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The electronic states and magnetization of coupled AlGaAs/GaAs quantum dots in magnetic fields
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Department of Physics, Faculty of Science, An-Najah National University, Palestine, United States

Abstract

We present a theoretical study of electronic states and magnetization of two interacting electrons confined in coupled quantum dots (CQDs) presented in a magnetic field. We obtain the eigenenergies of the CQD by solving the relative two-dimensional (2D) Hamiltonian using the combined variational-exact diagonalization method. The dependence of magnetization on temperature, magnetic field strength, confining frequency and barrier height has been investigated. We have shown the singlet-triplet transitions in the ground state of the CQD spectra and the corresponding jumps in the magnetization curves. The comparisons show that our results are in very good agreement with the reported works. © 2017 World Scientific Publishing Company.

Author Keywords

coupled quantum dots; Electronic states; magnetic field; magnetization; variational-exact diagonalization method

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