

Reduced Dynamics in Non-Equilibrium Quantum Impurity

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The reduced dynamics formalism has recently emerged as a powerful tool to study the dynamics of nonequilibrium quantum impurity models in strongly correlated regimes. In this talk I'll cover examples including the nonequilibrium Anderson impurity model near the Kondo crossover temperature and the nonequilibrium Holstein model. In these examples the formalism provides an accurate description of the reduced density matrix of the system for a wide range of model parameters and timescales. Furthermore, I'll discuss generalization of the formalism to allow for non-system observables such as the current between the impurity and leads and show that the equation of motion for the reduced observable of interest can be closed with the equation of motion for the reduced density matrix. A working example of the new formalism will be given for a generic resonant level model.