

Abstract Submitted  
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**Nuclear and Nucleon Compton Scattering at the High Intensity Gamma Ray Source (HI $\gamma$ S) and Commissioning of the HI $\gamma$ S NaI Detector Array (HINDA)<sup>1</sup>** W. FREDERICK, Northwest Missouri State University, M.W. AHMED, H.R. WELLER, Duke University, Triangle Universities Nuclear Laboratory, TUNL CAPTURE GROUP TEAM — The availability of a high intensity, nearly monochromatic, linearly or circularly polarized gamma ray beam at the Duke Free Electron Laboratory has set the stage for unprecedented precision measurements of the electric, magnetic, and spin polarizabilities of the neutron. These measurements will be performed by Compton scattering polarized gamma rays from polarized proton, deuteron, and <sup>3</sup>He targets. In order to perform these measurements, a geometrically flexible, highly efficient NaI detector array with a large photon acceptance, dubbed HINDA, is being constructed. The HINDA detectors will be contained in 2" thick segmented NaI anti-coincidence shields, in order to produce high resolution background free spectra. This research lays the foundation for HINDA's assembly. The purpose of this research was to maximize the energy resolution of the HINDA detectors utilizing an AmBe source and to establish an identification and record system to facilitate its assembly.

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