Photoproduction of the $b_1(1235)$ meson off the proton at E_γ = 6-12 GeV

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GlueX collaboration

The GlueX experiment in Hall D, Jefferson Lab aims to map the meson spectrum, with a focus on exotic mesons and hybrids which are not allowed in a simple quark-antiquark model. In this talk, we present efforts to characterize the $\omega\pi^0$ decay channel of the $b_1(1235)$ meson as precursor to a search for the $\pi_1(1600)$ exotic hybrid meson candidate, which is predicted to decay dominantly to $b_1\pi$.

The cross-section of the $\omega\pi^0$ channel has been extracted as a function of photon beam energy and is of the order of 1 μb, in agreement with previous measurements. The differential cross section as a function of momentum transfer indicates the presence of two production processes based on a changing slope around 1 GeV^2/c^2. The analysis steps, corrections and systematic errors will be presented, along with preliminary amplitude analysis of the neutral and charged $\omega\pi$ final state.

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