$K_S\Lambda$ Photoproduction on the Neutron within the Resonance Region

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QCD-based and inspired models predict a plethora of N* states that decay through modes that heretofore have not been measured or precisely identified. These decay mechanisms give insight into the underlying symmetries of the excited-baryon states. There are competing models for the quark symmetries and dynamics ranging from preferentially paired-quark distributions to hybrid gluonic excitations. There are host of polarization observables afforded by using polarized electron and photon beams onto unpolarized and polarized neutrons and protons. Among these observables are the energy-dependent differential cross sections, which also give measure of the core mechanisms. In this paper, we report the first differential cross-sectional measurements of the $\gamma n \rightarrow K_S\Lambda$ reaction employing a circularly-polarized photon beam onto unpolarized LD_2. The energy of the photon beam ranged from 1.3 to 2.65 GeV, which spans from threshold to the resonance regimes. We observe an excess of cross section in the central cms region for photon energies of 2.2 to 2.4 GeV. We regard this work on the $K_S\Lambda$ energy-dependent differential cross section as the first necessary step in identifying the underlying physics in the resonance regime. The work will form the foundation for further studies in extracting the polarization observables for circularly- and linearly-polarized photons from our analyzed dataset, which was taken by the CLAS detector in Hall B of Jefferson Lab in 2007.