Energy spectra of double quantum dot by variational calculations

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Abstract

The eigenenergies of two electrons confined in double quantum dot structure had been obtained by solving the Hamiltonian using the variational method. The Hamiltonian is modeled as a sum of two electron parabolic quantum dot Hamiltonians coupled with a Gaussian potential barrier of finite width and height .We had shown the transitions in the angular momenta of the ground states of the double quantum dot spectra as a function of magnetic field. The singlet-triplet splitting as a function of magnetic field and barrier height is also displayed. Our results computed by variational method are tested against other reported numerical ones.