Studies of hadronization mechanisms in deep-inelastic scattering from nuclei using neutral pion electroproduction.

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Content:
Semi-inclusive DIS, Drell-Yan reactions and heavy-ion collisions each contribute different kinds of information to connect parton propagation with hadron formation. A unique feature of semi-inclusive DIS is its ability to investigate time-dependence of hadronization by embedding it in nuclei of increasing size. Such studies began more than a decade ago with the HERMES program and continue at Jefferson Lab. A series of measurements of semi-inclusive neutral pion electroproduction, presented here, have been performed on deuterium, carbon, iron and lead targets exposed to a 5.014 GeV electron beam. The data were collected using the CEBAF Large Acceptance Spectrometer at Jefferson Lab. The goal of the experiment was to measure attenuation of hadrons in a medium of varying size normalized to deuterium. We report on preliminary three-fold multiplicity ratios of neutral pions in (ν, Q^{2}, z) and (Q^{2}, z, p_{T}^{2}) bins. Combined with extensive data on charged pion states, these data are providing new insights into hadronization mechanism.
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