Photon Beam Asymmetry Measurement in Photoproduction Reaction $\gamma + p \to K^+\Sigma^0$ at $E_\gamma = 8.5$ GeV in GlueX

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We present measurements of the photon beam asymmetry Σ for the reaction $\gamma p \to K^+\Sigma^0(1193)$ using GlueX experiment in Jefferson Lab's Hall D. Data were collected using linearly polarized photon beam with energy range 8.2-8.8 GeV incident on a liquid hydrogen target. Asymmetries are measured as functions of Mandelstam variables t and u. These are first direct measurements of the photon beam asymmetry Σ in this exclusive reaction at high energies. In the t-channel, results show that the reaction is dominated by natural-parity exchange with $K^*(892)$ meson, as predicted by theoretical models. Results obtained for u-channel are consistent with intermediate baryon exchange mechanism predicted by theoretical models.