Abstract Submitted
for the APR10 Meeting of
The American Physical Society

**Elastic Photon Scattering from $^{12}$C Nuclei** JOHN CAPONE, GERALD FELDMAN, The George Washington University, COMPTON@MAX-LAB COLLABORATION — Data were collected at MAX-lab in Lund, Sweden from tagged photons ($E_\gamma = 82 - 116$ MeV) which were elastically scattered from a graphite target and detected by three large-volume NaI(Tl) detectors. Scattered events were analyzed to determine the cross sections of these interactions at 60°, 120°, and 150° relative to the beam axis. The elastic Compton scattering peak was identified by using energy and timing information from the NaI detectors and the tagger focal plane. A time window on "true" coincidences between the NaI detectors and tagger detectors was used to generate an energy spectrum; a second time window outside the "true" window was used to generate an energy spectrum of "random" events, which was subtracted from the "true" spectrum. The residual background was fit using a second degree polynomial to determine the integral of the elastic scattering peak. Uncertainties in the yield were carefully determined by improving the propagation of statistical errors in the analysis procedure. As a final step, a Monte Carlo simulation was run using GEANT4 to determine the detector response functions and efficiencies, the yield corrections for photon absorption in the target, and the effects of detector solid angles and finite target size. The preliminary results for the differential cross section of Compton scattering from $^{12}$C will be compared to published data as a function of energy and angle.

John Capone
The George Washington University

Date submitted: 26 Oct 2009 Electronic form version 1.4