Dynamics of Light Induced Current in 1D Coupled Quantum Dots

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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.