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Sub-1% Electron Beam Polarimetry in Hall C at Jefferson Lab
DAVID GASKELL, Jefferson Lab — The electron beam polarization in experimental Hall C at Jefferson Lab has been measured with a total uncertainty of dP/P <0.7% at a beam energy of $\approx$ 1 GeV. This was accomplished using two, high-precision electron beam polarimeters. The first device makes use of Møller scattering from atomic electrons polarized in a pure iron foil driven to magnetic saturation. The second uses polarized electron-photon (Compton) scattering from laser light stored in a low gain Fabry-Perot cavity. Data from both devices, as well as a direct comparison of the two will be shown. The polarization data that will be described were taken as part of the Q_{weak} experiment in Hall C, which aimed to measure the polarization to better than 1%. Future experiments at Jefferson Lab will require knowledge of the polarization to 0.4% or better. In this talk, I will describe the lessons learned during the Q_{weak} running and discuss prospects for improving the beam polarimetry precision to the 0.4% level.

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