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Beam Asymmetry in γ p $\rightarrow \eta \Delta^+$ at GlueX

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Photoproduction mechanisms studied in the GlueX experiment allows the mapping of light mesons in unprecedented detail with particular interest in exotic meson candidates. This is achieved by impinging an 8.2-8.8 GeV linearly polarized photon beam on a liquid hydrogen target. The measurement of beam asymmetry Σ will help constrain quasi-particle t-channel exchange processes using Regge theory. Understanding the photoproduction exchange mechanisms is a crucial ingredient in establishing hybrid and exotic photoproduced light meson states. Σ is extracted from the azimuthal angular distribution between the meson production plane and the polarized photon beam. In particular, we will report results on the beam asymmetry measurements for η in the reaction γ p $\rightarrow \eta \Delta^+$. This reaction with a recoiling Δ^+ will allow for comparison and validation of theoretical calculations and provide additional validation of the η asymmetry with a recoiling proton. The different isospin of the Δ^+ imposes additional restrictions that further constrain allowed Regge exchanges.

Keyword-1

Beam asymmetry

Keyword-2

photoproduction experiment

Keyword-3

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