Berlin Leipzig Seminar
Analysis/probability theory
Fourth Meeting Winter Term 2006/07

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

Date:

Friday, 9 February 2007

Venue:

Max Planck Institute for Mathematics in the Sciences, Inselstr. 22, 04103 Leipzig
Room A01

Program:

10:30 – 11:30: **Karel Netocny (Prague)**

Towards quantum large deviation theory

Abstract: We will discuss and compare some possibilites how to extend the classical large deviation formalism to a noncommutative setup. In particular, we consider (1) the effective Gibbs measures for classical subsystems, (2) a quantum variant of the Laplace-Varadhan integral lemma, and (3) a quantum microcanonical ensemble under noncommutative constraints. (Based on joint work with W. De Roeck, C. Maes, and F. Redig.)

11:40–12:40: **Jan Swart (Prague)**

The rebellious voter model

Abstract: In the standard voter model, voters on an infinite lattice each hold one of two possible political opinions. With rate one, a voter adopts the opinion of one of his or her neighbors. In this talk, we will discuss a variation of this model where voters like to adopt a minority point of view. This model has applications in population biology, in the study of the distribution of two closely related species. Physicists have made a number of conjectures about this type of models, much of which remains unproved. I will present some rigorous results recently obtained in cooperation with Anja Sturm (Delaware).

14:00–15:00: **Felix Otto (Bonn)**

A new criterion for the logarithmic Sobolev inequality

Abstract: We present a criterion for the logarithmic Sobolev inequality (LSI) on the product space $X_1 \times \ldots \times X_N$. We have in mind an N–site lattice, unbounded continuous spin variables, and Glauber dynamics. The interactions are described by the Hamiltonian H of the Gibbs measure. The criterion for LSI is formulated in terms of the LSI constants of the single–site conditional measures and the size of the off–diagonal entries of the Hessian of H. It is optimal for Gaussians with positive covariance matrix. To illustrate, we give two applications: one with weak interactions and one with strong interactions and a decay of correlations condition. This is joint work with Maria Reznikoff.

Everybody is welcome to attend. Wolfgang König, University of Leipzig