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Compton Scattering and the Nucleon Polarizabilities in the A2 Collaboration at MAMI[1] EVANGELINE DOWNIE, The George Washington University, MAMI A2 COLLABORATION — There has been an upsurge in interest in Compton Scattering experiments as a means to understand the internal structure and dynamics of the nucleon. The new PDG value of β, the proton magnetic polarizability, changed noticeably, with no new data, simply new theoretical treatment of the existing data set. This indicates that the existing data is insufficient to constrain our extraction of these fundamental constants, which are important in areas of physics such as the proton radius determination, and neutron star physics. In the A2 Collaboration of the Institut fuer Kernphysik in Mainz, we use the MAMI accelerator with the Glasgow Mainz Photon Tagger to produce a quasi-monoenergetic, linearly polarized photon beam and apply it to a liquid hydrogen target. The reaction products detected in the Crystal Ball and TAPS large acceptance spectrometer array allow clean separation of the low-cross-section hadronic Compton scattering process. In so doing, we have produced the firs t measurement of the photon asymmetry in Compton scattering on the proton below the pion production threshold. Preliminary results show a demonstrable effect due to the polarizabilities. We will cover the experimental results and future prospects of the A2 polarizability program.

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