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Modeling of ${}^6_{\Lambda}\text{He}$ hypernucleus within configuration space Faddeev approach

I. Filikhin^a, V. M. Suslov and B. Vlahovic

Department of Physics, North Carolina Central University, 1801 Fayetteville Street, Durham,
NC 27707, USA

e-mail: ^a ifilikhin@nccu.edu

Abstract. The cluster ${}^4\text{He} + \Lambda + n$ model is applied to describe the ${}^6_{\Lambda}\text{He}$ hypernucleus. The consideration is based on the configuration space Faddeev equations for a system of non-identical particles. A set of the pair potentials includes the OBE simulating (NSC97f) model for the Λn interaction and the phenomenological potentials for the $\alpha\Lambda$ and αn interactions. We calculated energies of $(1^-, 2^-)$ spin doublet. For the 2^- excitation energy, the obtained value is 0.18 MeV. The hyperon binding energy of the bound 1^- state is less than the experimental value, which may be an evidence for violation of the exact three-body cluster structure.

Keywords: Λ hypernuclei; cluster model; ΛN interaction; Faddeev equations

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