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$\Xi(1320)^-$ Differential Cross Section in Photoproduction at GlueX[1]

JESSE HERNANDEZ, Florida State University, GLUEX COLLABORATION —

For decades an assortment of quark models and more recently lattice QCD calculations have predicted many more baryon states than have been experimentally observed. Furthermore, the fundamental physics of flavor SU(3) symmetry indicates that there should be a Cascade partner for every N^*- and Δ^*- resonance observed. The doubly strange baryon, i.e., Ξ, in particular, overwhelmingly lacks these states experimentally. The GlueX experiment at Hall D in Jefferson Lab has accumulated high statistics data of photoproduction. Using this high statistics data and the fact that the lowest lying Cascade states have very narrow peaks we will be able to study the systematics of the spectrum in detail. In addition, we will study the production mechanism that produces these Cascade resonance, which, has not been studied extensively. We will report the differential cross section for $\Xi(1320)^-$ in the exclusive t-channel production reaction $\gamma p \to K^+ Y^* \to K^+(K^+\Xi^-)$ where $\Xi^- \to \Lambda\pi^-$. With this measurement we will get a better understanding of the production mechanism, i.e., Y^* states, in photoproduction.

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Jesse Hernandez
Florida State University

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