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Using Polarized Compton Scattering to Extract Proton Spin Polarizabilities PHILIPPE MARTEL, Institut fuer Kernphysik, Johannes Gutenberg-Universitaet Mainz, MAMI A2 COLLABORATION — The MAMI A2 collaboration has recently taken data on the Compton scattering beam-target asymmetry Σ_{2z} using a circularly polarized photon beam with a longitudinally polarized target. These data accompany previous A2 data using a transversely polarized target to obtain Σ_{2x} and a linearly polarized photon beam on an unpolarized target to obtain Σ_3 . The goal of this Compton scattering program at A2 is the extraction of the proton spin polarizabilities, parameters which describe the response of the proton spin to a scattering photon. Third order terms in the energy expansion of the Compton scattering amplitude, the spin polarizabilities provide a valuable test of nucleon structure, dispersion and effective field theories, and lattice calculations. While values have been determined for two linear combinations of the spin polarizabilities, their independent extraction requires the use of such complimentary data sets on different Compton scattering observables. These data were taken with the MAMI A2 Bremsstrahlung beam, either a frozen-spin butanol or an unpolarized hydrogen target, and the Crystal Ball and TAPS detectors. We will report on the Σ_{2x} measurements, supplemented by preliminary Σ_3 and Σ_{2z} measurements.

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