

Abstract Submitted
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A New Method for Identifying Nuclear Isotopes Based Upon Polarized (γ, n) Asymmetries¹ S. STAVE, M.W. AHMED, N. BROWN, S.S. HENSHAW, B.A. PERDUE, P.-N. SEO, H.R. WELLER, Duke U/TUNL, P.P. MARTEL, A. TEYMURAZYAN, UMass, G. WARREN, PNNL — Linearly polarized gamma rays between neutron threshold and 20 MeV can be a powerful tool for the interrogation of materials. In addition to their ability to penetrate shielding, they also induce the emission of several MeV neutrons. The ratio of neutron yields parallel and perpendicular to the plane of polarization as a function of outgoing neutron energy can provide a unique signature of isotopes. The photo-neutron yield asymmetries on ²³⁸U using linearly polarized photons have been measured at gamma-ray energies of 10 and 15 MeV using the High Intensity Gamma-ray Source (HI γ S). Additional targets included Pb, Bi and Fe. The results from these different targets will be compared to one another and to a calculated energy averaged result based upon previous unpolarized measurements and the assumption of pure E1 absorption.

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