

SEARCH FOR A Ξ BOUND STATE IN THE $^{12}\text{C}(\text{K}^-, \text{K}^+)\text{X}$ REACTION AT 1.8 GEV/C

Tomofumi Nagae¹, for the J-PARC E05 collaboration

¹Department of Physics, Kyoto University

We have measured an excitation energy spectrum of the $^{12}\text{C}(\text{K}^-, \text{K}^+)\text{X}$ reaction at 1.8 GeV/c with an energy resolution of 7 MeV (FWHM), which is the best energy resolution ever achieved in studying this reaction. The measurement was performed at the K1.8 beam line of the J-PARC hadron experimental hall by using the SKS spectrometer, as a pilot run of J-PARC E05 experiment. The K^- beam intensity at the primary proton beam power of 39 kW was typically 6×10^5 /spill with 5.5-sec. beam cycle. The energy resolution was estimated from the peak observed in the $p(\text{K}^-, \text{K}^+)\Xi^-$ reaction from a 9.54-g/cm^2 CH_2 target. We took the data on the $^{12}\text{C}(\text{K}^-, \text{K}^+)\text{X}$ reaction with a 9.4-g/cm^2 C target for about 10 days. We have observed about 60k events of quasi-free Ξ^- production, and several tens of events in the bound region.

Although the analysis is still preliminary, we could see clear enhancements in the bound region above a flat background. The up-to-date analysis result will be presented.