

Programme on
“Measured Group Theory”
January 18 - March 18, 2016
organized by

**Miklos Abért (Hungarian Academy of Sciences, Budapest), Goulnara Arzhantseva (U Vienna),
Damien Gaboriau (ENS Lyon), Thomas Schick (U Göttingen), Andreas Thom (TU Dresden)**

Conference
February 15 – 19, 2016

• **Friday, February 19, 2016**

09:30 – 10:30 **Remi Boutonnet**

Local spectral gap in simple Lie groups

10:30 – 11:00 *coffee / tea break*

11:00 – 12:00 **Adam Timar**

Indistinguishable clusters in random spanning forests

12:00 – 13:30 *lunch break*

13:30 – 14:00 **Oren Becker**

Equations in permutations and locally testable groups

This parallel session takes place in the Boltzmann Lecture Hall

13:30 – 14:00 **Martin Schneider**

A Ramsey-type characterization of amenability for topological groups

This parallel session takes place in the Schrödinger Lecture Hall

14:15 – 15:15 **Roman Sauer**

A measurable version of simplicial volume

All talks take place at the ESI, Boltzmann Lecture Hall, except the parallel sessions, that will take place at the ESI, Schrödinger Lecture Hall!

see Page 2 for the abstracts of the talks

Abstracts

Remi Boutonnet

Local spectral gap in simple Lie groups

In this talk I will define a notion of local spectral gap for infinite measure +preserving actions, extending the classical notion of spectral gap in the +finite measure setting. I will provide examples of actions satisfying this +property and a few applications: strong ergodicity, orbit equivalence rigidity, +Banach-Ruziewicz problem... This talk is based on joint work with A. Ioana and Salehi-Golsefidi.

Adam Timar

Indistinguishable clusters in random spanning forests

It was proved by Lyons and Schramm that the infinite components of Bernoulli percolation on a Cayley graph are indistinguishable. This means that any invariantly defined property either holds for every infinite component or for none of them. Indistinguishability of clusters is the same as the ergodicity of the cluster equivalence relation. The perhaps most important invariant random spanning forests of a Cayley graph are the Uniform Spanning Forest (USF) and the Minimal Spanning Forest (MSF). We show that the free versions of these forests satisfy indistinguishability whenever they differ from their wired counterparts. This question was asked by Benjamini, Lyons, Peres and Schramm.

Oren Becker

Equations in permutations and locally testable groups

Arzhantseva and Paunescu showed 2015 that if two permutations X and Y in $\text{Sym}(n)$ nearly commute, then they are close to permutations that really commute. This question can be asked for any equation (or set of equations) and one sees that the answer depends on the abstract group defined by the equations rather than by the equations themselves. This leads to the notion of locally testable groups (aka β -table groups). So, the main result of [AP] is that that abelian groups are locally testable, while Glebsky and Rivera showed 2009 that the same is true for any finite group. A locally testable sofic group must be residually finite. In a joint work with A. Lubotzky (work in progress), we develop an ensemble of tools to check whether or not a given group is locally testable. As an application, we can answer two questions of [AP] by showing that the Baumslag-Solitar group $BS(1,2)$ is locally testable and that there exists a finitely presented solvable (and so sofic) residually finite group which is not locally testable.

Martin Schneider

A Ramsey-type characterization of amenability for topological groups

In the talk I will present a Ramsey-type characterization of amenability for general (in particular non-locally compact) topological groups in terms of matchings with respect to finite uniform covers. In particular, I will explain why it suffices to consider two-element covers. If time permits, I will also talk about the connection with structural Ramsey theory and discuss a corresponding result concerning matchings with respect to infinite uniform covers. The material to be presented originates from a joint work with Andreas Thom.

Roman Sauer

A measurable version of simplicial volume

I explain a measurable variant of the simplicial volume. The transition from simplicial volume to the measurable version reminds of the transition from the rank of the group to its cost. I discuss recent results on the measurable simplicial volume of hyperbolic manifolds (joint work with Frigerio, Löumlh and Pagliantini) and the connection to torsion homology growth