

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Probing Charge Symmetry Violation in Quark Distributions using SIDIS¹ HEM BHATT, Mississippi State Univ — Charge symmetry has been universally assumed to be valid in all global fits of data to extract parton distribution functions. At the quark level, the violation of this symmetry arises due to the small mass difference between the up and the down quarks as well as the electromagnetic interaction between the quarks. Although the charge symmetry violation (CSV) is expected to be very small, the precision of the existing data can only constrain it to be $< \pm 10\%$. Jefferson Lab Hall-C experiment E12-09-002 was the first experiment that aimed to place the constraints on the degree of CSV in the valence quark distributions in the nucleon via semi-inclusive deep inelastic scattering (SIDIS). 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. We measure the ratios of charged pion cross-sections with high precision to extract and place limits on the charge symmetry violating parton distribution functions. Some preliminary results and the current progress in data analysis will be discussed in this talk.

¹U.S. DOE Grant Number: DE-FG02-07ER41528

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Date submitted: 25 Jun 2020

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