

**Berlin Leipzig Seminar**  
**Analysis/probability theory**  
**Second Meeting Winter Term 2009/10**

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

DATE: Friday, 15 January 2010

VENUE: University of Bonn, Institute for Applied Mathematics, Lipschitz Lecture Hall (room number 1.016), Endenicher Allee 60, 53115 Bonn

PROGRAMME:

9:40–10:30: **Jason Miller (Stanford University)**

*Fluctuations for the Ginzburg-Landau grad-phi interface model on bounded domains*

*Abstract:* The object of our study is the massless field with strictly convex nearest neighbor interaction on lattice approximations of a bounded, smooth, planar domain  $D$  with boundary conditions given by the restriction of a continuous function  $f$ . This is a general model for a (2+1)-dimensional effective interface. We prove that the mean of the random height function  $h$  converges to the harmonic extension of  $f$  from the boundary of  $D$  to  $D$  and that linear functionals of  $h$  converge to the Gaussian free field on  $D$ , a conformally invariant random distribution. Time permitting, we will explain how the estimates employed in the proof can be used to show that other functionals have conformally invariant limits.

10:40–11:30: **Felix Otto (University of Bonn)**

*Optimal error estimates in stochastic homogenization*

*Abstract:* We consider discrete elliptic equations with random coefficients. On large scales, the solution operator behaves like that of a homogeneous, deterministic elliptic equation. The formula for the homogenized coefficients involves the corrector, which is the stationary solution of an auxiliary random elliptic problem. We establish new a priori estimates on the moments of this corrector. These estimates yield optimal bounds on the error made when replacing the formula for the homogenized coefficients by a numerically tractable approximation. This is joint work with A. Gloria (INRIA Lille).

11:40–12:30: **Annibale Magni (University of Dortmund)**

*Perelman's Dilaton*

*Abstract:* We will give a new framework for the gradient-like formulation of the Ricci Flow and we will sketch some possible applications.

Everybody is welcome to attend.

Wolfgang König, TU Berlin and WIAS Berlin