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Direct Comparison of Møller and Compton Polarimeters in Hall C at Jefferson Lab[1] DAVE GASKELL, Jefferson Lab — Knowledge of the electron beam polarization is one of the most important systematic uncertainties in precision, parity-violating electron scattering experiments with next generation experiments aiming to measure the electron beam polarization to better than 0.5%. At high energies, the most typical polarimetry techniques are Møller (polarized electron-electron) and Compton (polarized electron-photon) scattering. The use of two techniques with different systematic uncertainties provides confidence in the extracted beam polarization. Direct comparisons of the two polarimetry techniques are challenging in that Compton polarimeters typically desire maximum beam flux (high beam currents) while Møller polarimeters need to limit the beam current to avoid depolarization effects in the target. We have performed a direct comparison of the Møller and Compton polarimeters in experimental Hall C at Jefferson Lab. This test is unique in that the data were taken sequentially under identical beam conditions at $\approx$4.5 μA. We found excellent agreement between the Hall C Møller and Compton polarimeters. Combined with high-current Compton data, we were also able to limit the beam current dependence of the beam polarization to 1% or less up to a beam current of 180 μA.

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