

$\vec{\gamma}d \rightarrow K^+\Lambda n$ through Helicity Asymmetries

Abstract Submitted
for the DNP11 Meeting of
The American Physical Society

Study of Rescattering Effects in ¹ WEIZHI XIONG, University of South Carolina, CLAS COLLABORATION — Here we present our experimental study of rescattering effects in the reaction $\vec{\gamma}d \rightarrow K^+\Lambda n$ through beam-helicity asymmetries. The nuclear reaction was initiated by circularly polarized photon beam on unpolarized liquid deuterium target. The data were collected with the CLAS detector at Jefferson Lab. The goal of this project is to identify kinematics at which final-state interactions are maximal. Our investigation is part of a larger program carried out at USC studying the hyperon-nucleon interaction through rescattering between the lambda (Λ) and the neutron in the deuteron. In order to determine beam-helicity asymmetries, we construct and study φ (azimuthal angle)-dependent asymmetry distributions. Since for the elementary process $\vec{\gamma}p \rightarrow K^+\Lambda$ the helicity asymmetry is zero, large asymmetries would indicate large rescattering effects in the final state. In this presentation we will show how we identify the outgoing particles and the reaction of interest, and will give very preliminary estimates for the beam-helicity asymmetry for various choices of polar and azimuthal angles.

¹This work is supported by the US National Science Foundation under grant PHY-0856010.

Weizhi Xiong
University of South Carolina

Date submitted: 28 Jul 2011

Electronic form version 1.4