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Photoproduction of eta mesons off protons at CB-ELSA¹ A. WOODARD, V. CREDE, A. MCVEIGH, Florida State University, CB-ELSA COL-LABORATION — QCD-inspired models predict more states in the hadron mass spectrum than have been seen experimentally. Models show that some of these states should be observed in photoproduction experiments, thus providing a sensitive tool to study hadron properties. Baryon resonances have broad, overlapping widths. Photoproduction of η mesons serves as an isospin filter; the η meson has isospin I = 0 and for this reason, isospin conservation guarantees that the N η final state can only be reached via formation of N^{*} resonances. Contributions from Δ^* states with I = 3/2 are excluded. We used the Crystal-Barrel Detector (CsI(Tl) calorimeter) at ELSA to determine the cross-section of the reaction $\gamma p \rightarrow \eta p$ studying the η in its two neutral decay modes $(\eta \to 3\pi^0 \to 6\gamma \text{ and } \eta \to 2\gamma)$ for photon incoming energies in the range of $E_{\gamma} = 850 - 3000$ MeV. In this experiment, the Two-Armed Photon Spectrometer (TAPS) was placed in the forward direction. This BaF_2 calorimeter serves as a fast trigger and increases the overall angular coverage to essentially the full 4π solid angle. We present differential cross sections for η photoproduction off the proton for $(-1 < \cos \theta_{\eta}^{\rm cms} < 1)$. Approximately 600,000 events have been identified. Preliminary results of a partial wave analysis are discussed.

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