

PROPERTIES OF HEAT CONDUCTION IN CHAINS OF ANHARMONIC OSCILLATORS

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We discuss the use and utility of the Donsker–Varadhan theory of large deviations for Hamiltonian systems thermostatted by a Gaussian stochastic coupling. We first derive a general formula for the Donsker–Varadhan functional of dynamics which satisfy a generalized detailed balance. We then show that it implies fluctuation symmetry relations for the related current functions. Next, we discuss the characterization of the stationary state as the solution of a variational principle and its relation to the minimum entropy production principle. Finally, we compute the large deviation functional of the current in the case of a harmonic chain.