

Abstract Submitted
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Precise Determination of Total Absolute Gamma Ray Intensity at HI γ S S. STAVE, M.W. AHMED, M.A. BLACKSTON, M.D. BUSCH, M. EMAMIAN, S.S. HENSHAW, C.R. HOWELL, J. LI, S. MIKHAILOV, B.A. PERDUE, G. SWIFT, H.R. WELLER, Y.K. WU, Duke U. & TUNL — Precision determination of cross sections requires precise knowledge of the incident γ -ray intensity. For this purpose, six precision machined copper attenuators have been installed in the beamline of the High Intensity Gamma Source (HI γ S) located on the Duke University campus. Each of the attenuators is individually mounted and controlled remotely. To decrease background, the attenuator system is located near the exit of the storage ring about 50 meters from the location of the target. The Cu attenuation coefficients were determined for several γ -ray energies between 2.3 MeV and 40 MeV and then the attenuated beam intensity was measured in a 10x14 inch NaI detector. Different combinations of the attenuators were used to test their effect on the γ -ray beam looking for differences in counts and resolution. Then the total, unattenuated intensity was calculated using the deadtime corrected integrated peak counts from the NaI along with the measured Cu attenuation coefficients. The results for attenuation coefficients and total intensity are in good agreement with existing attenuation data, intensity calculations and known cross sections. A detailed analysis of the uncertainties in the measured intensities will be presented along with a description of the system.

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