

Abstract Submitted
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Improvements to a Compton Polarimeter¹ BRANDON CAVNESS, Angelo State University, DAVE GASKELL, Jefferson Laboratory, MARK DALTON, Virginia State University — The Jefferson Lab in Newport News, Virginia, uses a polarized beam of electrons to perform research on the substructure of nuclei and nucleons. Jefferson Lab uses a relatively new Compton polarimeter to continuously measure the polarization of the electron beam delivered by the Continuous Electron Beam Accelerator Facility (CEBAF) accelerator. The Compton polarimeter determines beam polarization by colliding a high-power laser with the electron beam and measuring the scattered photons and electrons. The Compton polarimeter utilizes this asymmetry of Compton scattering rates to measure polarization to (+/-)1% every few hours. For an accurate measurement, the laser polarization and the position of the scattered photon cone must be well known. The focus of this project was to expand the instrumentation to monitor and control the Compton polarimeter with the intent of improving the electron beam polarization measurement. The individual components of the system are all working as intended, but the system as a whole will not be tested until beam operations resume. An improved measurement of the electron beam polarization will reduce the uncertainty of future experiments.

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