

# Stochastic pump as a model to study nonequilibrium properties

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*Stochastic thermodynamics* is a modern approach to extend the usual Thermodynamics results to systems far from equilibrium. It is based on the mathematics of Markov processes and has become one of the main cornerstones of statistical mechanics. Periodically driven systems have attracted a lot of attention in nonequilibrium thermodynamics, in which the influence of reservoirs and forces acting over the system are time dependent.

We introduce a model for a periodically driven electron pump in contact with an arbitrary number of reservoirs. Exact expressions for the thermodynamic fluxes, such as entropy production and particle flows are derived arbitrarily far from equilibrium. We use this model to study properties such as Casimir-Onsager symmetry and different Thermodynamic Uncertainty Relations.