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The decay of the $b_1(1235)$ meson through the $\omega\pi$ channel at GlueX¹

KARTHIK SURESH, AHMED M FODA, ZISIS PAPANDREOU, Univ of Regina, GLUEX COLLABORATION — 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 dominant decay $b_1 \rightarrow \omega\pi$. In this talk we discuss the channel $\gamma p \rightarrow p\pi^+\pi^-4\gamma$ which can reconstruct to the reaction $\gamma p \rightarrow pb_1$, where the axial-vector meson $b_1(1235)$ decays to $\omega\pi$. Understanding this channel is important, particularly in the context of Partial Wave Analysis and being able to extract 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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