

Photo-production of ω Meson Using CLAS at Jefferson Laboratory

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Photo-production of ω meson was studied using CEBAF Large Acceptance Spectrometer (CLAS) at Jefferson Laboratory. Two observables have been measured from the reaction $\gamma p \rightarrow p\omega$: the differential cross section and the double polarization observable E . The differential cross section measurement was performed using circularly-polarized photons produced from bremsstrahlung of longitudinally-polarized electrons with energy 5.7 GeV, incident on unpolarized liquid hydrogen target. While the double polarization observable E was measured using circularly-polarized photons with energy range up to 2.4 GeV and longitudinally-polarized butanol target. The differential cross section as well as the polarization observable allow us to find the N^* resonances that decay to $p\omega$ through multi-channel Partial Wave Analysis (PWA) method. They also provide a probe to test theoretical models about the production mechanism of ω meson and also the scaling behavior of the cross section. We found that the $\gamma p \rightarrow p\omega$ differential cross section exhibits scaling behavior as predicted by pQCD.