Workshop "Analysis on p-adic fields, p-adic Fuglede problem"

2-4 November, 2016 Toulouse France

Schedule

	Wednesday, Nov 2	Thursday, Nov 3	Friday, Nov 4
9:30-10:30		Yuefei WANG	Lingmin LIAO
10:30-11:00		Coffee Break	Coffee Break
11:00-12:00	Welcome and registration	Xiaoguang WANG	Jinghua YANG
12:00-14:30	Lunch Break	Lunch Break	Lunch Break
14:30-15:30	Aihua FAN	Hexi YE	Shilei FAN
15:30-16:00	Coffee Break	Coffee Break	Coffee Break
16:00-17:00	Ruxi SHI	Free Discussion	Free Discussion
20:00		Conference dinner	

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Titles and Abstracts

8 lectures.

Speakers: Aihua Fan, Shilei Fan, Lingmin Liao, Ruxi Shi, Xiaoguang Wang, Yuefei Wang, Jinghua Yang, Hexi Ye

Aihua FAN (Université de Picardie Jules Verne & Central China Normal University)

Title. Some remarks on dyadic multiplicative arithmetic functions

Abstract. An arithmetic function is a function (or sequence) defined on the set of natural integers. The Thue-Morse sequence is a typical example of dyadic multiplicative functions. We will discuss different aspects of such a sequence like the sizes of the trigonometric polynomials having such a sequence as Fourier coefficients (supremum norm, multifractal analysis of pointwise growth etc), the convergence speed of weighted Birkhoff averages having such a sequence as sequence of weights. The talk will be partially based on joint works with W. X. Shen and J. Scheming.

Shilei FAN (Central China Normal University & Aix-Marseille Université)

Title. The finite subgroups of p-adic mobius group

Abstract. We intend to characterize all the possible finite subgroups of $\mathrm{PGL}(2, \mathbb{Q}_p)$, where $\mathbb{Q}_p$ is the field of p-adic number. It is shown that the finite subgroups are either cyclic groups, dihedral groups, A_4, S_4 or A_5.

Lingmin LIAO (Université Paris-Est Créteil Val de Marne)

Title. Polynomial and rational dynamical systems on the field of p-adic numbers and its projective line

Abstract. Polynomials and rational maps are studied as dynamical systems on the field of p-adic numbers or its projective line. Polynomials with p-adic integer coefficients and rational maps with good reduction are 1-Lipschitz and their dynamical structures are described by a decomposition of the space into attracting basins and minimal components. For expanding polynomials and rational maps, we can usually find subsystems which are topologically conjugate to subshift of finite type. The talk is based on a series of works joint with Ai-Hua Fan, Shilei Fan, Yue-Fei Wang and Dan Zhou.

Ruxi SHI (Université de Picardie Jules Verne)

Title. Fuglede conjecture holds in the field of p-adic numbers

Abstract. For a locally compact abelian group G, Fuglede conjecture states that a Borel set is spectral iff it tiles the group G. In the case $G = \mathbb{R}^n$, it have been studied for long since Fuglede formulated this conjecture in 1974 and it is proved to be false for $n \geq 3$ but it is still open for $n = 1, 2$. In this talk, I will consider the case $G = \mathbb{Q}_p$ the field of p-adic numbers. I will show that the Fuglede conjecture holds in the field of p-adic numbers.

This is the joint work with A. Fan, S. Fan, L. Liao.

Xiaoguang WANG (Zhejiang University)

Title. Riemann mapping theorem and its generalizations

Abstract. The famous Riemann mapping theorem states that any simply connected planar domain, which is not the whole plane, is bi-holomorphic to the unit disk. In this talk, I will discuss the generalization of this theorem to proper holomorphic mapping between multi-connected planar domains.

Yuefei WANG (Academy of Mathematics and System Sciences, Chinese Academy of Sciences)

Title. Geometry of polynomials

Abstract. We shall talk about recent progress on the global dynamics of Newton maps, rigidity of stable rational maps and the critical singularities of polynomials.

Jinghua YANG (Shanghai University)

Title. On doubling properties of the limits sets of contractive analytical functions on non-archimedean space

Abstract. The doubling property of a metric space is also very important. Many metric spaces have the doubling property, e.g. the Euclidean space, a compact Riemann surface, etc. However, not all non-Archimedean spaces have the doubling property, e.g. $\mathbb{C}_p$ and Puiseux series $\mathbb{C} << t >>$. The limit sets of contractive analytical functions of non-archimedean space K can be viewed as a metric subspace of K. Hence it is important to ask whether a limit set has the doubling property. We prove that not all the limit sets have the doubling properties. This talk gives recent results on the criteria for doubling properties of limit sets.

Hexi YE (Zhejiang University)

Title. Curves with Zariski-dense subset of postcritically finite maps

Abstract. In this talk, we will talk some unlikely intersection problem in Complex Dynamics. We discuss the curves in the moduli space of cubic polynomials with Zariski-dense subset of postcritically finite polynomials.