Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Measurement of the Proton Scalar Polarizabilities at MAMI VAHE SOKHOYAN, The George Washington University, A2 COLLABORATION — The scalar polarizabilities, α_{E1} and β_{M1}, as fundamental properties of the nucleon, play a crucial role not only in our understanding of the nucleon, but also in other areas such as atomic physics, where they provide e.g. corrections to the Lamb Shift. To date, these observables were extracted in parallel from unpolarized cross-sections of Compton scattering on the proton. At the MAMI accelerator facility in Mainz, Germany, the proton polarizabilities were measured using a linearly polarized photon beam for the first time in a photon energy range from 110 to 150 MeV. The photon beam, produced in the Glasgow-Mainz Photon Tagger, impinged on a liquid Hydrogen target and the reaction products were detected in the Crystal Ball and TAPS 4π spectrometer setup. The beam asymmetry Σ_3 was measured for the first time below pion threshold. This measurement will allow the first independent extraction of the observables α_{E1} and β_{M1}. The current status of the Σ_3 measurement as function of incoming photon energy and polar angle of the outgoing photon will be presented and the α_{E1} and β_{M1} extraction will be discussed.

Vahe Sokhoyan
The George Washington University

Date submitted: 28 Jun 2013 Electronic form version 1.4