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Coherent vector meson electroproduction off the deuteron
ATILLA GONENC, BRIAN RAUE, LAIRD KRAMER, Florida International University, CLAS COLLABORATION — QCD predicts Color Transparency (CT), which refers to nuclear medium becoming transparent to a small color neutral object produced in high momentum transfer reactions, due to reduced strong interaction. Despite several studies at BNL, SLAC, FNAL, DESY and Jefferson Lab, a definitive signal for CT still remains elusive. In this paper, we present the results of a new study at Jefferson Lab motivated by theoretical calculations that suggest fully exclusive measurement of coherent vector meson electroproduction off the deuteron is a favorable channel for studying CT. Vector meson production has a large cross section at high energies, and the deuteron is the best understood and simplest nuclear system. Exclusivity allows the production and propagation to be controlled separately by controlling Q^2 , l_f (formation length), l_c (coherence length) and t . This control is important as the rapid expansion of small objects increases their interaction probability and masks CT. The CT signal appears in a ratio of cross sections at high $-t$ (where rescattering is significant) to low $-t$ (where single nucleon reactions dominate).

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