

Dynamics of Light Induced Current in 1D Coupled Quantum Dots

Authors : Tokuei Sako

Abstract : Laser-induced current in a quasi-one-dimensional nanostructure has been studied by a model of a few electrons confined in a 1D electrostatic potential coupled to electrodes at both ends and subjected to a pulsed laser field. The time-propagation of the one- and two-electron wave packets has been calculated by integrating the time-dependent Schrödinger equation directly by the symplectic integrator method with uniform Fourier grid. The temporal behavior of the resultant light-induced current in the studied systems has been discussed with respect to the lifetime of the quasi-bound states formed when the static bias voltage is applied.

Keywords : pulsed laser field, nanowire, electron wave packet, quantum dots, time-dependent Schrödinger equation

Conference Title : ICNN 2015 : International Conference on Nanoscience and Nanotechnology

Conference Location : Istanbul, Türkiye

Conference Dates : February 16-17, 2015