



Mathematical Physics

# Energy fluctuations, hydrodynamics and local correlations in harmonic systems with bulk noises

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In this note, I summarise and comment on joint work with C. Bernardin, V. Kannan and J. L. Lebowitz concerning two harmonic systems with bulk noises whose nonequilibrium steady states (NESS) are nearly identical (they share the same thermal conductivity and two-point function), but whose hydrodynamic properties (convergence towards the NESS) are very different. The goal is to discuss the results in the general context of nonequilibrium properties of dynamical systems, in particular, what they tell us about possible effective models, or predictive approximations, for such systems.

Comments: 11 pages, minor revisions and new references. Extended from a talk given at a workshop in the Nordita program "Foundations and Applications of Non-equilibrium Statistical Mechanics" in 2011

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