

OpenQMBP2023: New perspectives in the out-of-equilibrium dynamics of open many-body quantum systems



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Quantum Transport and cold atomic gases

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Quantum transport of a system which is between two reservoirs, at e.g. different chemical potentials, is one of the most common but also most important ways to put a quantum system out of equilibrium. Such a situation is relevant not only for charge transport but also for other transport properties such as spin transport or Hall transport for systems which are put under a magnetic field. I will discuss in this talk the recent progress done on the theoretical front, using in particular Keldysh technique, to deal with various situations such as the transport between two superconducting reservoirs with and without loss of particles, or to the transport in presence of a time dependent noise. These situations can be directly relevant for experimental situations encountered in cold atomic gases and I will present such realizations, and in particular recent experiments concerning Hall transport.

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