

Study of Doubly Strange Nuclei by Emulsion-Scintillating fiber Hybrid method (E373)

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The study of hyperon-hyperon interaction will provide us of an opportunity to verify various ideas on baryon-baryon interaction such as the $SU(3)_{flavor}$ symmetry. The information about Λ - Λ force is also useful to investigate multi-strangeness system such as "strange matter". Experimentally, the interaction energies, $\Delta B_{\Lambda\Lambda}$, between two Λ hyperons are obtained by the mass measurement of double- Λ hypernuclei. The double- Λ hypernucleus is strongly related to the existence of the H -dibaryon predicted by R.L.Jaffe. The study of hyperon-hyperon interaction will also provide us the solution for the problem of non-existence of the H particle. However, the experimental information has been quite limited.

Therefore, we have carried out the E373 experiment, where we would expect ten times higher statistics of Ξ^- hyperon capture at rest

in nuclear emulsion than that of the past experiments.

In 2003, we have located 90% Ξ^- hyperon candidate tracks in nuclear emulsion. By the analysis to estimate the number of Ξ^- stopping events which we could locate, it was found to be nearly one thousand. All of scanning in proposal will be finished for a few months.