Berlin Leipzig Seminar
Analysis/probability theory
First Meeting Summer Term 2010

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

DATE: Friday, 18 June 2010

VENUE: University of Heidelberg, Seminar room of the Institute for Theoretical Physics, Philosophenweg 19, 69120 Heidelberg.

PROGRAMME:

10:15–11:15: **Wojciech de Roeck (University of Heidelberg)**

Diffusion in Hamiltonian systems

Abstract: I report on a proof of long-time diffusion for a Hamiltonian (hence deterministic) and physically realistic system, namely a heavy quantum particle interacting with a gas of bosons. This model can be roughly compared to the 'Rayleigh gas' model studied by Dürr, Goldstein and Lebowitz (1980). However, in contrast to this result, as well as similar recent results by Erdős, Yau and Salmhofer, we do not take any scaling limit in which the system becomes Markovian. Instead, we prove a central limit theorem for a fixed dynamical system. [based on joint works with J. Fröhlich and A. Kupiainen]

11:30–12:30: **Christof Külske (University of Bochum)**

Spin dynamics, generalized Gibbs measures and multiple histories

Abstract: Measures describing spin systems in statistical mechanics which do not fit into the classical Gibbsian framework are best known to occur as a result of renormalization group transformations. More than that, in the last years there has been interest in the investigation of Gibbs-non Gibbs transitions of a similar spirit as a result of stochastic dynamics. We begin our talk with a discussion of some lattice and mean-field systems under high-temperature dynamics. We will then explain more specifically our recent results about the behavior of the Curie-Weiss model at a given initial temperature in vanishing external field evolving under a Glauber spin-flip dynamics corresponding to a possibly different (and possibly low) temperature (Joint with V. Ermolaev, arXiv:1005.0954v1). The analysis rests on the detection of multiple minimizers of the large deviation rate functional for magnetization paths conditioned to take fixed end points.

Everybody is welcome to attend. Wolfgang König, TU Berlin and WIAS Berlin