PRECISE STUDY OF THE EFIMOV THREE-PARTICLE SPECTRUM AND STRUCTURE FUNCTIONS WITHIN VARIATIONAL APPROACH

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S u m m a r y

A precise study within variational approach of the basic properties of the three-particle spectrum and structure functions with Gaussian potential near the critical coupling constant of interaction where the Efimov effect takes place is carried out. A method is developed to calculate highly excited states with very small binding energies, and numerical analysis is carried out for the ground and three excited energy states. For these states, one-particle density distributions, formfactors, pair correlation functions, and momentum distributions are calculated. It is found that the second excited state has already all the basic features of a level from the infinite Efimov series. An essential asymmetry is found in the position of energy levels with respect to the critical constant point. A halo-type structure is revealed in the one-particle density distributions, and formfactors are shown to have specific dips of finite depth, the number of dips being equal to the number of the state. The behaviour of pair correlation functions and momentum distributions is studied for three-particle states.