

Livia Corsi (Roma 3)

Title: Long time stability for Lagrangian tori in infinite dimensional lattice systems

Abstract: We consider a 1-dimensional chain of infinitely many rotators weakly interacting with each other, with very smooth interaction. From a previous work, we know that such a system admits a positive measure set (in an appropriate sense) of infinite dimensional invariant tori. We prove that such tori are in fact Lagrangian and stable over subexponentially long time. This is a joint work with Michela Procesi.

Charles Fougeron (Sorbonne Paris Nord)

Title : Random Walks with Memory and Ergodicity of Projective Polytope Systems (j.w. Thierry Coulbois, Paul Mercat)

Abstract: Many dynamical systems arising from induction procedures can be described by a finite graph whose states carry polytopes and whose transitions are given by linear maps (e.g. renormalization for foliations on surfaces, multidimensional continued fractions, ...). Projectivizing gives a piecewise-projective dynamical system, with the different branches encoded by the graph. We develop a general ergodicity criterion for such systems. The main difficulty is that the symbolic dynamics is not Markovian: the probability of following a transition depends on the past through a finite-dimensional distortion. We interpret the dynamics as a random walk on the graph with this distortion as memory. A combinatorial condition on the induced dynamics of faces, together with suitable growth and contraction assumptions, implies that the distortion repeatedly becomes balanced. This leads to existence and unicity of an ergodic measure equivalent to Lebesgue as well as exponential mixing (among other rich ergodic results) for its canonical suspension flow.

Anna Jove (Imperial College London)

Title: Lyapunov exponents for a family of tangent-like maps

Abstract: In a joint work with Matthieu Astorg, we study Lyapunov exponents for a family of meromorphic dynamical systems that arise as natural extensions of the tangent map. We investigate the Lyapunov exponent with respect to the natural invariant measure on the boundary of the attracting region, focusing on its integrability, positivity, and dependence on the parameter. Some of the techniques developed in this setting extend to a broader class of meromorphic dynamical systems with simply connected attracting basins.

Thibault Lefeuvre (Paris Saclay)

Title : The spectrum of Anosov representations

Abstract : The geodesic flow on the unit tangent bundle of a convex co-compact hyperbolic surface is an Axiom A flow; its main statistical properties (such as exponential decay of correlations) are governed by the spectrum of its generator, known as the set of *Pollicott-Ruelle resonances*. In turn, this spectrum is related to the *quantum resonances* on the surface itself (the generalized eigenvalues of the Laplacian) by a *quantum-classical correspondance*.

We investigate these questions in the higher-rank setting of *Anosov representations*. The geodesic flow is then replaced by a *higher-rank Abelian action* and we show that we can associate a natural spectrum with Anosov representations, consisting of complex hypersurfaces in the complexified dual Cartan subalgebra. The leading hypersurface corresponds to a well-known object in the literature—the so-called critical hypersurface of the representation.

I will describe the main consequences of this spectral approach, namely the meromorphic extension (to the full complexified dual Cartan subalgebra) of dynamical zeta functions and Poincaré series associated with the representation. If time permits, I will discuss the sharp quantitative decay of correlations for the Weyl chamber flow, and the perspectives for future work.

Kathryn Mann (IMJ-PRG)

Title: Exotic Anosov flows

Abstract: Since the 1980s, there has been a big industry of constructing and classifying Anosov flows on 3-manifolds. But on higher dimensional spaces, there are relatively few known examples. A conjecture of Verjovsky from the 1970s suggested that the situation might be more rigid -- it states that on any manifold of dimension at least 4, any Anosov flow whose stable foliation had codimension 1 is necessarily a suspension of a map on the torus.

In recent work with Fenley and Potrie, we made (infinitely many) counterexamples in dimension 4. I will give an idea of the construction and advertise some next questions.

Emmanuel Militon (Nice Sophia-Antipolis)

Title : Invariant partitions for homeomorphisms isotopic to a pseudo-Anosov homeomorphism

Abstract: Pseudo-Anosov homeomorphisms are a generalization of Anosov automorphisms of the 2-torus to higher genus surfaces. In this talk, we will discuss how much the dynamics of a homeomorphism isotopic to a pseudo-Anosov homeomorphism looks like the dynamics of the actual pseudo-Anosov homeomorphism. More precisely, we will discuss the connections between a semi-conjugacy result by Handel, a more precise result by Fathi which gives invariant stable and unstable partitions of the surface and a new way to obtain these partitions.

Daniel Monclair (Université de Lille)

Title: Axiom A flows and Anosov representations

Abstract: In a joint work with B. Delarue and A. Sanders, we construct Axiom A flows on locally homogeneous manifolds associated to Anosov representations into a real semi-simple Lie group G , generalising the geodesic flow of a hyperbolic manifold in the case of $G = \mathrm{SO}(n, 1)$. We will see examples for which these flows can be interpreted as geodesic flows on pseudo-Riemannian symmetric spaces, such as $G = \mathrm{SO}(2, 2)$ (related to anti-de Sitter geometry, studied in joint work with B. Delarue and C. Guillarmou), and others for which there is no such interpretation.

Andres Navas (Universidad de Santiago de Chile)

Title : Exotic Denjoy Counter-examples

Abstract : On montrera une technique élaborée avec V. Kleptsyn pour créer des contre-exemples de Denjoy dont la dynamique restreinte à chaque composante connexe du complémentaire du Cantor invariante est affine. Si le temps le permet, on montrera comment fabriquer des exemples de ce type avec des propriétés supplémentaires remarquables. En particulier, on décrira l'exemple de Escayola qui répond par le négatif à une vieille question de Dusa McDuff.

Jaime Paradela (ICMAT Madrid)

Title: Non-local ergodic measures in Hamiltonian dynamics

Abstract: We consider the direct product of two Hamiltonian diffeomorphisms, one of which exhibits a basic set and the other one a non-degenerate elliptic equilibrium. Under a local domination condition we show that a typical real-analytic perturbation of this system displays a large normally hyperbolic lamination on which the natural invariant measure is ergodic.

Anja Randecker (Université de Caen Normandie)

Title : Counting saddle connections for large-genus translation surfaces

Abstract : Translation structures on surfaces can be obtained in many different ways: as suspensions of interval exchange transformations, from holomorphic differentials, or by unfolding polygonal billiards, to name a few. In analogy to the case of hyperbolic surfaces, we can ask how such translation surfaces generically behave for large genus.

In the talk, I will focus on the question of lengths of saddle connections, that is, of closed geodesics on translation surfaces. This includes Siegel-Veech constants and a joint result with Howard Masur and Kasra Rafi on the distribution of the number of short saddle connections.

Olga Paris-Romaskevich (Université Lyon 1) :

title : TBA

abstract : TBA

Sophie Schmidhuber (ETH Zurich)

Title : Rauzy-Veech Induction for Infinite-Type Interval Exchange Transformations

Abstract : TBA

Marie Trin (Université de Bourgogne)

Title_: Relative frequencies of curves in large genus

Abstract : Delecroix-Goujard-Zograf-Zorich produced estimates in large genus of relative frequencies of simple multicurves. In particular, they show that the relative frequency of separating and non-separating simple curves tends to 0 as the genus goes to infinity: in large genus a generic simple closed curve is non-separating. In this talk we will discuss this problems for curves with self-intersections. How to express their frequency ? How does this frequency behaves in large genus ? What about relative frequencies ? Which kind of curve is generic for a given self-intersection number ? This is a common work with M. Liu, K. Rafi and J. Souto.

Corinna Ulcigrai (ETH Zurich)

Title : Infinite periodic billiards and infinite extensions: a survey

Abstract : Fundamental examples of slowly chaotic flows arise from billiards in (bounded) polygons and area-preserving flows on surfaces. After briefly highlighting a connection between certain quasi-integrable elliptic billiards and certain polygonal billiards, we will focus on ergodicity in infinite slowly chaotic systems. While bounded rational billiards and flows on *compact* surfaces

are very well understood, many questions are still widely open when the billiard or the surface are 'infinite'. During the talk, we will survey some of known results on periodic billiards and smooth surface flows extensions and explain how they relate to 'fluctuations' phenomena.