Abstract Submitted
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Proton Spin Polarizabilities with Polarized Compton Scattering at MAMI[1] DILLI PAUDYAL, University of Regina, A2 COLLABORATION[2] — The nucleon polarizabilities are fundamental structure observables, which describe its response to an applied electric or magnetic field. While the electric and magnetic scalar polarizabilities of the nucleon have been measured, little effort has been made to extract the spin dependent polarizabilities. These leading order spin dependent terms of the nucleon polarizabilities, $\gamma_{E_1E_1}, \gamma_{M_1M_1}, \gamma_{M_1E_2}$ and $\gamma_{E_1M_2}$ describe the spin response of a proton to electric and magnetic dipole and quadrupole interactions. We plan to extract these spin polarizabilities of the proton using real polarised Compton scattering off the proton at the MAMI tagged photon facility in Mainz, Germany. This requires precise measurement of the single and double polarization observables which are sensitive to these polarizabilities. The double polarization observables $\sum_{2x}$, $\sum_{2z}$ are measured via a circulary polarized photon beam and a transversely and a linearly polarized butanol target in the resonance region ($E = 250 - 310$ MeV). This presentation will be focused on the status and analyis of an experiment completed at MAMI in 2014 and 2015 for the measurement of $\sum_{2z}$ at different energies and angles.

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[2]We work with the Crystal Ball experiment which was installed at the A2 tagged photon facility at the Mainz Microtron in Mainz, Germany in 2003. Various real Compton scattering experiments have been performed using polarized and unpolarized experiment

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