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Observation of $\Lambda\Lambda$ production in the reaction (K^-, K^+) with HypTPC at J-PARC

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A search for the H -dibaryon has been conducted at J-PARC using a 1.8 GeV/c K^- beam, in June 2021. The E42 experiment was designed to maximize sensitivity from a loosely bound H to resonances near $\Lambda\Lambda$ and $\Xi^- p$ thresholds with the Hyperon Spectrometer. A time-projection chamber (HypTPC) reconstructs all charged particles' trajectories that emerged from the $^{12}\text{C}(K^-, K^+)X$ reaction. We observed thousands of $\Lambda\Lambda$ events, which are two orders of magnitude more than ever. We believe the observation of such large statistics $\Lambda\Lambda$ events will shed light on the H -dibaryon search. We will present the E42 apparatus and analysis progress toward the H -dibaryon search and outline preliminary results on $\Lambda\Lambda$ production in the $^{12}\text{C}(K^-, K^+)X$ reaction.

session

B. Hadron Spectroscopy

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