

Berlin Leipzig Seminar

Analysis/probability theory

First Meeting Winter Term 2010/11

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

DATE: Friday, 26 November 2010

VENUE: MPI for Mathematics in the Sciences, Inselstr. 22, 04103 Leipzig, Room A01

PROGRAMME:

10:00–10:50: **Benjamin Schlein (University of Bonn)**

Effective evolution equations from many body quantum dynamics

Abstract: One of the main goal of non equilibrium statistical mechanics is the derivation of effective evolution equations from first principles, many body, quantum dynamics. In this talk I will present two examples of physically interesting systems for which effective equations can be rigorously derived. In the first example, I will discuss the evolution of boson stars and the related phenomenon of stellar collapse. In the second example, I will consider the dynamics of initially trapped Bose-Einstein condensates.

11:0–11:50: **Noam Berger (Hebrew University of Jerusalem)**

Spin-glasses on \mathbb{Z}^2 - Many questions, very few answers

Abstract: We discuss the structure of ground-states for two dimensional spin-glasses, mostly the geometry of the collection of unsatisfied edges. We prove one result, saying that percolation does not occur for those edges, and present further questions that are open.

Based on joint work with Ran J. Tessler.

12:00–12:50: **Sergio Conti (University of Bonn)**

On geometrically nonlinear plasticity models in the limit of rigid elasticity

Abstract: In the study of geometrically nonlinear crystal plasticity much insight can be gained by focusing on variational models with rigid elasticity. We investigate their validity by studying the asymptotics of elastic-plastic models in the limit of large elastic coefficients, for one slip system in two dimensions. The limiting behavior depends strongly on the growth of the energy. In the natural case of quadratic growth compactness is recovered by resorting to an extension of the classical div-curl lemma. This talk is based on joint work with Georg Dolzmann, Carolin Klust and Stefan Müller.

Everybody is welcome to attend.

Wolfgang König, TU Berlin and WIAS Berlin