Abstract Submitted
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Analyzing Photoproduction Data at the CB-ELSA Experiment to Establish Missing Hadronic Resonance States[1] MATTHEW SZMAIDA — The structure and dynamics of the nucleon and its excited states has been the subject of much inquiry since the discovery of the Δ resonance in the early 1950s. Typically, research into nucleon structure entails acquiring large data sets with input from several experiments using different mechanisms. New resonance states cannot be found by looking at simple spectra. Without precise data from many different nucleon decay channels, it remains difficult or even impossible to accurately determine the properties of well established resonances, or to confirm or rule out the existence of weakly established resonances or new, so-far not observed states. The current challenge is to search for new states and to measure the properties of some of the known higher-lying nucleon states with masses between 1.7 and 2.5 GeV/c^2. By studying the isospin-selective reaction $\gamma p \rightarrow \Delta\omega \rightarrow p\pi^0\omega$, it is possible to isolate contributions from individual excited states and to clarify their importance. In this reaction, only Δ^* resonances can contribute in the intermediate state; N* states are excluded due to the zero isospin of the ω meson. The data for the project were taken with the Crystal-Barrel/TAPS experiment at the Electron Stretcher Accelerator at the University of Bonn, Germany.

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