

$\bar{K}N$ interaction in the Skyrme model

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We study the $\bar{K}N$ system in the Skyrme model in a method based on the bound state approach of Callan-Klebanov but with the kaon around the physical nucleon of the rotating hedgehog. This corresponds to the variation after projection which is opposite to the variation before projection. The new method is considered to be more suited to the study of the weakly interacting $\bar{K}N$ system forming a loosely bound state corresponding to $\Lambda(1405)$. We have found a bound state with binding energy of order ten MeV, consistent with the observed state. We also discuss the $\bar{K}N$ interaction which consists of an attraction in the middle range and of a repulsion in the short range.

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