

# BEAM ASYMMETRY FOR LIGHT MESON DECAYS IN GLUEX\*

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The principal goal of the GlueX experiment at the Thomas Jefferson National Accelerator Facility is to search for non- $q\bar{q}$  mesons, a construction not allowed by the simple quark model but predicted by Quantum Chromodynamics. Specifically, *hybrid* mesons, which result from the addition of a *constituent gluon* and are pictured as a  $q\bar{q}g$  state, will be accessed using the 8-9 GeV linearly polarized photon beam of GlueX and will be mapped as a function of their quantum numbers using partial wave analysis (PWA). Knowing the production mechanism is a key ingredient of PWA and is accessible through the beam asymmetry observable, which was extracted as a function of four-momentum transfer ( $-t$ ) for the reactions  $\gamma p \rightarrow \eta p$ ,  $\gamma p \rightarrow \eta' p$  and  $\gamma p \rightarrow \eta \Delta^+$ . Results from the full GlueX-I data set (2016-2020) over a wide range of  $-t$  have yielded a beam asymmetry close to unity, which indicates that the photoproduction process is dominated by  $\rho$  and  $\omega$  exchange.

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