

Three terminal efficient heat to electricity converter

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Thermoelectric properties of the efficient heat to electricity converter have been studied. The system consisting of two independently controlled quantum dots connected to three terminals has been modeled by the Anderson Hamiltonian. In the configuration with one hot and two cold electrodes, the electric current flows in the direction effectively perpendicular to the heat current. We have calculated linear transport coefficients and the resulting efficiency. Interestingly the power factor obtained from the knowledge of the linear electrical conductance and the thermopower surprisingly well compares to the exactly calculated (in the strongly nonlinear regime) value of optimal power of the device. The roles of asymmetry in the couplings and temperature difference between two cold electrodes have been explored in order to further optimise the performance of the system.

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