



## Mini-workshop on Discrete Dynamical Systems

**Time:** December 12 – December 14, 2025

(Arrival: December 12, 2025; Departure: December 14, 2025)

**Venue:** Room 1801, Guanghai East Main Building (Handan Campus)

**Organizer:** Guohua Zhang (Fudan University)

Time	Talk	Speaker
<b>December 13, 2025 (Room 1801)</b>		
9:00-9:40	The structure and linearization of distal pseudo-rotations on the annulus	Enhui Shi
9:40-10:20	Entropy and Lyapunov Exponents for Infinite-Dimensional Smooth Dynamical Systems	Yun Zhao
<b>Coffee Break</b>		
10:40-11:20	On entropy and metric mean dimension under Feldman-Katok metric	Ruifeng Zhang
11:20-12:00	An overview on the mean dimension of algebraic actions	Bingbing Liang
<b>Lunch</b>		
15:00-15:40	覆盖定理在动力系统中的应用	Dou Dou
15:40-16:20	CF-Nil systems and convergence of two-dimensional ergodic averages	Qinqi Wu
<b>Coffee Break</b>		
16:40-17:20	Ergodic theory of surface diffeomorphisms	Dawei Yang
<b>Dinner</b>		

**Talk:** The structure and linearization of distal pseudo-rotations on the annulus

**Speaker:** Enhui Shi (Soochow University)

**Abstract:** Let  $A$  be an annulus in the plane  $\mathbb{R}^2$  and  $g : A \rightarrow A$  be a boundary components preserving homeomorphism which is distal and has no periodic points. Then there is a continuous decomposition of  $A$  into  $g$ -invariant circles such that all the restrictions of  $g$  on them share a common irrational rotation number and all these circles are linearly ordered by the inclusion relation on the sets of bounded components of their complements in  $\mathbb{R}^2$ . Finally, we show that  $g$  is conjugate to an irrational rotation if and only if there exists a transversal and examples without transversals are also constructed. This is a joint work with Hui Xu and Ziqi Yu.

**Talk:** Entropy and Lyapunov Exponents for Infinite-Dimensional Smooth Dynamical Systems

**Speaker:** Yun Zhao (Soochow University)

**Abstract:** In this talk, we will report some recent results obtained in infinite dimensional smooth dynamical systems, including the Holder continuity of Oseledets subspaces on the chosen orbit, sub-additivity of entropies for commuting maps and the characterization of SRB measures for random dynamical systems in a Banach space. These are joint works with Chiyi Luo.

**Talk:** On entropy and metric mean dimension under Feldman-Katok metric

**Speaker:** Ruifeng Zhang (Hefei University of Technology)

**Abstract:** In this talk, we explore the entropy and metric mean dimension of the dynamical systems, both under Feldman-Katok metric. We established some variational principles for entropy and metric mean dimension under FK metric. This talk is based on the joint work with Kunmei Gao.

**Talk:** An overview on the mean dimension of algebraic actions

**Speaker:** Bingbing Liang (Soochow University)

**Abstract:** Typical algebraic actions refer to algebraic subshifts of the infinite-dimensional torus. Utilizing Pontryagin duality, we can derive many dynamical properties of algebraic actions effectively. This talk provides an overview on the mean dimension of algebraic actions and highlights some recent developments and questions in the field.

**Talk:** 覆盖定理在动力系统中的应用

**Speaker:** Dou Dou (Nanjing University)

**Abstract:** 覆盖定理是几何测度论和调和分析中的重要工具，这里我们将介绍覆盖定理在动力系统维数理论以及顺从群作用动力系统中的应用。

**Talk:** CF-Nil systems and convergence of two-dimensional ergodic averages

**Speaker:** Qinqi Wu (Shanghai University of Finance and Economics)

**Abstract:** A topological dynamical system  $(X, T)$  is called CF-Nil( $k$ ) if it is strictly ergodic and the maximal measurable and maximal topological  $k$ -step pro-nilfactors coincide as measure preserving systems. In this talk, we study the CF-Nil properties of induced systems and investigate the convergence of two-dimensional ergodic averages weighted by nilsequences. Moreover, we show the  $L^2$ -convergence of a certain two-dimensional averages for non-commuting transformations without zero entropy condition. This is a joint work with Kangbo Ouyang.

**Talk:** Ergodic theory of surface diffeomorphisms

**Speaker:** Dawei Yang (Soochow University)

**Abstract:** Surface diffeomorphisms hold a particularly important position in the study of differentiable dynamical systems, as surfaces are the lowest-dimensional setting in which sufficient complexity emerges to illustrate the intricacies of diffeomorphisms. Recently there are many progress in the ergodic theory of surface diffeomorphisms, such as Buzzi-Crovisier-Sarig's results on Newhouse conjecture and Burguet's results on Viana conjecture. In this talk, we will give an overview of this theory and report our recent results in this direction.