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Spectroscopy of Λ hypernuclei

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Spectroscopy of Λ hypernuclei has recently become one of the most valuable tools for the experimental investigation of strangeness nuclear physics. Following the pioneering pikr spectroscopy experiments at the BNL AGS in the 1970's, excitation spectra have been measured using this reaction for a wide variety of Λ hypernuclei with the superconducting kaon spectrometer(SKS) at the KEK 12 GeV PS. More recently, Λ hypernuclear spectroscopy was carried out for the first time using the eek reaction and the continuous electron beam at the Thomas Jefferson National Accelerator Facility (Jefferson Lab). This reaction will be further explored using a new high-resolution kaon spectrometer (HKS) installed at Jefferson Lab. At the same time, precision γ-ray spectroscopy with a germanium detector array (Hyperball) has been successfully performed for p-shell Λ hypernuclei at the KEK 12 GeV PS and at the BNL AGS. Quantitative information on Λ hypernuclear structure as well as strengths of the spin-dependent hyperon- nucleon interaction in the p-shell region were derived. In this talk, the progress of Λ hypernuclear spectroscopy, reaction spectroscopy and γ-ray spectroscopy, and their future prospects are presented.