

Abstract Submitted
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Measurement of Single Target-Spin Asymmetry in Semi-Inclusive Pion Electroproduction on a Transversely Polarized ^3He Target XI-AOFENG ZHU, Duke University, HALLA-JLAB COLLABORATION — The study of transverse spin distributions and transverse spin phenomena is at the frontier of recent research activities to understand the nucleon spin structure and QCD. We plan to measure the target single spin asymmetry in the semi-inclusive deep-inelastic $\vec{n}(e, e'\pi^-)X$ and $\vec{n}(e, e'\pi^+)X$ reaction with a transversely polarized ^3He target as an effective polarized neutron target. The transverse single spin asymmetry on the “neutron” as a function of the Collins angle and Sivers angle will be studied in the x range of 0.13 to 0.41, providing a separation between the two competing mechanisms: the chiral-even Sivers effect and the chiral-odd Collins effect, a crucial step towards extracting the quark transversity distribution. It will be the first experiment on “neutron” transversity, complementary to the HERMES measurement on proton and the COMPASS measurement on deuteron, providing constraints on the transversity distributions and Sivers functions for both u-quark and d-quark in the valence quark region. The tentative schedule for this experiment is fall of 2007.

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