

Rotation–vibration interaction in ^4He trimers

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Abstract

An approximate treatment of the rotation–vibration interaction is considered in the helium trimer system to study the existence of bound states with non-zero ($J = 1$) total angular momentum and to elucidate its Efimov character. With the interaction used here, at least one bound state is found. In terms of a λ -parameter modifying the strength of the two-body potential, the radial part of the wave function changes dramatically with tiny variations around the physical value $\lambda = 1$. High-resolution rotational Raman spectroscopy in a supersonic beam expansion is proposed as a feasible way of observing the bound state predicted. © 2001 Elsevier Science B.V. All rights reserved.
