

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 possibilities 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 $X_1 \times \dots \times X_N$. 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