Abstract Submitted
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Charge Symmetry Violation in Quark Distributions using Semi-Inclusive Deep Inelastic Scattering[1] HEM BHATT, Mississippi State University — Charge symmetry is the invariance of the strong interactions during specific isospin rotation of 180 degrees which results to the exchange of up and down quarks, while simultaneously interchanging protons and neutrons. It has generally been assumed to be valid in most parton distribution fits. The violation of this symmetry arises due to the small mass difference between up and down quarks and the electromagnetic interactions. Although charge symmetry violation (CSV) is expected to be very small, the precision of the existing data can only constrain it to be <10%. Jefferson Lab Hall-C experiment E12-09-002 aims to place constraints on the degree of CSV in the valence quark distributions in the nucleon via semi-inclusive deep inelastic scattering. In this experiment, a 10.6 GeV electron beam was incident on a liquid deuterium target with the scattered electrons and charged pions detected in coincidence in the HMS and SHMS spectrometers respectively. This experiment will measure the ratios of charged pion cross-sections with high precision to extract and place limits on the charge symmetry violating parton distribution. The current status of the data analysis will be discussed in this talk.

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