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Spin doublet $(1^-, 2^-)$ of ${}^{6}_{\Lambda}$He within three-body cluster model[1]
VLADIMIR SUSLOV, IGOR FILIKHIN, BRANISLAV VLAHOVIC, North Carolina Central University — The spin doublet $(1^-, 2^-)$ of ${}^{6}_{\Lambda}$He is interesting as a test for theoretical models of the hyperon-nucleon interaction. The experimental value for the binding energy of the 1^- state (singlet spin state) of ${}^{6}_{\Lambda}$He is known (-0.17 MeV) [1]. There are no experimental data for the 2^- state (triplet spin state). Theoretical considerations for the 2^-state of ${}^{6}_{\Lambda}$He have been attempted by Motoba et al. in [2] and Hiyama et al. in [3]. Indirect prediction for the 2^- state has been done in [4]. The results obtained in these works are quite different. Our goal is to get a new prediction for the ${}^{6}_{\Lambda}$He hypernucleus, which is considered as a cluster system $\alpha n\Lambda$, by using new proposed potentials [5] for the$\alpha\Lambda$and αn interactions. Our cluster approach is based on the configuration-space Faddeev equations for a system of three non-identical particles. The energy of the (1^-,2^-) spin doublet for different $n\Lambda$ potentials [6] is calculated. Our results are compared with those obtained in other calculations and experimental data. [1] L. Majling, Proc. Natl. Conf. on Physics of Few-Body and Quark-Hadronic System (Kharkov, Ukraine, 1992). [2] T. Motoba at al. Prog. Theor. Phys. 70 189 (1983). [3] E. Hiyama at al. Phys. Rev. C 59 2351 (1999). [4] I. Filikhin at al. J. Phys. G: 31, 389 (2005). [5] I. Filikhin at al. EPJ Web of Conferences 3, 07004 (2010). [6] I. Filikhin, A. Gal, Phys. Rev. C 65 041001R (2002).

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