Abstract

A noninteracting quantum-dot array side-coupled to a quantum wire is studied. Transport through the quantum wire is investigated by using a noninteracting Anderson tunneling Hamiltonian. The conductance at zero temperature develops an oscillating band with resonances and antiresonances due to constructive and destructive interference in the ballistic channel, respectively. Moreover, we have found an odd-even parity in the system, whose conductance vanishes for an odd number of quantum dots while becomes $2e^2/h$ for an even number. We established an explicit relation between this odd-even parity, and the positions of the resonances and antiresonances of the conductivity with the spectrum of the isolated quantum dot array.