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The Jefferson Lab Hall C Hypernuclear spectroscopy program[1]
JOERG REINHOLD, Florida International University, JEFFERSON LAB E05-115 (HES/HKS) COLLABORATION — The Jefferson Lab HKS/HES Collaboration studies the electroproduction of Λ-hypernuclei in the (e,e'K^+) reaction, with a resolution of ≈400 keV (FWHM), a record for reaction spectroscopy. Ordinary nuclei are composed of protons and neutrons which in turn contain up and down quarks. A hypernucleus contains a hyperon, which contains a strange quark, implanted as an "impurity" within the nuclear medium. Precise information about the mass and excitation energies of hypernuclei allows one to infer the underlying hyperon-nucleon interaction, which is not yet well known. Further, it is believed that neutron stars might contain hyperons. Hypernuclear data will also constrain current models of neutron stars. In experiment E01-011 we obtained spectroscopic data on ^{12}C, ^{28}Si and a series of light targets. In Fall 2009, we will run experiment E05-115, an investigation of a medium heavy target, ^{51}Cr. The talk will outline the experimental technique, present results from E01-011 and preliminary data from the just completed E05-115 run.

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