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Study of few body Kaonic Nuclei using the method of hyperspherical functions in momentum representation ROMAN KEZERASHVILI, The City Univrsity of New York- CITY TECH, SHALVA TSIKLAURI, The City Univrsity of New York-BMCC — Kaonic three-body K^- NN, and of four-body K^-NNN and K^-K^-NN nuclei are studied within the method of hyperspherical functions in momentum representation, using realistic local and separable potential models for NN and KN as well as for KK interactions. We solve nonrelativistic three- and four-body Schrodinger equation in momentum representation in the framework of the method of hyperspherical harmonics to find a ground state binding energy and corresponding wave function. The following ground-state binding energies were obtained: 48.3 MeV (K^-pp), 28.2 MeV (K^-K^-p), 67.2 MeV (K^-ppn), and 89.3 MeV (K^-K^-pp), which are in good agreement with previous results obtained for the same potentials using Faddeev equations and variational method. There are theoretical discrepancies relating to the binding energy of kaonic nuclei, coming from the different KN and KK interactions. Using AV4 NN (Wiringa, Pieper, Phys. Rev. Lett. 89, 182501, 2002) potential and energy dependent chiral KN and KK local potentials (Barnea et al, Phys. Lett. B 712, 132, 2012) we received the following results of the binding energies 13.9 Mev (KNN) $_{1/2,0}$, 27.3 Mev (K NNN)$_{I=0}$ and 30.4 MeV (K^-KNN) $_{I=0}$. The results of our calculations are in agreement with results of Barnea et al. The experimental evidences to support theoretical predictions are discussed. This research is supported by CUNY Research Grant Program C^3IRG .

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