

Abstract Submitted
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Strong coupling effects in coherent electron transport in periodic quantum nanostructures¹ T. V. SHAHBAZYAN, L. S. PETROSYAN, Jackson State University — We study coherent transport in a system of periodic linear chain of quantum dots placed between two parallel quantum wires. We show that resonant-tunneling conductance between the wires exhibits Rabi splitting of the resonance peak as a function of Fermi energy in the wires. This effect is an electron transport analogue of the Rabi splitting in optical spectra of two interacting systems. The conductance peak splitting originates from anticrossing of Bloch bands in a periodic system caused by strong coupling between electron states in the quantum dot chain and quantum wires. A perpendicular magnetic field, by breaking the system left-right symmetry, gives rise to multiple Bloch band anticrossings leading to the appearance of a fine structure in the conductance lineshape.

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T. V. Shahbazyan
Jackson State University

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