

Abstract Submitted
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Search for the $\bar{K}NN$ bound states via photon-induced reactions

ATSUSHI TOKIYASU, Research Center for Nuclear Physics, Osaka University, LEPS COLLABORATION — The existence of the $\bar{K}NN$ bound states has not been established experimentally. Search experiments in various reaction channels are awaited. The multi-GeV photon induced reaction is one of the promising channels to search for exotic systems with strangeness -1. We adopted the $d(\gamma, K^+\pi^-)X$, $d(\gamma, K^+)X$ and $d(\gamma, K^+\pi^+)X$ reactions with photon energies from 1.5 to 2.4 GeV to search for the K^-pp , K^-pn and K^-nn bound states in the LEPS/Spring-8 experiment. The symmetrical experimental setup for positive and negative charged particles enables us to search for three different isospin states simultaneously. We searched for a peak structure in the mass region from 2.22 to 2.36 GeV/ c^2 in the inclusive missing mass spectrum for each reaction. In addition, we have studied the exclusive missing mass spectrum for the $d(\gamma, K^+)X$ reaction. $\Sigma\pi$ final states were selected and the structure in the $\Lambda(1405)/\Sigma(1385)$ region was investigated precisely. The line shape in the spectra will be discussed with emphasis on the final state interaction effect. The search results and the details of the analysis will be presented in this talk.

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