Abstract Submitted
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Atomic Hydrogen Polarimetry for Precision Electroweak Experiments[1] WOUTER DECONINCK, College of William and Mary — In parity-violating electron scattering experiments the measurement of the electron beam polarization using Compton or Møller polarimetry is frequently the dominant experimental systematic uncertainty (*e.g.* HAPPEx-III, PV-DIS, PREx, and Q_{Weak} at Jefferson Lab, and PVA4 at the University of Mainz). Future experiments, in particular the SoLID and MOLLER experiments at Jefferson Lab and the P2 experiment at the University of Mainz, will require electron beam polarimetry with a precision better than 0.5%. Improving Møller polarimetry with polarized iron foil targets to this level is challenging due to heating-induced target depolarization and the Levchuk effect. A new Møller polarimeter with polarized atomic hydrogen at 0.3 K trapped inside an internal target in a strong solenoidal magnetic field is being developed at the University of Mainz in collaboration with several US groups. This technique is not affected by the Levchuk effect and will allow for non-invasive, continuous polarization measurements. The depolarizing effect due to the ionization into single electrons and H^- or H_2^+ ions will be mitigated through a system of electrodes. I will present the atomic hydrogen polarimeter, and discuss in-beam tests at the University of Mainz.

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