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High Precision Compton Polarimetry at ELSA

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At the 3.2 GeV Electron Stretcher Facility ELSA, nucleon resonances are studied by performing beam-target double polarization experiments. For scattering experiments with circularly polarized photons, the stored electron beam's polarization needs to be optimized. As of now, this polarization can only be estimated via Moeller polarimetry by using the extracted electron beam. Continuous and precise Compton polarimetry in the stretcher ring would not only result in a faster optimization procedure. It would also allow for simultaneous scattering experiments with circularly and linearly polarized photons.

For this reason, a Compton polarimeter is currently being installed. The planned polarimeter setup, first measurements with its components and results from the numerical simulation of the Compton process will be presented. The overall expected performance of the polarimeter will be discussed.

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