

Abstract Submitted
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Many-body calculation for charge transport through triangular quantum dot molecules¹ CHIH-CHIEH CHEN, YIA-CHUNG CHANG², Department of Physics, University of Illinois Urbana-Champaign, DAVID M.T. KUO, Department of Electrical Engineering and Department of Physics, National Central University — We study the many-body effect of electron tunneling through the coupled quantum dots systems in the Coulomb blockade regime. Using the equation of motion method for the non-equilibrium Green's function, we calculate the charge current and conductance of junctions consisting of metallic electrodes and a few quantum dots. Many-particle correlation functions are explicitly solved numerically. Quantum phenomena like quantum interference, Coulomb blockade and spin blockade for the triangular quantum dot molecules are discussed. Our work suggests a new method for the modeling of the mesoscopic transport.

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