Berlin Leipzig Seminar
Analysis/probability theory
First Meeting Winter Term 2008/09

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

DATE: **Friday, 24 October 2008**

VENUE: **Max Planck Institute, Inselstr. 22, 04103 Leipzig, Room A01**

PROGRAMME:

9:30 – 10:20: **Patrick Dondl (MPI Leipzig)**

Pinning and depinning behavior of martensitic phase boundaries in a heterogeneous environment

Abstract: We study the role of defect in the quasistatic evolution of martensitic phase boundaries. This transformation involves a change in shape of the underlying crystal. Therefore, the propagation of the phase boundary is accompanied by an evolving mechanical stress and strain field. We derive, in the sense of Gamma-convergence, an approximate model for a shallow slope phase boundary. We show that, in this quasilinear approximation, the evolution reduces to a one- dimensional problem that exhibits stick-slip behavior, and thus gives rise to hysteresis. We also present numerical simulations of the de- pinning transition showing a power-law behavior in the average velocity.

10:30–11:20: **Nicolas Pétrélis (TU Berlin)**

Copolymer in an emulsion: supercritical and subcritical regime.

Abstract: In this talk we discuss a two-dimensional directed self-avoiding walk model of a random copolymer in a random emulsion. The copolymer is a random concatenation of monomers of two types, A and B, each occurring with density $\frac{1}{2}$. The emulsion is a random mixture of liquids of two types, A and B, organised in large square blocks occurring with density p and $1-p$, respectively, where $p \in (0,1)$. The copolymer in the emulsion has an energy that is minus α times the number of AA-matches minus β times the number of BB-matches. We will consider both the supercritical regime (oil droplets form an infinite cluster) and the subcritical regime (no infinite cluster).

11:30–12:20: **René Schilling (TU Dresden)**

Approximating Feller processes

Abstract: We give a brief survey on the construction and a few properties of Feller processes. We will then explain a (also numerically useful) approximation scheme for Feller processes. (Joint work with B. Böttcher, TU Dresden)

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