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Spectroscopic Study of Λ Hypernuclei using the $(e,e'K^+)$ Reaction LEON COLE, Hampton University, HKS COLLABORATION, COSM TEAM
— The “Spectroscopic Study of Λ Hypernuclei up to the Medium-Heavy Mass Region Through the $(e,e'K^+)$ Reaction” (HKS Experiment) was successfully completed during the summer of 2005 at Jefferson Laboratory. It utilized a new High Resolution Kaon Spectrometer (HKS) and a “Tilt Method” to the electron arm aiming to achieve the best ever resolution and the highest possible production yield of Λ Hypernuclei. The goal of the experiment is to investigate Λ hypernuclear structures with precise measurements of the mass spectra from light to medium-heavy mass region. Such precise spectroscopy will provide valuable information on the single-particle behavior of Λ hyperon in a nuclear medium, gain knowledge on the effective Λ -N interaction, and nuclear structure probed by the Λ hyperon. An overview of HKS experiment will be presented and preliminary results of the excitation spectra from various targets will be showcased.

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