrete gamma rays at the bottom of the cascade to deduce the neutron-induced cross sections. However, there is little information on how the intensities of discrete gamma rays vary as a function of neutron energy in neutron capture. We have recently measured the 95Mo(n,γ) reaction at LANSCE to obtain the pattern of discrete transition intensities as a function of neutron energy. This is part of the larger effort to validate the (d,pγ) reaction as a surrogate for neutron capture. Preliminary results will be presented.

[1] J.E. Escher et al., Rev. Mod. Phys. 84, 353 (2012).

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