

KIAS Summer School on Homogeneous dynamics

Date: July 2~6, 2013 Place: 5F Seminar room/ KIAS, Seoul, Korea

Title and Abstracts

Emmanuel Breuillard (Orsay, France)

Title: Unitary representations and Spectral gaps

Abstracts:

- 1) The unitary dual (Fell topology, property T, amenability).
- 2) Decay of matrix coefficients (Howe, Moore, Cowling).
- 3) The Burger Sarnak method.
- 4) Spectral gap and effective equidistribution in G/Γ
(work by Einsiedler–Margulis–Venkatesh).

Manfred Einsiedler (ETH, Swiss)

Title: The classification of positive entropy measures for diagonal actions

Abstracts: Let G be a Lie group, $\Gamma < G$ be a lattice, $X = G/\Gamma$ and let $A < G$ be a split torus (i.e. diagonalizable over \mathbb{R}) subgroup. It is conjectured that A -invariant and ergodic probability measures on X are always algebraic unless the action "contains" rank one situations. We will outline the proof of this conjecture in special cases and discuss the application to Littlewood's conjecture in Diophantine approximation. This is joint work with Elon Lindenstrauss and Anatole Katok

Alex Eskin (Chicago, USA)

Title: The $SL(2, \mathbb{R})$ action on Moduli space

Abstracts:

- 1) Introduction to moduli space and statement of the main theorem.
- 2) Lyapunov exponents and the entropy method.
- 3) Products of random matrices – simplicity of the Lyapunov spectrum
(i.e. work by Guivarc'h and Raugi)
- 4) Exponential drift (i.e. work by Benoist and Quint).

Alex Furman (UIC, USA)

Title: Introductory lectures on Ergodic theory

Abstracts: T.B.A

Dmitry Kleinbock (Brandeis University USA)

Title: Homogeneous dynamics and Diophantine approximations

Abstracts: T.B.A

Amir Mohammadi (UT, Austin, USA)

Title: Unipotent flows on homogeneous spaces

Abstracts: Unipotent flows on homogeneous spaces present a rich dynamical system with several application to other fields particularly number theory. We will first give an overview of the main results in the field which have been developed over the past four decades or so; to present ideas involved in the proof we will then work out an explicit "low dimensional" example.

Andreas Strömbergsson (Uppsala, Sweden)

Title: Spectral theory and some cases of effective equidistribution in homogeneous spaces

Abstracts: T.B.A