Berlin Mathematical School

BMS Days 2016

Monday 15 February 2016

BMS Loft, Urania, An der Urania 17, 10787 Berlin

11:00 Maryna Viazovska (HU Berlin)

15:30 Alain-Sol Sznitman (ETH Zurich)

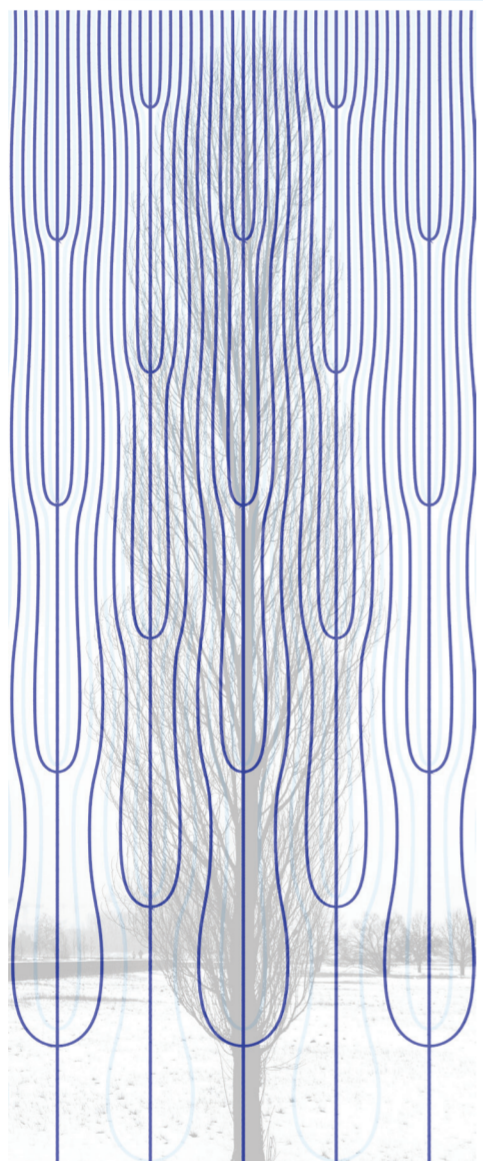### Maryna Viazovska: Modular forms and their applications

Modular forms are exceptionally symmetric holomorphic functions on the upper half plane. Their theory is deeply connected with harmonic analysis, algebraic geometry, representation theory, and arithmetic geometry. Moreover, the theory of modular forms provides tools for solving various problems in number theory, mathematical physics, and combinatorics. Two classical examples, Viazovska will discuss, are the study of integer lattices and the computation of partition numbers. She will also speak about the new results relating modular forms and the sphere packing.

Maryna Viazovska is a BMS Dirichlet Postdoctoral Fellow. She works at HU Berlin in Jürg Kramer's arithmetic geometry group. Her research interests include number theory and discrete geometry.
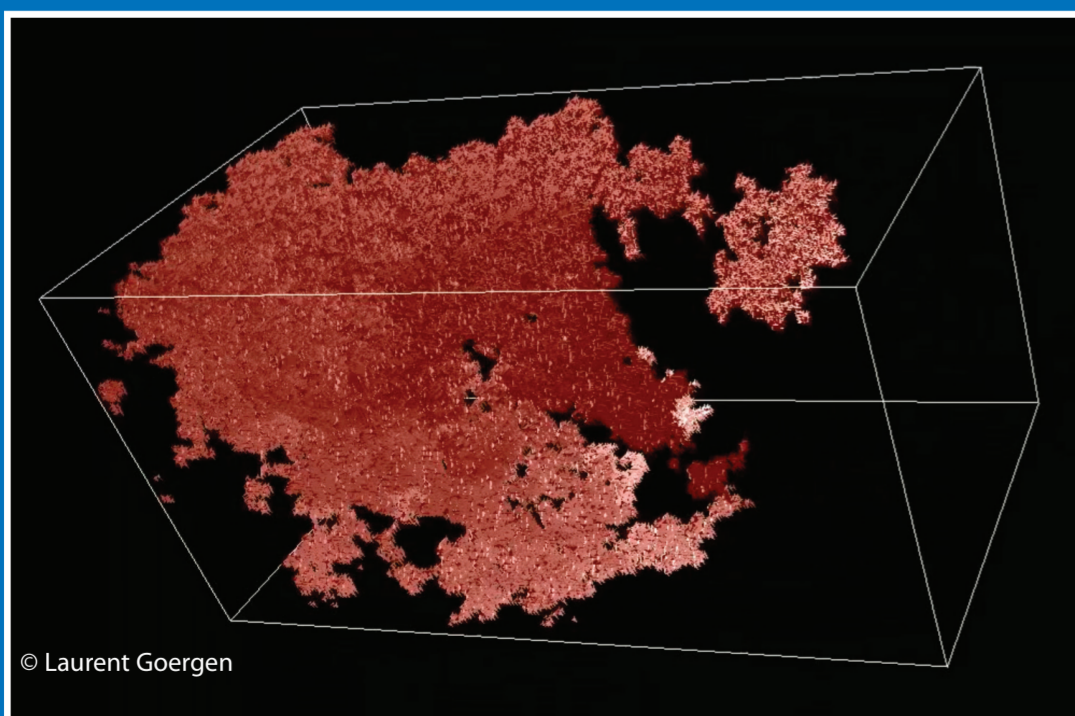
© Maryna Viazovska

Alain-Sol Sznitman: On the cost of insulation with a random walk

In his talk, Sznitman will discuss some large scale asymptotics related to various disconnection problems. One typical question is, for instance, to understand how the trajectory of a simple random walk in dimension three and above can disconnect a macroscopic body from infinity. Sznitman will relate this question to similar disconnection problems for random interlacements and for the level-sets of the Gaussian free field. Some of the results discussed in this talk have been obtained in collaboration with Xinyi Li.

Alain-Sol Sznitman is a professor of mathematics at ETH Zurich. His research concerns probability theory, with a special focus on problems connected with random media.

© Laurent Goergen

www.math-berlin.de