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Numerical studies of the dynamics of interacting electrons confined in nanostructures ROK ZITKO, Jozef Stefan Institute, Ljubljana, Slovenia, JANEZ BONCA, ANTON RAMSAK, FMF, University of Ljubljana, Slovenia, TOMAZ REJEC, Ben-Gurion University, Beer Sheva, Israel — At low temperatures electrons have long phase-relaxation time. They tunnel coherently through nanostructures in a wave-like manner, which leads to various interference effects. We presently have adequate knowledge about the transport phenomena that can be described using single-electron models. The transport in the presence of interactions is, however, still a subject of intensive research. More refined theoretical tools are required to tackle problems such as that of the transport through systems of coupled quantum dots in the Kondo regime. We present our studies using complementary methods: the quantum Monte Carlo, the variational method and the numerical renormalization group. We show the phase diagram of the triple quantum dot and explain the various regimes of enhanced conductance.

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