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Effect of Isospin Averaging for $pp\bar{K}^-$ Kaonic Cluster

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The kaonic cluster $NN\bar{K}$ ($s_{NN} = 0$) is modeled based on the configuration space Faddeev equations. The $N\bar{K}$ interaction is given by isospin-dependent potentials having significant difference between singlet and triplet components. We show that the relation $|E_3(V_{AA} = 0)| < 2|E_2|$ is satisfied, where E_2 is the binding energy of the $N\bar{K}$ subsystem and $E_3(V_{AA} = 0)$ is the three-body binding energy, when interaction between identical particles is omitted, $V_{NN}=0$. Taking into account weak attraction of NN interaction, the relation leads to the evaluation $|E_3(V_{AA}=0)| < 2|E_2|$. The "isospinless model" for the kaonic cluster based on the isospin averaged $N\bar{K}$ potential [1, 2, 3] demonstrates the opposite relation $|E_3(V_{AA}=0)| > 2|E_2|$. The isospin averaging leads to loosely bound $NN\bar{K}$ system due to reduction of two-body threshold. Numerical calculations using phenomenological potentials will be presented.

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[1] M. Bayar, J. Yamagata-Sekihara and E. Oset, Phys. Rev. C 84, 015209 (2011).

[2] T. Sekihara, E. Oset, A. Ramos, PTEP 123D03 (2016).

[3] N.Barnea, A.Gal, E.Z. Liverts, Physics Letters B 712, 132 (2012).

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