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Investigation of Λp invariant mass spectrum in $K^- + d \rightarrow \Lambda p \pi^-$ reaction

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Abstract

In the present work, the in-flight kaon interaction on the deuteron target at incident K^- momentum of $p_K = 760$ MeV/c is investigated in the Λ channel by a phenomenological potential model. By considering the effect of $\Sigma^{*-}(1385)$ resonance in the Λp invariant mass spectra comes from $K^- d \rightarrow \Lambda p \pi^-$ reaction, and a comparison between theoretical spectra and Braun's data, we found the best theoretical spectrum fitted to the experimental data. The energy and width of Λp resonance state are respectively extracted $E_{\Lambda p} = 0$ MeV and $\Gamma_{\Lambda p} = 9$ MeV from the fitting process.

Keywords: kaonic nuclei, $K^- - d$ interaction and Λp resonance state

For full article, refer to the Persian section