Single Target-Spin Asymmetries in Inclusive Hadron Electroproduction Reaction Using a Transversely Polarized \(^3\)He Target

KALYAN ALLADA, Thomas Jefferson National Accelerator Facility, HALL-A E06-010 COLLABORATION — Single-spin asymmetries (SSAs) are an invaluable tool to study the transverse-spin and transverse-momentum structure of the hadron. First measurements of transverse SSA were performed in \(pp \rightarrow hX\) reactions in mid-70s followed by much more precise measurements from early 90s onwards. More recently transverse SSA were explored using semi-inclusive deep inelastic scattering (SIDIS) reactions using transversely polarized targets. A different type of reaction which is sensitive to transverse spin structure of nucleon, and experimentally least explored, is the inclusive hadron electroproduction on a transversely polarized nucleon (\(eN^\uparrow \rightarrow hX\)). We report the first measurement of such SSAs, measured using a transversely polarized \(^3\)He target and the 5.9 GeV electron beam at Jefferson Lab. The Hall-A high-resolution spectrometer was used to detect hadrons (\(\pi^\pm, K^\pm, p\)) which had an average hadron transverse momentum (\(p_T\)) of 0.64 GeV/c. In this talk we will present the preliminary results of this experiment.