

**RESEARCH TRAINING GROUP**

*Stochastic analysis with applications in biology, finance  
and physics*

**Wednesday, 1 February, 2017, 18 Uhr c.t.**

Speaker:

**Tuan Anh Nguyen**  
**(Technische Universität Berlin)**

Title:

**”The excess decay in the discrete setting”**

Abstract: In the talk, I will give an introduction to my ongoing research based on a work of F. Otto et. al. on stochastic homogenization. Consider the random differential operator  $\nabla \cdot a \nabla$  where the random matrix (coefficient field)  $a$  is assumed to be stationary and ergodic. The main part of the talk will explain the idea of *perturbing around the homogenized coefficient field*. By making use of the extended correctors  $(\phi, \sigma)$  and choosing a reasonable homogenization error, one can obtain a regularity estimate, namely the excess decay, which implies a Liouville principle for  $a$ -harmonic functions. It is interesting to know whether this idea can be applied in the discrete case of the random conductance model: The answer is positive when the coefficient  $a$  is uniformly elliptic (the work by Gloria, Neukamm, and Otto). Recently, the excess decay has already been proved in the continuum setting by Bella, Fehrman, and Otto under some moment conditions. It is possible to obtain the same result in the discrete case for dimension  $d = 2$  as a first step. The remaining part of the talk will discuss some ideas and open problems.

**Place:**

Mathematics building, room MA 004,  
Technische Universität Berlin,  
Strasse des 17. Juni 136, 10623 Berlin

coffee/tea 16.45 Uhr, room MA 721, Strasse des 17. Juni 136, 10623 Berlin