Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Spectroscopy of $S = -2$ hypernuclei at J-PARC with a new spectrometer S-2S SHUNSUKE KANATSUKI, Kyoto University, J-PARC E05 COLLABORATION — The study of $S = -2$ hypernuclei is important for understanding baryon-baryon interaction and strange nuclear matter. However, experimental data of $S = -2$ systems are very limited. We will obtain the spectroscopic information of $S = -2$ hypernuclei using the (K^-, K^+) reaction. As a first step, We plan to perform the J-PARC E05 experiment by using the ^{12}C(K^-, K^+) reaction. Following this experiment, we plan to carry out further studies on Ξ- and double Λ-hypernuclei with various targets. We will utilize the high intensity K^- beam and high resolution beam spectrometer at J-PARC K1.8 beam line. To achieve both enough statistics and better resolution, a new spectrometer S-2S for scattered K^+ is under construction. It consists of a QQD-type configuration. It is designed to have a momentum resolution of better than 5×10^{-4} (FWHM), which corresponds to energy resolution of 1.5 MeV. The construction of Q1 and Q2 has already been finished. We measured magnetic field of Q1, and obtained a field gradient of 8.7 T/m enough to achieve an acceptance of 60 msr at 1.3 GeV/c. We are also developing detectors, especially a water Cherenkov counter for on-line K/p separation. The magnets and the detectors will be ready for installation in the next year.

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Date submitted: 30 Jun 2014 Electronic form version 1.4