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Precision Measurement of π^0 Lifetime via the Primakoff Effect[1]
LIPING GAN, University North Carolina Wilmington, PRIMEX COLLABORATION — As the lightest particle in the hadron spectrum, π^0 plays an important role in understanding the fundamental symmetries of QCD at low-energy. The $\pi^0 \to \gamma\gamma$ decay width offers a key test of the QCD predictions based on the chiral anomaly and spontaneous chiral symmetry breaking. The theoretical calculations over the last decade have reached 1% precision in the decay amplitude of the π^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 π^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 carried out with the final goal of 1.4% precision. The preliminary result of PrimEx-II will be presented.

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