

Abstract Submitted
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Beam Asymmetries for Eta Pi Photoproduction on the Proton at GlueX STUART FEGAN, The George Washington University, GLUEX COLLABORATION — The GlueX facility, featuring a linearly polarised 9 GeV real photon beam delivered to a large-acceptance detector system, recently completed an initial phase of data taking at energies where quark systems beyond the known baryons and mesons, such as hybrid mesons, tetraquarks and glueballs, should exist. Analysis efforts are well underway, and results are expected to shed new light on how quarks combine under the strong force, particularly the role played by gluons. The work presented showcases efforts to measure beam asymmetries in the reaction $\gamma p \rightarrow p\eta\pi$, where both mesons decay to two photons, and whose invariant mass spectrum features both the $a_0(980)$ meson and a nearby signal from $a_2(1320)$. The beam asymmetry of the $\eta\pi$ system can be used to search for exotic signals, for instance through the presence of a non-zero P-wave contribution, which may be seen in asymmetry measurements at small opening angles in the meson decay frame. Additionally, the t -dependence of the $a_0(980)$ beam asymmetry can provide insight into production mechanisms of this state. Future prospects for related analyses in this reaction topology, informed by these measurements, will also be discussed.

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