

Abstract Submitted
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Rosenbluth Separation of the pion electroproduction cross section from Hydrogen, Deuterium, Carbon and Copper targets¹ XIN QIAN, Duke University/ TUNL, BEN CLASIE, Massachusetts Institute of Technology, DIPANGKAR DUTTA, Duke University/ TUNL, HAIYAN GAO, Duke University/ TUNL, JLAB E01107 COLLABORATION — Pion electroproduction data was collected from six targets, including hydrogen, deuterium, carbon and copper, in Jefferson Lab experiment E01-107. The primary motivation of this experiment is to search for signatures of a phenomenon predicted by perturbative quantum chromodynamics (pQCD) known as Color Transparency (CT). In this experiment the nuclear transparency of pions is extracted by using the ratio of semi-exclusive pion electroproduction from nuclear targets to the same from a hydrogen target. This method relies on the assumption that the reaction mechanism of electropion production from hydrogen is similar to the quasi-free electropion production from nuclear targets. This assumption can be tested by performing a Longitudinal-Transverse (L-T) separation of the pion electroproduction cross section and comparing the separated cross sections from hydrogen to that from heavier targets. In order to perform an L-T separation, data were collected at forward and backward electron angles at fixed momentum transfer squared (Q^2), for $Q^2=2.15$ and $4.0 \text{ GeV}^2/c^2$, which were chosen to fall within the Q^2 range over which the nuclear transparency is extracted. The extracted longitudinal and transverse cross sections at the two Q^2 settings from hydrogen, deuterium, carbon and copper targets will be presented.

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