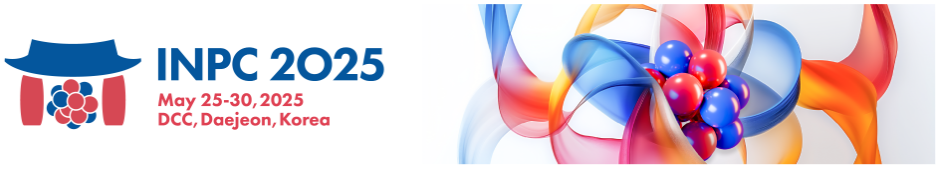

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H-dibaryon Search near the $\Lambda\Lambda$ and $\Xi^- p$ Thresholds in the $^{12}\mathrm{C}(K^-, K^+)$ Reaction

Tuesday, 27 May 2025 11:50 (15 minutes)

We present preliminary results from our search for the H-dibaryon near the $\Lambda\Lambda$ and $\Xi^- p$ mass thresholds using the E42 detector. The E42 experiment was designed to maximize sensitivity to both a loosely bound H-dibaryon and possible resonances near the $\Lambda\Lambda$ and $\Xi^- p$ thresholds by employing a dedicated Hyperon Spectrometer, whose main detector is a time-projection chamber (HypTPC) reconstructing all charged-particle trajectories originating from $^{12}\mathrm{C}(K^-, K^+)X$ reactions, enabling us to collect data with statistics two orders of magnitude higher than ever before.

In this talk, we will introduce the E42 apparatus and discuss our ongoing analysis, which aims to provide a definitive answer regarding the existence of the H-dibaryon based on the unprecedented statistical precision of the E42 dataset.

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