

Abstract Submitted
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PrimEx-Eta: A Precision Measurement of the Eta Meson Radiative Decay Width¹ ANDREW SMITH, Duke University, GLUEX COLLABORATION — The η meson is a unique probe of QCD symmetry breaking. Of particular importance is the $\eta \rightarrow \gamma\gamma$ decay, as it proceeds via the chiral anomaly. In the chiral limit, the amplitude for the two-photon decay of the pure SU(3) states, η_0 and η_8 , is exactly calculable, and therefore a precision measurement of the η radiative decay width provides both a precision test of this chiral anomaly prediction as well as information about the η - η' mixing angle. In the past, this 2γ decay width has been measured both in a fixed target experiment utilizing the Primakoff effect and in e^+e^- collider experiments. However, a large discrepancy between the results of the two types of experiments remains unresolved. The PrimEx- η experiment in Hall D at Jefferson Lab will perform a precision measurement of $\Gamma_{\eta \rightarrow \gamma\gamma}$ via the Primakoff method to address this discrepancy, and to reduce the overall uncertainty. Additionally, it will allow to significantly reduce uncertainties on partial widths for all other η decays. In this talk the motivation and experimental techniques will be discussed along with a presentation of data from the experiment's first phase which was completed in the Spring of 2019.

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