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$^{7}_{\Lambda}$He bound state within three-body approach[1] VLADIMIR SUSLOV, IGOR FILIKHIN, BRANISLAV VLAHOVIC, North Carolina Central University — The $^{7}_{\Lambda}$He hypernucleus is studied within the cluster model $^{5}_{\Lambda}\mathrm{He}+\mathrm{n}+\mathrm{n}$, using configuration space Faddeev formalism. Intrinsic structure of the core nucleus is taken into account by the folding procedure applied to construct the $^{5}_{\Lambda}\mathrm{He}-\mathrm{n}$ interaction. The OBE simulating potential of the NSC97f model for Λn and phenomenological $\alpha\Lambda$ potential are used. Singlet and triplet components of the folding potential are adjusted to reproduce the 2^{-} excitation energy $E_x(^{6}_{\Lambda}\mathrm{He})$ of the $^{6}_{\Lambda}$He hypernucleus. A correlation between $E_x(^{6}_{\Lambda}\mathrm{He})$ and hyperon binding energy $B_\Lambda(^{7}_{\Lambda}\mathrm{He})$ of $^{7}_{\Lambda}$He is established. We use this correlation to evaluate $B_\Lambda(^{7}_{\Lambda}\mathrm{He})$ taking into account results of our calculation for $E_x(^{6}_{\Lambda}\mathrm{He})$ within the three-body model $\alpha+\Lambda+n$. The value obtained for $E_x(^{6}_{\Lambda}\mathrm{He})$ is 0.18 MeV. With this value our evaluation for $B_\Lambda(^{7}_{\Lambda}\mathrm{He})$ yields 5.69 MeV, which is close to the recently reported experimental data (5.68 MeV).

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