**Elon Lindenstrauss,  Hebrew University of Jerusalem, Israel**

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**Title : Joining of higher rank homogenous actions,**

(j\w M. Einsidler)

Higher rank homogeneous actions display subtle rigidity properties that are not yet well understood. One situation where the state of knowledge seems to be quite satisfactory is regarding joinings of higher rank diagonalizable actions on quotients of semisimple groups.

This situation appears quite naturally in applications, and I will survey a few of these, including a result of Aka, Einsiedler and Shapira regarding the joint distribution of points on a sphere and the shape of its perpendicular lattice.

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**Victoria Sadovskaya, Pennsylvania State University, USA**

  Title: Periodic approximation of Lyapunov exponents for Banach cocycles.

 Abstract : We consider a Holder continuous cocycle A over a hyperbolic dynamical

system with values in the group of invertible bounded linear operators

on a Banach space. We show that the upper and lower Lyapunov exponents

of A with respect to any ergodic invariant measure can be approximated

in terms of its periodic data, i.e. its return values along the periodic

orbits in the base. These exponents cannot always be approximated by the

exponents of A with respect to measures on periodic orbits. We also

deduce growth estimates for the cocycle in terms of its periodic data.

This is joint work with B. Kalinin.

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**Tushar Das, University of Wisconsin-La Crosse, USA**

Title:A variational principle in the parametric geometry of numbers

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Abstract:  
We establish a new connection between metric Diophantine approximation  
and the parametric geometry of numbers by proving a variational  
principle facilitating the dimension computation of a number of sets  
of interest in the theory of numbers. I will present certain  
applications of our theorems that include computing the Hausdorff and  
packing dimensions of the set of points witnessing a conjecture of  
Starkov (2000), and of the set of points witnessing a conjecture of  
Schmidt (1983). This is ongoing joint work with Lior Fishman  
(NorthTexas), David Simmons (York) and Mariusz Urbanski (North Texas).

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**Michael Lin, Ben Gourion University, Israel**

 Title: [Ergodic theorems and geometry of Banach spaces](https://ergwork.web.unc.edu/unc17-abstract3/)

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**Olena Karpel, Institute for Low Temperature Physics, Ukraine / Institute of   Mathematics, Poland**

Title: Decisive Bratteli-Vershik models

Abstract: Bratteli-Vershik representations have been used to study mainly minimal Cantor systems, where they showed extremely useful as a tool allowing to describe the simplex of invariant measures and orbit equivalence classes. The talk is devoted to Bratteli-Vershik models of general compact zero-dimensional systems with the action of a homeomorphism. An ordered Bratteli diagram is called decisive if the corresponding Vershik map prolongs in a unique way to a homeomorphism of the whole path space of the Bratteli diagram. We prove that a compact invertible zero-dimensional system has a decisive Bratteli-Vershik model if and only if the set of aperiodic points is either dense, or its closure misses one periodic orbit. This is a joint work with T. Downarowicz.

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**Daniel Mansfield, UNSW, Australia**

Title: The Hausdorff dimension of a G-measure

Abstract: The Hausdorff dimension for a measure is a standard notion of dimension for probability measures. This talk shows that there is a simple connection between the Hausdorff dimension of a measure and its G-measure representation. Both concepts will be introduced, and the theory will be applied to the problem of finding the Hausdorff dimension for a variety of ergodic measures.

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**Joe Rosenblatt, Indiana University-Purdue University Indianapolis, USA**

Title : [Good functions and bad functions for averaging](https://ergwork.web.unc.edu/good-functions-and-bad-functions-for-averaging-processes2/)

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**Anton Solomko, University of Bristol, UK**

 Title : On rank and isomorphism of von Neumann special flows

A von Neumann flow is a special flow over an irrational rotation of the circle and under a piecewise smooth roof function with a non-zero sum of jumps. Such flows appear naturally as special representations of Hamiltonian flows on the torus with critical points. We consider the class of von Neumann flows with one discontinuity. I will show that any such flow has infinite rank and that the absolute value of the jump of the roof function is a measure theoretic invariant. The main ingredient in the proofs is a Ranter type property of parabolic divergence of orbits of two nearby points in the flow direction.  
Joint work with Adam Kanigowski.

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**Mrinal Roychowdhury,University of Texas Rio Grande Valley, USA**

Title: An overview of optimal quantization

Abstract: The basic goal of quantization for probability distribution is to reduce the number of values, which is typically uncountable, describing a probability distribution to some finite set and thus approximation of a continuous probability distribution by a discrete distribution. Mixed distributions are an exciting new area for optimal quantization. Recently, in  the paper "An overview of the quantization for mixed distributions",  available in arXiv, I have determined the optimal sets of $n$-means, the $n$th quantization error, and the quantization dimensions of different mixed distributions. Besides, I have discussed whether the quantization coefficients for the mixed distributions exist. The results in this paper will give a  motivation and insight into more general problems in quantization of mixed distributions.

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**Sebastian Donoso, University of O'higgins,  Chile.**

Title: Quantitative multiple recurrence for two and three transformations.

Abstract: In this talk I will provide some counter examples for quantitative multiple recurrence problems for systems with more than one transformation.  For instance, I will show that there exists an ergodic system $(X,\mathcal{X},\mu,T\_1,T\_2)$ with two commuting transformations such that for every $\ell < 4$ there exists $A\in \mathcal{X}$ such that

\[ \mu(A\cap T\_1^n A\cap T\_2^n A) < \mu(A)^{\ell} \]

for every $n \in \mathbb{N}$.

The construction of such a system is based on the study of ``big'' subsets of $\mathbb{N}^2$ and $\mathbb{N}^3$  satisfying combinatorial properties.

This a joint work with Wenbo Sun.

**Francesco Cellarosi, Queen's University, Canada**

Title: The dynamical construction of an automorphic function

Abstract:I will present the construction of an automorphic function on the Jacobi group G (the Lie group consisting of the semidirect product of SL(2,R) and the Heisenberg group). This function generalizes Jacobi theta function. The function is invariant under the action of a lattice in G and thus well defined in the quotient, but a priori only as a square-integrable function.  
We are able to show that the function is actually defined pointwise along the whole orbit of almost every point, under the geodesic flow. The construction uses dynamical ideals of renormalization, ergodicity of the geodesic flow, equidistribution of horocycle lifts, and a partition of unity suitably "adapted" to the flow. Joint work with Jens Marklof.