

Abstract Submitted
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Compton Polarimetry for the PREX-II Experiment¹ ADAM ZEC,
University of Virginia, PREX-II COLLABORATION — The Jefferson Lab Continuous Electron Beam Accelerator Facility's experimental Hall A employs a Compton polarimeter to measure incoming beam polarization for parity violating electron scattering experiments. The polarimeter operates by amplifying green laser light in a Fabry-Perot cavity which then Compton scatters off the incoming electron beam. The scattered photons are then passed through a scintillating GSO (Gadolinium Oxyorthosilicate) crystal with a single photomultiplier tube. The polarization measurement is conducted by taking advantage of the helicity-dependence of Compton scattering. By measuring the integrated signal from photons scattered while the beam is in different helicity states, we generate a differential asymmetry between these states, which then yields information about the electron beam's longitudinal polarization. Measuring the asymmetry requires a robust background subtraction of helicity-correlated asymmetry as well as identifying the Compton edge from observing spectra. The beam polarization is an important component needed to determine the parity-violating asymmetry for the PREX-II experiment. This talk will focus on the analysis of the integrating photon detector data.

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