Berlin Leipzig Seminar

Analysis/probability theory

Third Meeting Winter Term 2006/07

Organized by the DFG Research Group *Analysis and Stochastics in Complex Physical Systems*

Date:

Friday, 19 January 2007

Venue:

Technical University Berlin, Institute for Mathematics, Str. des 17. Juni 136, 10623 Berlin

Room MA313/314

Programme:

9:45–10:45: **Thierry Bodineau (Paris)**

Current large deviations in stochastic systems

Abstract: Using the framework of the hydrodynamic limits, we will discuss the large deviations of the heat current through a diffusive system maintained off equilibrium by two heat baths at unequal temperatures. In particular, we will explain the occurence of a dynamical phase transition which may occur for some models. In the last part of the talk, we will focus on a specific dynamics (the totally asymmetric process) and show how the large deviation functional of the current provides a physical interpretation to the non-entropic solutions of Burgers equation.

10:55–11:55: **Nicolas Dirr (MPI MIS Leipzig)**

Sharp-interface limit of a mesoscopic energy with a random external field.

Abstract: We add a random bulk term, modeling the interaction with the impurities of the medium, to a standard functional in the gradient theory of phase transitions consisting of a gradient term with a double well potential. For the resulting functional we study the asymptotic properties of minimizers and minimal energy under a rescaling in space, i.e. on the macroscopic scale by bounding the energy from below by a coarse-grained, discrete functional.

(Joint work with Enza Orlandi)

13:00–14:00: **Senya Shlosman (Marseille)**

Condensation phenomenon in the equilibrium statistical mechanics

Abstract: I will review some known results concerning the spontaneous appearance of the droplets of one phase in the environment of another phase, as one changes the concentration or a related external parameter. I will present some new results, including the model of dew fall, obtained together with Dima Ioffe.

Everybody is welcome to attend.

Wolfgang König, University of Leipzig