Production and Searches for Cascade Baryons with CLAS

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Abstract. We will present the results of photoproduction cross sections of the ground state cascade Ξ^- and the first excited state $\Xi^-(1530)$ measured with the CLAS detector. The photoproduction of the cascade resonances has been investigated in the reactions $\gamma p \to K^+K^+(X)$ and $\gamma p \to K^+K^+\pi^-(X)$. The differential (total) cross sections for the Ξ^- were determined for photon beam energies from 2.75 to 3.85 (4.75) GeV and are consistent with a production mechanism of $Y^* \to K^+\Xi^-$ through a t-channel process. The reaction $\gamma p \to K^+K^+\pi^-[\Xi^0]$ has also been investigated to search of excited cascade resonances. No significant signal of excited cascade states other than the $\Xi^-(1530)$ is observed. The cross-section results of the $\Xi^-(1530)$ have also been obtained for photon beam energies from 3.35 to 4.75 GeV.

We also present the latest results of a search for for the $\Phi^{--}(1862)$ exotic pentaquark state in a photoproduction experiment on a deuterium target. A high-statistics sample of $\pi^-\Xi^-$ events have been collected and analyzed. Preliminary invariant mass spectrum of the $\pi^-\Xi^-$ system will be presented, which will be used to set upper limits on the photoproduction of the Φ^{--} pentaquark state.