Precision Measurement of the $\pi^0$ Lifetime via the Primakoff Effect\textsuperscript{1} LIPING GAN, University of North Carolina Wilmington, THE PRIMEX COLLABORATION COLLABORATION — The neutral pseudoscalar meson $\pi^0$ plays a fundamental role in QCD at low-energy. The $\pi^0 \to \gamma\gamma$ decay width offers a sensitive probe for the chiral anomaly and spontaneous chiral symmetry breaking, and the nature of QCD confinement. The theoretical calculations over the last decade have reached 1% precision in the decay amplitude of the $\pi^0$ into two photons. The experimental measurement of this parameter with a comparable precision will be an important test of QCD. The PrimEx collaboration at Jefferson Lab has developed and performed experiments to measure the $\pi^0$ radiative decay width via the Primakoff effect. The published result from the first experiment (PrimEx-I) has a 2.8% total uncertainty. The second experiment (PrimEx-II) was performed with the final goal of 1.4% precision. The updated result of PrimEx-II will be presented.

\textsuperscript{1}This project is supported by National Science Foundation. MRI PHY-0079840, PHY-1206043, and PHY-1506303.