

Abstract Submitted
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BrilLanCe detector energy resolution characterization at HI γ S¹

N. BROWN, M.W. AHMED, S. STAVE, S.S. HENSHAW, B.A. PERDUE, P.-N. SEO, H.R. WELLER, Duke U/TUNL, P.P. MARTEL, A. TEYMURAZYAN, UMass, F. QUARATI, ESA/ESTEC — The High Intensity γ -ray source (HI γ S) produced a variable γ -ray beam in the energy range of 2.5 to 15.5 MeV with an energy resolution of 50-100 keV. The γ -ray spectra from several BrilLanCe detectors (manufactured by Saint-Gobain Ceramics and Plastics, Inc.) were collected over this range of energy. The beam energy resolution was monitored throughout the experiment using a High Purity Germanium (HPGe) detector, running in parallel. The energy resolution of the γ -ray beam was obtained using a Gaussian fit to deconvoluted HPGe data. Gaussian fits to the BrilLanCe detector spectra were then corrected for the beam energy spread to obtain the detector resolution. A 4" (diameter) x 6" (long) LaCl₃Ce detector, a 3" x 3" LaBr₃Ce detector and a 2" x 2" LaBr₃Ce detector are characterized in the present study. The energy resolution of each detector will be reported as a function of incident γ -ray energy from 2.5 to 15.5 MeV, and the response functions will be compared to spectra obtained with HPGe and NaI detectors.

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