

Abstract Submitted  
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**Determining the Reconstruction Efficiency  
of  $\Lambda^0$  Hyperons in CLAS12 at Jefferson Lab<sup>1</sup>** MATTHEW MCENEANEY,  
William Mary, ANSELM VOSSEN, Duke University —  $\Lambda^0$  hyperons can be pro-  
duced from hadronization of a struck quark in SIDIS processes. This is of interest as  
their polarization may be inferred from their self-analyzing weak decay. Thus, such  
polarized probes allow one to analyze the polarization of quarks in the proton and  
test fundamental aspects of QCD. The CLAS12 experiment at Jefferson Lab uses an  
11 GeV electron beam incident on a polarized or unpolarized target to study the be-  
havior of the strong force within the proton. In this study, we generated SIDIS events  
using a Lund Monte Carlo and simulated the response of the CLAS12 detector using  
GEANT4 with different toroidal magnet field strengths and configurations (either  
inbending or outbending). We then processed events using the CLAS12 reconstruc-  
tion framework to find the optimal configuration and maximize our reconstruction  
efficiency from the  $\Lambda^0 \rightarrow \pi^- + p^+$  decay channel. For  $\Lambda^0$  hyperons coming from a  
struck quark ( $x_{Feynman} > 0$ ), we obtained our best reconstruction efficiency in the  
outbending toroidal configuration. We will present the results of this study along  
with the implications on the statistical precision of a potential measurement of  $\Lambda^0$   
polarization using the data to be collected by CLAS12.

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