

Abstract Submitted
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Phi Photoproduction Cross Section and Spin Density Matrix Elements Using CLAS g12 Data ANDREW HURLEY, Florida State University — Photoproduction experiments, in complement with nucleon deep inelastic scattering experiments, seek to better understand the spectrum of excited baryons, as well as the structure and QCD interactions of the quarks and gluons inside them. In recent years, the amount (and quality) of data for light-meson photoproduction has grown and expanded into higher energies. The production of vector mesons is particularly interesting because photons have the same spin-parity ($J^P = 1^-$) as vector mesons such as ρ , ω , and ϕ . The decay of excited baryons into vector mesons is also largely underexplored; however, the study of such decay modes –in addition to the better known decays into pseudoscalar mesons– is necessary to establish the existence of a baryon resonance. Out of the vector meson decays, the reaction $\gamma p \rightarrow p\phi$ has been studied the least. Here we analyze the aforementioned decay by using data taken at Jefferson Laboratory with the CEBAF Large Acceptance Spectrometer (CLAS) at energies from the reaction threshold to 5.5 GeV. Using the data for $p K^+ K^-$ final states (since $\phi \rightarrow K^+ K^-$ with a $\sim 49\%$ branching fraction), a cross section for this decay mode and elements of the spin-density matrix have been determined.

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