

Small atomic He clusters at low energies

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Clusters of gas atoms form a broad class of molecules bound by van der Waals-type interactions. Some weakly bound clusters exhibit universal characteristics and scale invariance linked to the famous Efimov effect, which was first experimentally confirmed in an ultracold gas of Cs atoms. The helium trimer system has long been regarded as an ideal candidate for observing Efimov states. After extensive research, the Efimov state—corresponding to the excited state of 4He_3 —was finally detected in 2016.

Numerous realistic He-He potential models have been developed, achieving increasingly accurate reproductions of two-body data. However, highly precise calculations are necessary to assess the influence of these potential models on the properties of three-body systems. One of the most effective methods for studying triatomic clusters relies on solving the differential Faddeev equations which we use for calculation of helium trimer.

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