Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Compton Scattering Cross Section Measurement in Hall D at Jefferson Lab[1] ANDREW SMITH, Duke University, GLUEX COLLABORATION COLLABORATION — The PrimEx-eta fixed-target experiment in Hall D at Jefferson Lab (E12-10-011[2]) will measure the $\eta \to \gamma\gamma$ decay width using the Primakoff method with a projected uncertainty of 3.2%. In order to achieve this goal, Compton scattering from the atomic electrons in the target is being used as a reference process. Because of its similar kinematics to the $\eta \to \gamma\gamma$ decay, the total Compton scattering cross section can be measured using the same experimental configuration as the η decay width measurement. Consequently, it can be used to verify the systematic uncertainties for the η decay width measurement and monitor the luminosity, detection efficiency, and overall experimental stability. The first phase of the PrimEx-eta data was collected in 2019, corresponding to roughly one-third of the total proposed statistics. In this talk, I will discuss the preliminary results for the total Compton scattering cross section measured on a ^{9}Be target. This will provide the first experimental data for Compton scattering in the energy range 6-11 GeV.

[1]This work is supported in part by the U.S. Department of Energy under Contract No. DE-FG02-03ER41231 and the 2020-2021 JSA/Jefferson Lab Graduate Fellowship.
[2]Spokespersons: A. Gasparian (contact), L. Gan, I. Larin, A. Somov

Andrew Smith
Duke University

Date submitted: 08 Jan 2021 Electronic form version 1.4