Exclusive \( \pi^0 \) production and Compton scattering at GlueX

ZACHARY BALDWIN, William Mary Coll, GLUEX COLLABORATION — The GlueX experiment in Jefferson Labs Hall D aims to explore the gluonic degrees of freedom within hadrons through high-energy meson photoproduction. Using a 9 GeV linearly-polarized photon beam, the first measurements of the \( \Sigma \) beam asymmetry for pseudoscalar production have already provided insight into the meson production mechanisms at these energies. In this work, studies of the reaction \( \gamma p \rightarrow \pi^0 p \) will be presented along with an exploratory study of the Compton scattering process \( \gamma p \rightarrow \gamma p \), utilizing the fine-grained calorimetry of the GlueX experiment.

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Zachary Baldwin
William Mary Coll

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