

Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Measurement of Compton scattering cross section during PrimEx-II Experiment at Jefferson Lab¹ LI YE, Mississippi State Univ, PRIMEX COLLABORATION — The electron Compton scattering is the most known fundamental QED process, however, a precision measurement of its cross section for the beam energy above 1 GeV has been lacking up to now. An updated high precision measurement of the neutral pion lifetime via the Primakoff effect (PrimEx-II) experiment was performed in Hall B of Jefferson Lab in 2010. The experiment used small angle coherent photoproduction of π^0 's in the Coulomb field of a nucleus, *i.e.* the Primakoff effect, to determine the lifetime with a precision of less than 1.5% . It therefore requires thorough understanding of the underlying systematic uncertainties. To facilitate that data for well known electromagnetic processes were taken concurrently with the photoproduction data. This analysis pertains to measuring the Compton scattering cross section, which occurs at similar kinematics as the primary process. The combination of the well established theory of this process with large collected statistics allowed to extract this cross section with high precision in an energy region of 4-5 GeV for ^{12}C and ^{28}Si targets. The results of this analysis will be presented.

¹This work is supported in part by the U.S. Department of Energy under Contacts No. DE-FG02-03ER41528, NSF MRI PHY-0079840, Thomas Jefferson National Laboratory, Mississippi State University and PrimEx collaboration

Li Ye
Mississippi State Univ

Date submitted: 30 Jun 2017

Electronic form version 1.4