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

- **Monday, February 15, 2016**

  09:00 – 09:30 **Registration**

  09:30 – 10:30 **Brandon Seward**
  Positive entropy actions of countable groups factor onto Bernoulli shifts

  10:30 – 11:00 *coffee / tea break*

  11:00 – 12:00 **Uri Bader**
  An ergodic theoretical method for proving non-linearity of groups.

  12:00 – 14:00 *lunch break*

  14:00 – 15:00 **Narutaka Ozawa**
  A functional analysis proof of Gromov's polynomial growth theorem

  15:15 – 15:45 **Nicolas Matte Bon**
  Topological full groups of self-similar groups
  This parallel session takes place in the Boltzmann Lecture Hall

  15:15 – 15:45 **Adrien le Boudec**
  Discrete and locally compact groups acting on trees
  This parallel session takes place in the Schrödinger Lecture Hall

  16:00 – 17:00 **Hanfeng Li**
  Sofic mean length

All talks take place at the ESI, Boltzmann Lecture Hall, except the talk of Adrien le Boudec!

Note: The talks for the following days will be announced each day before on the programme webpage http://www.uni-math.gwdg.de/schick/ESI16/esi16_7.html

see Page 2 for the abstracts of the talks

Abstracts

Brandon Seward
Positive entropy actions of countable groups factor onto Bernoulli shifts

I will prove that if a free ergodic action of a countable group has positive Rokhlin entropy (or, less generally, positive sofic entropy) then it factors onto all Bernoulli shifts of lesser or equal entropy. This extends to all countably infinite groups the well-known Sinai factor theorem from classical entropy theory. As an application, I will show that for a large class of non-amenable groups, every positive entropy free ergodic action satisfies the measurable von Neumann conjecture.

Uri Bader
An ergodic theoretical method for proving non-linearity of groups.

The talk will have two parts. In the first part I will explain how to relate linear representations of two groups which have commuting ergodic actions (based on a joint work with A. Furman). In the second part I will discuss the non-linearity of some groups of automorphisms of affine buildings (based on a joint work with J. Lecureux and P.E. Caprace).

Narutaka Ozawa
A functional analysis proof of Gromov's polynomial growth theorem

The celebrated theorem of Gromov in 1980 asserts that any finitely generated group with polynomial growth contains a nilpotent subgroup of finite index. Alternative proofs have been given by Kleiner (2007), etc. In this talk, I will give yet another proof of Gromov's theorem, along the lines of Shalom and Chifan–Sinclair, which is based on the analysis of reduced cohomology and Shalom's property HFD.

Nicolas Matte Bon
Topological full groups of self-similar groups

I will discuss some topological full groups arising naturally from Schreier graphs spaces of automaton groups. I will explain in particular why every bounded automaton group can be embedded in a finiteky generated simple group which is still amenable.

Adrien le Boudec
Discrete and locally compact groups acting on trees

This talk will survey recent results about the study of some groups acting on trees, defined by piecewise prescribing the action on finitely many subtrees. This construction provides locally compact simple groups with no lattice (in connection with Tsachik Gelander's course), as well as discrete countable groups with no amenable normal subgroup and whose reduced C*-algebra is not simple.

Hanfeng Li
Sofic mean length

For a unital ring R, a length function on left R-modules assigns a (possibly infinite) nonnegative number to each module being additive for short exact sequences of modules. For any unital ring R and any group G, one can form the group ring RG of G with coefficients in R. The modules of RG are exactly R-modules equipped with a G-action. I will discuss the question of how to define a length function for RG-modules, given a length function for R-modules. An application will be given to the question of direct finiteness of RG, i.e. whether every one-sided invertible element of RG is two-sided invertible. This is based on joint work with Bingbing Liang.