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Improved Pair-Potential Function for Diatomic Systems

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ABSTRACT

A three-parameter pair-potential model recently constructed is improved in the short- and long-range interaction regions. We demonstrate that this improved potential function is able to accurately describe the entire potentials of the ground-state van der Waals systems such as rare-gas, triplet H_2 , Alkali-helium, Alkaline-earth, and group 12 diatomic systems. All these systems show a single binding-energy relation in the attractive region. The improved function suggests a unique form for describing the potentials of diatomic systems ranging from strongly-bound to weakly-bound diatomic systems.

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