

Abstract Submitted
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Harmonically Trapped Four-Boson System¹ D. BLUME, University of Oklahoma, M. W. C. SZE, J. L. BOHN, JILA, NIST, and University of Colorado — Four identical spinless bosons with purely attractive two-body short-range interactions and repulsive three-body interactions under external spherically symmetric harmonic confinement are considered. The repulsive three-body potential prevents the formation of deeply-bound states with molecular character. The low-energy spectrum with vanishing orbital angular momentum and positive parity for infinitely large two-body s-wave scattering length is analyzed in detail. Using the three-body contact, states are classified as universal, weakly non-universal, or strongly non-universal. Connections with the zero-range interaction model are discussed. The energy spectrum is mapped out as a function of the positive two-body s-wave scattering length. In the weakly- to medium-strongly-interacting regime, one of the states approaches the energy obtained for a hard core interaction model. This state is identified as the energetically lowest-lying "BEC state". Structural properties are also presented.

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