M A T H E M A T I C A L P H Y S I C S S E M I N A R

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Thermal conductivity in the weak coupling limit

Abstract

Recently there have been some rigorous results about the macroscopic evolution of the energy in coupled system in a lattice, through a weak-coupling limit. More precisely Dolgopiat and Liverani have studied the case weak-coupling limit of determinist chaotic systems (geodesic flows on manifolds of negative curvature) and Liverani and Olla the case of a chain of anharmonic oscillators with energy conserving internal noise. In all cases the energy evolves, after the weak-coupling limit, following a stochastic differential system of the Ginzburg-Landau conservative type. This 'mesoscopic' stochastic evolution of the energy appears naturally in the small coupling serie expansion of the Green-Kubo formula for the thermal conductivity.