Status of the PrimEx-eta experiment at Jefferson Lab

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The GlueX detector in the experimental Hall-D at Jefferson Lab offers a unique opportunity to perform a measurement of the decay width of eta mesons through the Primakoff effect. The experiment complements the physics program at Jefferson Lab on measuring the decay width of light pseudoscalar mesons via the Primakoff process. The goal of the experiment is to measure differential cross sections of η mesons at forward angles using a beam of tagged photons incident on a liquid ^{4}He target, which will be used for the extraction of the decay width. This measurement is vital for understanding fundamental properties like the ratios of the light quark masses and the η-η' mixing angle, and will provide an important test of chiral symmetry breaking in QCD. Our experimental results will help reduce uncertainties on partial widths of all other η decays. The experiment collected data during three physics runs between 2019 and 2022. We will give an overview of the PrimEx-eta experiment and the current status of our data analyses. We will also discuss the feasibility of conducting future Primakoff measurements in light of the recent upgrade of the GlueX forward calorimeter.

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