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Preliminary Results of Polarization Observables T and F in the $\vec{p}(\vec{\gamma},\pi^0)p$ Reaction from CLAS HAO JIANG, Univ of South Carolina — The theory which describes the interaction of quarks is Quantum Chromodynamics (QCD), but how quarks are bound inside a nucleon is not yet well understood. Pion photoproduction experiments reveal important information about the nucleon excited states and the dynamics of the quarks within it and thus provide a useful tool in the study of QCD. Detailed information about this reaction can be obtained in experiments which utilize polarized photon beams and polarized targets. Pion photoproduction in the $\gamma p \to \pi^0 p$ reaction has been measured in the FROST experiment at the Thomas Jefferson National Accelerator Facility. In this experiment circularly polarized photons with energies up to 3 GeV impinged on a transversely polarized frozen-spin target. Final-state protons were detected in the CEBAF Large Acceptance Spectrometer. Preliminary results of the polarization observables T and F have been extracted. The data generally agree with predictions of present partial wave analyses, but also show marked differences. The data will constrain further partial wave analyses and improve the extraction of proton resonance properties. This work is supported in parts by the U.S. National Science Foundation: NSF PHY-1205782.

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