Double Hypernuclei Experiment with Hybrid Emulsion Method at J-PARC

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Double hypernuclei are very good probes for the systematic study of strangeness. We plan an experiment to search for double hyper nuclei using emulsion-counter at the K1.8 beamline in the Hadron Experimental Facility (J-PARC E07 experiment)[1]. The purpose of this experiment is a systematic study of double strangeness nuclei with 10 times higher statistics than the previous experiment (KEK-E373) and the first measurement of Ξ^- atomic X-ray. The expected observasion is 10^4 stopping Ξ^- hyperons (Ξ^- atoms) in the emulsion via quasi-free (K^-, K^+) reactions on a diamond target. On the other hand, we will also observe X-ray from Ξ^- atoms with a germanium detector array installed close to the emulsion by tagging Ξ^- stopped events. This will be the first measurement of X-ray from the decay of $S = -2$ system.

We need to use not only kaon but also anti-proton beam since this emulsion analysis need some reference points on an emulsion to search a track. Accordingly, we studied the intensity, purity and profile of Kaon and anti-proton beam and tested the exposure of an emulsion with anti-proton beam. Its result will be presented in this conference.

[1] K. Nakazawa *etal.*, J-PARC E07 proposal.