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Measurement of Single Target-Spin Asymmetry in Semi-Inclusive Charged Pion Electroproduction on a Transversely Polarized ^{3}He Target[1]

CHIRANJIB DUTTA, University of Kentucky, JEFFERSON LAB HALL A COLLABORATION — We measured the neutron target single spin asymmetry in the semi-inclusive deep inelastic $^3He^{\uparrow}(e, e'\pi^{\pm})X$ reaction using a transversely polarized ^{3}He target. The experiment acquired data in Hall A at Jefferson Lab using a 40 cm long polarized ^{3}He target and an electron beam of 5.9 GeV. This first measurement on neutron transversity focuses on the valence quark region, $x = 0.13 \sim 0.41$, at $Q^2 = 1.31 \sim 3.10$ (GeV/c)^2. Pions were detected in the left high-resolution spectrometer in coincidence with the scattered electrons detected by the BigBite spectrometer. The data from this experiment, when combined with world data, will provide constraints on the Transversity, Sivers distribution functions and Collins fragmentation functions of both u-quark and d-quark in the valence region. A brief summary of the ongoing analysis and preliminary results will be presented.

[1]Jefferson Lab Hall A Collaboration / Transversity Collaboration

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