

1015-35-258

Luc Rey-Bellet* (luc@math.umass.edu), Lederle Graduate Center, Department of Mathematics and Statistics, University of Massachusetts, Amherst, MA 01003. *Stochastic nonlinear Klein-Gordon equation and statistical mechanics.*

We derive from a microscopic Hamiltonian system a stochastic non-linear Klein-Gordon equation which models heat conduction in a nonlinear medium coupled to several heat reservoirs at positive temperatures. The resulting equation is a Markovian stochastic PDE for which we prove existence of pathwise global solutions. We discuss the existence and invariance of Gibbs measures which correspond to the case of all reservoirs having the same temperature as well as invariant measures in the case of reservoirs at different temperatures. The results are joint work with Lawrence E. Thomas of University of Virginia. (Received February 07, 2006)