Recent Progress of the Spectroscopy of Light Hypernuclei

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High resolution spectroscopy of hypernuclei has become possible with a newly constructed Ge detector array called *Hyperball*. With this device, one can study hypernuclei with a few keV resolution, which can be compared to a few MeV resolution achieved with magnetic spectrometers. Moreover one can study electromagnetic properties of hypernuclei by γ spectroscopy. The first experiment with *Hyperball* was carried out at KEK, and we have studuied ${}^{7}_{\Lambda}Li$. The splitting due to Λ-N spin-spin interaction and a shrinkage of nuclei due to Λ were clearly observed. At BNL, we are studying fine-structures of many p-shell hypernuclei with *Hyperball*. The small splitting due to Λ-N spin-orbit interaction has been observed for ${}^{9}_{\Lambda}Be$. We will discuss these results and current status of the on-going experiment at BNL.

The γ spectroscopy of hypernuclei has thus just started. It is quite promising way to understand the structure of hypernuclei, as it was in nuclear physics. We will discuss the prospect of γ spectroscopy of hypernuclei such as $\gamma - \gamma$ correlation measurements with a stopping K^- method. We will also discuss current topics in p-shell Λ hypernuclei in the experimental aspects.

Recently, a double hypernulei, $Lampha({}^{6}_{\Lambda}He)$, was clearly observed by Nakazawa et al., at KEK. The observation of nuclei with S=-2 is quite important to understand baryon-baryon interaction and confinement aspect of QCD, especially the existence of the predicted H-dibaryon. The clear observation of *Lampha* encouraged further studies of the world of S=-2 nuclei. We will discuss the current status and questions of S=-2 nuclei.

The construction of a high intensity proton accelerator (called JHF before) has just started by KEK-JAERI in Tokai, Japan this year. We will briefly discuss prospects of the hypernuclear physics at this new facility.