

Abstract Submitted  
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**Monte Carlo Studies of the Hall C Compton Polarimeter**<sup>1</sup> ERIK URBAN, Hendrix College — By measuring the scattering asymmetry observed between helicity states in polarized Compton scattering, the Hall C Compton polarimeter at Jefferson National Laboratory gives a precision measurement of the electron beam polarization, a requirement for most parity violation experiments. After updating a Monte Carlo simulation of the Compton polarimeter electron detector and adapting the corresponding analysis scripts, tests were performed to better understand the processes that influence the polarization measurement, assess the validity of the current analysis methods, and gauge the magnitude of various systematic sensitivities. The effects of processes such as secondary particle emission and trigger strictness are now understood more clearly, leading to better analysis methods. Additionally, several basic systematic sensitivities have been quantified, the largest to date estimated at  $\pm 0.55$  percent polarization. Once all the uncertainties associated with the Compton polarimeter have been determined, an overall systematic error can be assigned to the beam polarization measurement.

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