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Use of correlated potential harmonic basis functions for the description of the ^{4}He trimer and small clusters

Tapan Kumar Das; Barnali Chakrabarti; Sylvio Canuto

+ Author & Article Information

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A correlated many-body basis function is used to describe the ^{4}He trimer and small helium clusters (^4He_N) with $N = 4 - 9$. A realistic helium dimer potential is adopted. The ground state results of the ^{4}He dimer and trimer are in close agreement with earlier findings. But no evidence is found for the existence of

potential strength we calculate several excited states of the trimer which exhibit Efimov character. We also solve for excited state energies of these clusters which are in good agreement with Monte Carlo hyperspherical description.

Topics

Physical quantities, **Few body systems**, **Physics of gases**, **Functions and functionals**, **Recurrence relations**, **Interatomic potentials**, **Diatomic molecule**, **Adiabatic theorem**, **Excited state energies**, **Schrodinger equations**

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