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Elastic Compton Scattering from Carbon KASEY LEWIS, GERALD FELDMAN, George Washington University, COMPTON@MAX-LAB COLLABORATION — The elastic Compton scattering cross section for carbon has been measured using tagged photons at the MAX-Lab facility in Lund, Sweden. To produce the photons, an electron beam impinged on an aluminum foil – the electrons radiated via bremsstrahlung and then entered a magnetic spectrometer which deflected them onto a plastic scintillator array in the spectrometer focal plane. The produced photons (E_γ = 95-115 MeV) scattered from a graphite block and were detected at 3 angles ($\theta_\gamma = 60^\circ, 120^\circ, 150^\circ$) by high-resolution large-volume NaI detectors. Using timing information from the focal-plane scintillators, coincidences between converted electrons and scattered photons were identified, thereby "tagging" the energy of the incident photons. The elastic Compton peak was then observed in the energy spectrum of the NaI detectors. After subtracting random backgrounds due to cosmic rays and untagged photons, the resulting energy spectrum showed a clear peak sitting on a low-energy background. Accounting for this background with an exponential fit, the integral of the peak yielded the number of scattered photons in each NaI. The absolute cross section was determined from these yields using information about the photon beam flux, the target thickness and the detector solid angles. These data for the carbon cross section will be presented, and the energy and angle dependencies will be discussed.

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