齐性动力系统研讨会

2023 年 2 月 16 日-2 月 17 日

上海数学中心

上海数学中心
SHANGHAI CENTER FOR
MATHEMATICAL SCIENCES

齐性动力系统研讨会

时间：9：30-17：00（2023 年 2 月 16 日）；9：30-12：00（2 月 17 日）

地点：上海数学中心 102 教室

报告人：

何伟鲲	中国科学院数学研究所
杨鹏宇	中国科学院数学研究所
于树澄	中国科学技术大学
张涵	清华大学
张润林	北京大学
张翼华	清华大学

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齐性动力系统研讨会日程安排

日期	时间	报告题目	地点
2 月 16 日上午 主持人：沈维孝	9:30-10:30	张翼华:BCZ cocycles and RH	102 教室
	10:30-11:00	自由讨论	
	11:00-12:00	张润林: Nondivergence of subgroup action on finite volume homogeneous spaces	102 教室
	12:00-13:00	茶歇	四楼大厅
	13:00-14:00	自由讨论	
2 月 16 日下午 主持人：郑骋	14:00-15:00	何伟鲲:Equidistribution of random walks on Heisenberg nilmanifolds	102 教室
	15:00-15:30	自由讨论	
	15:30-16:30	张涵: Birkhoff genericity on submanifolds of homogeneous space under a diagonal flow	102 教室
	16:30-17:00	自由讨论	
2 月 17 日上午 主持人：关力凡	9:30-10:30	于树澄:From mean square to counting	102 教室
	10:30-11:00	自由讨论	
	11:00-12:00	杨鹏宇:Singular vectors on affine subspaces	102 教室
	12:00-13:00	茶歇	四楼大厅

Titles and Abstracts

2 月 16 日 周四

张翼华 清华大学

Title: BCZ cocycles and RH
Abstract: A piecewise linear map used by Boca-Cobeli-Zaharescu to study the Farey sequences turns out to be a Poincare section of the horocycle flow on the unit tangent bundle of the modular surface. Starting with a characterization of RH by Franel and Landau, we give a reformulation of RH in terms of dynamics of BCZ cocycles.

张润林 北京大学

Title: Nondivergence of subgroup action on finite volume homogeneous spaces
Abstract: Consider X, the space of unimodular lattices in an Euclidean space, equipped with the natural action of the special linear group G. Let H be a subgroup of G. Since X is noncompact, one may ask what is the minimal possible H such that every orbit of H intersects a fixed compact subset of X. Together with Han Zhang, we answer this question for H algebraic and connected. We will review previous work, which deals with special cases, and discuss how one may combine these techniques to give the full proof. We shall also briefly discuss what is known and unknown for other finite volume homogeneous spaces.

何伟鲲 中国科学院数学研究所

Title: Equidistribution of random walks on Heisenberg nilmanifolds
Abstract: Consider random walks on a nilmanifold by automorphisms or by affine transformations. We investigate the quantitative equidistribution under some assumptions. This is a generalization of relevant results in the situation of the torus, due to Bourgain, Furman, Lindenstrauss and Mozes.This is based on a joint work with Tsviqa Lakrec and Elon Lindenstrauss.

张涵 清华大学

Title: Birkhoff genericity on submanifolds of homogeneous space under a diagonal flow
Abstract: We investigate Birkhoff genericity on submanifolds of homogeneous space G/\Gamma under a diagonal flow. Under certain conditions on the submanifolds, with respect to the nature volume measure of the manifold, almost every orbit of the

diagonal flow get equidistributed in G/\Gamma. We will discuss some examples of these equidistribution results, and some consequences of these dynamical results.

2 月 17 日周五

于树澄 中国科学技术大学

Title: From mean square to counting
Abstract: Using classical moment formulas of the Siegel transform, Schmidt (1960) proved very strong results on counting generic lattice points in an arbitrary increasing family of sets. In this talk, assuming some regularity conditions on the relevant counting sets, we give a new application of these moment formulas which allows us to count for lattices from a null set. This argument works in a more general setting and is particularly useful in Diophantine approximation. In particular, applying it to the setting of the light cone of a certain quadratic form we obtain various quantitative results on intrinsic Diophantine approximation on spheres.

杨鹏宇 中国科学院数学研究所

Title: Singular vectors on affine subspaces
Abstract：In Diophantine approximation the notion of singular vectors was introduced by Khintchine in the 1920s. In 2011 Yitwah Cheung showed that the Hausdorff dimension of the set of singular pairs in R^2 is 4/3, and this result was later generalized to R^n by Cheung-Chevallier. In this talk we give an upper bound of the Hausdorff dimension of the set of singular vectors in an affine subspace of R^n. The key part of our proof is the construction of a Margulis function which satisfies contraction hypothesis. Our construction is based on a construction of Ronggang Shi. Joint work with Nimish Shah.