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## Overview of Strangeness Nuclear Physics at J-PARC

*Friday 12 July 2024 09:40 (40 minutes)*

Research on hypernuclei plays an essential role in answering how the hierarchy of nuclei is constructed from quarks. We are going to review the recent achievements in hypernuclear programs in J-PARC. One of the recent achievements is the realization of an accurate hyperon-nucleon scattering experiment. The differential cross sections of the  $\Sigma^+p$ ,  $\Sigma^-p$  elastic scatterings and  $\Sigma^-p \rightarrow \Lambda n$  inelastic scattering have been measured with drastically improved accuracy. These new data will become essential inputs to improve the theories of the two-body baryon-baryon interaction. Another achievement is the big progress of research on the double hypernuclei. A lot of information on double  $\Lambda$  hypernuclei and  $\Xi$  hypernuclei has been accumulated through the observation of the double hypernuclear events in the nuclear emulsion in the series of experiments at KEK and J-PARC. Other experiments to study  $S=-2$  system were also carried out and the analysis is ongoing. In this article, the progress of the hypernuclear program in J-PARC is presented with a focus on these experimental results. Future prospects are also discussed briefly.

### **session**

J. Strange Nuclear Systems

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