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Faddeev calculations for light Ξ-hypernuclei

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Abstract. The hypernuclear systems $NN\Xi$ and $\Xi\Xi N$ are considered as an analogue of nnp (^{3}H) nuclear system (with the notation as AAB system). We use the recently proposed modification for the s-wave Malfliet-Tjon potential. The modification simulates the Extended-Soft-Core model (ESC08c) for baryon-baryon interactions. The ΞN spin/isospin triplet $(S, I) = (1, 1)$ potential generates a bound state with the energy $B_2(AB)$=1.56 MeV. Three-body binding energy B_3 for the states with maximal total isospin is calculated employing the configuration-space Faddeev equations. Comparison with the results obtained within the integral representation for the equations is presented. The different types of the relation between B_2 and $B_3(V_{AA} = 0)$ are discussed.

Keywords: Few-body systems, Hypernuclei, Nuclear forces, Faddeev equations

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