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Computational methods for quantum thermal transport in nanostructures

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We outline briefly two powerful methods to study transport of energy in the quantum regime in nano-junction systems: the nonequilibrium Green's function (NEGF) method and quantum master equation approach. We discuss the merits and limitations of each. Both of these methods can be applied to steady-state problems as well as time-dependent problems. We report some of these calculations as illustrative examples - the transient current when a junction is suddenly connected, and the effect of driven to thermoelectric efficiency in a quantum dot.

References:

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