Spin polarized resonant tunneling through coupled quantum dots

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Resonant electronic transport through two coupled non-interacting single-level quantum dots attached to ferromagnetic leads is analyzed theoretically. Magnetic moments of the leads are assumed to be collinear. Coupling of the dots to external leads as well as between the dots is assumed to be spin dependent. Basic transport characteristics, including current-voltage curves, linear and nonlinear conductance, and tunnel magnetoresistance associated with magnetization rotation are calculated using the Green function technique. The relevant Green functions have been calculated by the equation of motion method. Variation of the transport characteristics with such system parameters like energy level position, spin polarization of the leads, coupling between the dots, etc., has been calculated numerically. The results are also discussed from the point of view of possible applications in spintronics devices.

9.7 cm

13.4 cm

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