Titles and Abstracts

Paul Apisa

Abstract:

Vitaly Bergelson

Translations on Nilmanifolds and Generalized Polynomials

Abstract: "Generalized polynomials" are functions which are obtained from the conventional polynomials through the use of the greatest integer function, addition, and multiplication. In the first part of the talk, we will review the connections between generalized polynomials and dynamical systems on nilmanifolds. We will then describe some of the recent results on the uniform distribution of generalized polynomials along with applications to recurrence and convergence phenomena in ergodic theory. We will conclude by discussing several interesting open problems

Ben Call

Local Product Structure and the Bernoulli Property for Geodesic Flows Beyond Negative Curvature

Abstract: Local product structure of a measure has been used as a key ingredient for showing various mixing properties of dynamical systems. One prominent example of this is Ornstein and Weiss's proof of the Bernoulli property for geodesic flows in negative curvature. I will discuss recent work establishing local product structure using a nonuniform Gibbs property for a class of equilibrium states for the geodesic flow for some systems beyond negative curvature. This is joint work with Dave Constantine, Alena Erchenko, Noelle Sawyer, and Grace Work.

Dong Chen

Chaotic behavior near some entropy zero systems

Abstract: Abstract: In this talk, we discuss how chaotic behavior can generated near integrable systems and identity maps. In particular, we show how to produce dynamics with positive metric entropy, or even nonuniform hyperbolicity through perturbations in the C^∞ topology. Part of this work is joint with Burago and Ivanov, and with Yun Yang and Gang Liao.

Yann Mary He

Non-conformal multifractal analysis

Abstract: Multifractal analysis studies how local scaling behavior varies across points in a dynamical system. In conformal dynamical systems, it describes the distribution of quantities such as Lyapunov exponents, pointwise dimensions, and Birkhoff averages on

invariant sets. While this theory has been extensively developed for conformal systems, much less is known in the non-conformal setting.

In this talk, we discuss the multifractal analysis of equilibrium states associated with Hölder continuous potentials for hyperbolic holomorphic endomorphisms of $\mathbf{CP}^k$. In this setting, we obtain results that parallel those known in the conformal case. The key ingredient is a new dimension theory. This is based on joint works with F. Bianchi and with N. Dalaklis.

Adam Kanigowski

Ergodic properties of skew product transformations

Abstract: Let (T, X, μ) and (S, Y, ν) be two measure preserving transformations and let $f \in L^1(X, \mu)$. The corresponding skew product is defined by $F(x, y) = (Tx, S^{f(x)}y)$. Skew product transformations have been a rich source of both counterexamples and exotic examples for important ergodic properties. We will highlight some classical results and discuss more recent progress.

Kevin Pilgrim (Joint with L. Bartholdi and D. Dudko)

Correspondences on Riemann surfaces: (non-uniform) hyperbolicity and graph attractors

Abstract: We consider certain correspondences on a Riemann surface, and show that they admit a weak form of hyperbolicity: sufficiently long loops get shorter under lifting at a fixed point and closing. In terms of their algebraic encoding by bisets, this translates to contraction of fundamental group elements along sequences arising from iterated lifting.

As an application, we show that apart from the usual Lattès counterexamples, for any rational map on $\mathbf{P}^1$ with 4 post-critical points, there is a finite invariant collection of isotopy classes of curves into which every curve is attracted under iterated lifting.

Federico Rodriguez Hertz

Thermodynamic formalism and bounded cohomology

Abstract: In this talk I will discuss some relation between thermodynamics formalism and bounded cohomology. The goal is to show how quasi-morphisms on some groups relate to quasi-cocycles of certain dynamical systems. Then one can analyze the former using the latter. The latter can be related to functions with the Bowen property and in some cases shown to be trivial, giving another proof of a result of Burger and Monod. This is joint work with Pablo Carrasco