

Abstract Submitted
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Faddeev calculations for ${}^7_{\Lambda}\text{He}$ and ${}^9_{\Lambda}\text{Be}$: bound states and low-lying resonances IGOR FILIKHIN, VLADIMIR SUSLOV, BRANISLAV VLAHOVIC, North Carolina Central University, Durham NC, 27707 — ${}^7_{\Lambda}\text{He}$ and ${}^9_{\Lambda}\text{Be}$ hypernuclei are considered in the three-body cluster models ${}^5_{\Lambda}\text{He}+n+n$ [1] and $\alpha + \alpha + \Lambda$ [2], respectively. Configuration space Faddeev calculations are performed for the hyperon binding energy. For ${}^7_{\Lambda}\text{He}$ we obtained the binding energy 5.35 MeV which is in agreement with previous theoretical predictions and preliminary experimental value (5.4 MeV) [3]. We have found that the binding energy of ${}^9_{\Lambda}\text{Be}$ depends strongly on the $\alpha\Lambda$ potential used. A variant of the method of analytical continuation in coupling constant [4] is applied to calculate the energies of low-lying levels of the ${}^7_{\Lambda}\text{He}$ and ${}^9_{\Lambda}\text{Be}$. The second bound state of ${}^7_{\Lambda}\text{He}$ with total angular momentum $J=3/2^+(5/2^+)$ is found. The bound states of ${}^7_{\Lambda}\text{He}$ can be classified as an analog of the ${}^6\text{He}$ ground band. For ${}^9_{\Lambda}\text{Be}$ concluded that the ground band of this nucleus cannot be explained by similar classification related to the core nucleus ${}^8\text{Be}$. We have obtained a new 2_2^+ resonance state that is close to the $\alpha + \alpha + \Lambda$ threshold. Overall, calculated resonance energies differ from previous theoretical predictions. This work is supported by the DoD W911NF-05-1-0502 and NASA NAG3-804 grants. 1. I. Filikhin, et al. J. Phys. G31 389 2005 2. I. Filikhin, et al. J. Phys. G30 513 2004 3. O. Hashimoto, HYP2006 Mainz, October 11-14, 2006 4. V. I. Kukulin, et al. Theory of Resonances (Kluwer Academic, Dordrecht, 1989)

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