Double-sided Silicon Strip Detector for the study of Double Hypernuclei

TAKAYASU SEKIHARA, Kyoto University — Double-sided Silicon Strip Detector (DSSD) has been designed for the study of double hypernuclei. This DSSD is a key detector in BNL-E964, which uses a new emulsion-counter hybrid method to find 10 times more double hypernuclei than before. In BNL-E964, $\Xi^-$ hyperons produced in the target ($^{12}$C) by the $K^- + 'p' \rightarrow K^+ + \Xi^-$ reaction, are stopped in the emulsion and double strengeness nuclei are produced. The two DSSD’s are placed within 5 mm distance between the target and the emulsion. The DSSD is the best detector of tracking $\Xi^-$ because of its high position resolution and thinness which allows $\Xi^-$ passing the DSSD with minimum decay rate of $\Xi^-$. High position resolution of two DSSD’s enables to trace the track of $\Xi^-$ with high scanning efficiency in the emulsion to find double hypernuclei. Design criteria and details of its construction are presented.

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