Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Studies of spin-averaged SIDIS at Jefferson Lab PETER BOSTED, Jefferson Lab, HALL C MESON DUALITY COLLABORATION — Cross sections for semi-inclusive deep-inelastic electroproduction of positive and negative charged pions have been measured at Jefferson Lab from both proton and deuteron targets. The kinematic range spans $0.2 < x < 0.5$, $2 < Q^2 < 4$ GeV^2, $0.3 < z < 1$, transverse momentum $P_t^2 < 0.2$ GeV^2, and invariant mass of the residual system $1.1 < M_x < 2$ GeV. The data are in good agreement with models fit to higher invariant mass data, which can be considered as a manifestation of quark-hadron duality. We find the azimuthal dependence to be small. Small but statistically significant differences in the ϕ-averaged P_t dependence for the four cases were found. In the context of a simple model, we fit the data for the initial transverse momentum width of u and d valence quarks and also the transverse momentum widths of favored and unfavored fragmentation functions. We find all four widths to be qualitatively similar and of order 0.05 to 0.15 GeV^2. There is good potential to improve on this technique with future data using 11 GeV electrons.

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Date submitted: 01 Jul 2009 Electronic form version 1.4