# Berlin Leipzig Seminar
## Analysis/probability theory
# Second Meeting Winter Term 2010/11

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

DATE: Friday, 14 January 2011

VENUE: Technical University Dortmund, Vogelpothsweg 87, 44227 Dortmund, Mathe-Tower, Room 611 (6th floor)

PROGRAMME:

9:45–10:15: **Coffee in Room 640 ('Banachraum')**

10:15–11:05, Room 611: **Ben Schweizer (Technical University Dortmund)**

*On the homogenization of Prandtl-Reuss plasticity equations*

*Abstract:* Due to the highly nonlinear behavior of plastic materials and the effect of hysteresis in such media, the equations of plasticity raise interesting analytical questions and demand for the use of modern methods. In this talk, we are interested in homogenization results for one of the more prominent sets of equations of plasticity, the Prandtl-Reuss model. The task of homogenization is to derive effective equations when the original medium has high oscillations in the coefficients. In particular, for plastic materials, we ask how the averaged hysteresis properties are characterized. We present an approach that adopts the method of oscillating test-functions and that gives strong theorems and simple proofs even in the context of stochastic homogenization. We show results on the one-dimensional stochastic case, and on the higher-dimensional periodic case. We additionally present a new method for homogenization, the 'needle-problem approach'.

11:15–12:05, Room 611: **Friedrich Götze (University Bielefeld)**

*Approximations in free and classical central limit theorems*

*Abstract:*We show asymptotic approximations of first and second order in the Central Limit Theorem of Free Probability. For the $n$-fold free convolution we establish errors bounds of order $o(n^{-1/2})$ and $o(n^{-1})$ depending on the existence of three or four moments. This is joint work with G. Chistyakov.

In the classical CLT the rate convergence in the entropy distance to the normal distribution and the behavior of this distance under convolution is investigated. This is joint work with G. Chistyakov and S. Bobkov.

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**Route description from Dortmund main station:**

Train S1 (usually from track 7) to Dortmund Universität (3rd stop), go up all stairs, pass along the main library, head towards the largest building ('Mathe Tower'), enter the building, take elevator or stairs to the 6th floor.

Everybody is welcome to attend. Wolfgang König, TU Berlin and WIAS Berlin