Berlin Leipzig Seminar
Analysis/probability theory
Second Meeting Winter Term 2007/08

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

DATE: **Friday, 11 January 2008**

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

PROGRAMME:

9:30 – 10:20: **Franz Merkl (Technical University Munich)**

Linearly edge-reinforced random walks

Abstract: In the 1980ies, Diaconis asked whether linearly edge-reinforced random walk on $\mathbb{Z}^2$ is recurrent. This problem is still open. In the talk, I will give an overview on related recent results on linearly edge-reinforced-random walks. In particular, the main ideas for proving recurrence of linearly edge-reinforced-random walks on some two-dimensional graphs will be presented.

(Joint work with Silke Rolles)

10:30–11:20: **Karl-Theodor Sturm (University of Bonn)**

Entropic measure and Wasserstein diffusion

Abstract: We construct a canonical reversible process $(\mu_t)_{t\geq 0}$ on the L^2-Wasserstein space of probability measures $\mathcal{P}(\mathbb{R})$, regarded as an infinite dimensional Riemannian manifold. This process has an invariant measure $\mathbb{P}^\beta$ which may be characterized as the 'uniform distribution' on $\mathcal{P}(\mathbb{R})$ with weight function $\frac{1}{Z}\exp(-\beta \cdot Ent(.|m))$ where m denotes a given finite measure on $\mathbb{R}$.

One of the key results is the quasi-invariance of this measure $\mathbb{P}^\beta$ under push forwards $\mu \mapsto h_*\mu$ by means of smooth diffeomorphisms h of $\mathbb{R}$.

11:30–12:20: **Georg Dolzmann (University of Regensburg)**

Material systems with orientational degrees of freedom

Abstract: Many material systems display fascinating structures that are related to the existence of orientational degrees of freedom. In this talk we address the analytical and numerical challenges in the simulation of these systems. Examples include nematic or smectic elastomers and membranes in the gel phase.

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