Study of Λ Hyperon Fragmentation in Current and Target Regions using CLAS

Taya Chetry

Mississippi State University

June 27, 2019

On behalf of the CLAS Collaboration

Abstract

The color propagation and hadron production from hard interactions in nuclei have been extensively studied over the last few decades. These studies are related to one of the basic phenomena of quantum chromodynamics (QCD) dubbed as hadronization or fragmentation. In this process, an energetic struck quark transforms to color-neutral hadrons making it an effective probe of the confinement dynamics as well as the characteristic time-scales involved. This talk will report the first ever analysis of the semi-inclusive deep inelastic scattering of Λ hyperons in the current and target fragmentation regions using the 5 GeV Jefferson Lab CLAS (EG2) datasets. It will also emphasize the ongoing efforts to correct the extracted preliminary results of multiplicity ratios and transverse momentum broadening for the apparatus acceptance and radiative effects. The results of this baryon study combined with the other EG2 mesons channels will be instrumental in understanding the space-time evolution of hadrons at intermediate beam energies. Furthermore, the results will lay a strong foundation for the hadronization studies using the upgraded CLAS12 spectrometer and the 11 GeV Jefferson Lab electron beam.

This work is supported in part by the US DOE contract # DE-FG02-07ER41528.