Measurement of polarization observables in $\vec{\gamma}\vec{p} \to p\pi^+\pi^-$ using circular beam and longitudinal target polarization and the CLAS spectrometer at Jefferson Lab.

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The study of baryon resonances provides a deeper understanding of the strong interaction because the dynamics and relevant degrees of freedom hidden within them are reflected by the properties of the excited states of baryons. Higher-lying excited states at and above 1.9 GeV/c^2 are generally predicted to have strong couplings to the $\pi\pi N$ final states via $\pi\Delta$ or ρN intermediate states. Double-pion photoproduction is therefore important to investigate properties of high-mass resonances. The excited states of the nucleon are usually found as broadly overlapping resonances which may decay into a multitude of final states involving measons and baryons. Polarizations observables make it possible to isolate single resonances from these other interference terms. The CLAS g9a (FROST) experiment, as part of the $N^\star$ spectroscopy program at Jefferson Laboratory, has accumulated photoproduction data using circularly-polarized photons incident on a longitudinally-polarized butanol target in the photon energy range 0.3 to 2.4 GeV. In this contribution, the extraction of the beam-helicity asymmetry $\mathbf{I}^\odot$, the target asymmetry $\mathbf{P_z}$, and the helicity difference $\mathbf{P_z^\odot}$ for the reaction $\vec{\gamma}\vec{p} \to p\pi^+\pi^-$ will be presented and first preliminary results will be discussed. Both target related observables $\mathbf{P_z}$ and $\mathbf{P_z^\odot}$ will be first-time measurements for double-pion photoproduction.

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