



خصائص نقل الالكترون خلال نقطتين كميتين مقترنتين: تأثير التفاعل غير المباشر

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Abstract

In this paper, we investigate the indirect interaction effect between each quantum dots and other lead, on the electron tunneling properties through created system a serially coupled double asymmetric quantum dots, embedded between two nonmagnetic leads (source and drain). In this treatment, the time independent Anderson-Newns Hamiltonian model is considered as a basis to study the system dynamics and then to derive spin-dependent analytical formula to calculate the tunneling current considering the strong coupling regime, the differential conductance is calculated numerically and discussed in detail. These results review for the current and conductance as a function of bias voltage, for different values of indirect interaction and many values of the exchange interaction between the double quantum dots. And we concluded that when additional values of the positive indirect interaction energy for bias voltage it led to increased distance bias voltage and less the differential conductance, but when additional values of negative indirect interaction energy for bias voltage it led to decrease distance bias voltage and increases the differential conductance.

Keywords

Coupled Double Quantum Dots; Electron transport; indirect interaction.