

CAP Congress 2021 Abstract

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The decay of the $b_1(1235)$ meson through the $\omega\pi$ channel at GlueX^{1 2}

A long-standing goal of hadron physics has been to understand how the quark and gluon degrees of freedom that are present in the fundamental QCD Lagrangian manifest themselves in the spectrum of hadrons. The GlueX experiment at Jefferson lab contributes to the global spectroscopy program using 8-9 GeV linearly polarized photons. This experiment focuses on the exploration of the light-quark domain, potentially accessing hybrid mesons with exotic J^{PC} quantum numbers in photoproduction reactions.

The decay of several exotic mesons (e.g. $\pi_1(1600)$, etc.) to $b_1\pi$ can be accessed through the decay $b_1 \rightarrow \omega\pi$. In this talk we discuss the decay of the axial-vector meson b_1 through both charged ($\gamma p \rightarrow \Delta^{++}\omega\pi^-$) and neutral ($\gamma p \rightarrow p\omega\pi^0$) production mechanisms. Understanding the decay of the b_1 is important, particularly in the context of Partial Wave Analysis and for extraction of the D/S wave ratio, which is of interest to validate predicted couplings to this axial-vector resonance from Lattice QCD calculations.

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