

Abstract Submitted  
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**Development of a Hydrogen Møller Polarimeter for Precision Parity-Violating Electron Scattering**<sup>1</sup> VALERIE M. GRAY, College of William and Mary — Parity-violating electron scattering experiments allow for testing the Standard Model at low energy accelerators. Future parity-violating electron scattering experiments, like the P2 experiment at the Johannes Gutenberg University, Mainz, Germany, and the MOLLER and SoLID experiments at Jefferson Lab will measure observables predicted by the Standard Model to high precision. In order to make these measurements, we will need to determine the polarization of the electron beam to sub-percent precision. The present way of measuring the polarization, with Møller scattering in iron foils or using Compton laser backscattering, will not easily be able to reach this precision. The novel Hydrogen Møller Polarimeter presents a non-invasive way to measure the electron polarization by scattering the electron beam off of atomic hydrogen gas polarized in a 7 Tesla solenoidal magnetic trap. This apparatus is expected to be operational by 2016 in Mainz. Currently, simulations of the polarimeter are used to develop the detection system at College of William & Mary, while the hydrogen trap and superconducting solenoid magnet are being developed at the Johannes Gutenberg University, Mainz. I will discuss the progress of the design and development of this novel polarimeter system.

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