

# Construction status of a new spectrometer “S–2S” for spectroscopy of multi-strangeness systems

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A spectroscopic study of  $\Xi$ -hypernucleus is planned to carry out at J-PARC through the  $^{12}\text{C}(K^-, K^+)$  reaction (J-PARC E05 experiment [1]). The high-intensity  $K^-$  beam at J-PARC K1.8 beam line will be utilized to produce  $^{12}_{\Xi}\text{Be}$ , the cross section of which is expected to be only  $\approx 60$  nb/sr. We will observe bound state peak(s) for the first time with a good energy resolution and enough statistics, and obtain the information on the baryon-baryon interaction with  $S = -2$ .

For this experiment, we are constructing a new spectrometer “S-2S” (Strangeness  $-2$  Spectrometer) to measure the momentum of scattered  $K^+$  precisely. It is designed to have a momentum resolution of  $5 \times 10^{-4}$ (FWHM), which corresponds to an energy resolution of better than 2 MeV, and an acceptance of 55 msr. It comprises three magnets and the tracking and trigger detectors at the entrance and exit of the magnets. The construction of the magnets has been completed in 2015 and field measurements and calculations are on going. The trigger counters such as time-of-flight wall and water Čerenkov counter have also been developed. In this presentation, we will report the construction status of S-2S spectrometer.

[1] T. Nagae *et al*, J-PARC E05 proposal