

Low-Lying States of the $A^+B^-A^+B^-$ Coulomb Systems in Two-Dimensional Quantum Dots

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Abstract: The features of the low-lying spectra of four-body $A^+B^-A^+B^-$ systems have been deduced based on symmetry. Using the method of few-body physics, we calculate the energy spectra of $A^+B^-A^+B^-$ systems in a harmonic quantum dot. We find that the biexciton in a two-dimensional quantum dot may have other bound excited states and the quantum mechanical symmetry plays a crucial role in determining the energy levels and structures of the low-lying states.

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Key words: few-body physics, $A^+B^-A^+B^-$ Coulomb system, symmetry

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