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Local Polarimetry for Proton Beams with the STAR Zero Degree Calorimeters DAVID GROSNICK, Valparaiso University, STAR COLLABORATION — A spin physics program using the STAR detector at RHIC is underway that investigates the spin structure of the proton using colliding polarized proton beams at $\sqrt{s} = 200$ GeV, and in the future at 500 GeV. The local polarimeter that uses the beam-beam counters currently works well at $\sqrt{s} = 200$ GeV, but its effectiveness at higher energies may be problematic since the \sqrt{s} dependence of the analyzing power is not known. Data at $\sqrt{s} = 200$ GeV using the Shower Maximum Detectors of the Zero Degree Calorimeters (ZDC) were analyzed to determine the feasibility of using the ZDCs as a second local polarimeter. A six sigma left-right physics asymmetry and an up-down physics asymmetry consistent with zero were measured from a small dedicated data sample with vertical beam polarizations. The physics asymmetry was also calculated as a function of azimuthal angle and displayed a sinusoidal pattern, as expected. These results demonstrate the capability of using the ZDCs as another local polarimeter for STAR at $\sqrt{s} = 200$ GeV, and the performance of both polarimeters will be measured at $\sqrt{s} = 500$ GeV.

David Grosnick
Valparaiso University

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