

Phenomenological $\bar{K}N$ interaction with isospin-breaking effects and $\bar{K}NN$ system

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The interest in antikaon-nucleon interaction was renewed due to a theoretical prediction of deeply bound antikaon-nucleus states [1] and an experimental evidence of existing such a state in $\bar{K}NN$ system [2]. There are several sets of experimental data concerning $\bar{K}N$ interaction: K^-p cross-sections, kaonic hydrogen $1s$ level shift, mass and width of $\Lambda(1405)$. However, some of these data are old and not precise enough. From the theoretical side, several models of $\bar{K}N$ interaction exist, but most of them cannot describe all the experimental data simultaneously. Trying to improve the situation we constructed phenomenological antikaon-nucleon potentials, taking into account isospin-breaking effects. The influence of the obtained $\bar{K}N$ interactions on the properties of $\bar{K}NN$ system was investigated.

[1] T. Yamazaki, Y. Akaishi, Phys. Lett. B **535**, 70 (2002).

[2] M. Agnello *et al.*, Phys. Rev. Lett. **94**, 212303 (2005).

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