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Study of spectroscopy of Λ-hypernuclei using the (e,e'K^+) reaction at JLAB

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Electroproduction using high precision continuous-wave electron beam, such as available at Continuous Electron Beam Accelerator Facility (CEBAF) at the Jefferson National Laboratory (JLAB), has proved to be an effective mechanism to study the spectroscopy of Λ-hypernuclei. In comparison to the production using secondary meson beams, the present use of precision electron beam improves the energy resolution by more than a factor of two, reaching sub-MeV level while approximately preserving the yield. In addition, the (e,e'K^+) reaction acts on protons, dominantly producing high spin stretched, spin-flip states of neutron rich hypernuclei which are in complementary to that produced by the (K^-, π^-) and (π^+, K^+) reactions. The precision and power of the beam enables a detailed spectroscopic study of Λ-hypernuclei for a wide range of target masses and selected isotopes. The program will provide new information on the ΛN interaction, SU(3)-flavor symmetry in the nuclei, and the single particle nature of a Λ in the nuclear mean-field. This presentation will give an overview of the spectroscopy programs carried out in both Hall A and C with their presently achieved results.