

Abstract Submitted
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Partial Cross-Sections of $^{140}\text{Ce}(n,2n)^{139}\text{Ce}$ Reaction¹ C.T. ANGELL, B. FALLIN, A. HUTCHESON, H.J. KARWOWSKI, J.H. KELLEY, A.P. TONCHEV, W. TORNOW, UNC Chapel Hill, NC State U., Duke U. and Triangle Universities Nuclear Laboratory — The excitation function for the $^{140}\text{Ce}(n,2n)^{139}\text{Ce}$ reaction has been studied in the TUNL Shielded Neutron Source area. A pulsed and quasi-monoenergetic neutron beam was produced via the D(d,n) reaction ($\Delta E/E=3-5\%$) with energies of 12, 13.3, 14.5, and 16 MeV with a beam flux of $\sim 10^4$ n/(s*cm)². The target consisted of a mixture of natural Ce and Fe. Two clover and two planar HPGe detectors were used to make in-beam measurements of the γ -ray cascade de-exciting ^{139}Ce . The partial cross sections were normalized to the 847 keV transition in ^{56}Fe . Statistical model calculations using code EMPIRE will be compared with the present data as well as with the previously obtained [1] transition amplitudes for the $^{140}\text{Ce}(\gamma,n)^{139}\text{Ce}$ reaction.

[1] C.T.Angell et al. CGS 12. Notre Dame, IN, 2005, p. 363.

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