

Measurement of the Helicity Difference in $\gamma p \rightarrow p\pi^+\pi^-$ with CLAS at Jefferson Laboratory

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The study of the properties of baryon resonances can provide us with hints to help us understand the structure of non-perturbative QCD and the effect of a particular resonance on polarization observables. The investigation of double-pion photoproduction data is needed to discover properties of higher-lying excitation states at and above $W \approx 1.7$ GeV. Therefore, the analysis of the helicity difference in $\gamma p \rightarrow p\pi^+\pi^-$ will help us in our understanding of QCD.

The CLAS g9a (FROST) experiment, as part of the N^* spectroscopy program at Jefferson Laboratory, has accumulated photoproduction data using the linearly and circularly polarized photons incident on a longitudinally-polarized butanol target in the photon energy range 0.3 to 2.4 GeV. This CLAS frozen-spin experiment provides an important step toward a “complete” experiment for this reaction. In this contribution, the method to calculate the helicity difference for the reaction $\gamma p \rightarrow p\pi^+\pi^-$ will be described and preliminary results will be discussed.

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