Marc Abboud *Uniformness result for common periodic points in families of Hénon maps*

I will discuss the following result : if (f_t) and (g_t) are two families parametrised by an algebraic curve of polynomial automorphisms of $\mathbb{C}^2$ with positive entropy and such that $|Jac(f_t)|$ is constant < 1, then there exists a constant $C > 0$ such that, outside a finite set of parameters, f_t and g_t share at most C periodic points. This generalises a result of Mavraki and Schmidt for families of rational maps over P^1. I will also discuss possible generalisations of this result to other affine surfaces. This is joint work in progress with Yugang Zhang.

Immaculada Baldoma *Chaotic phenomena in the restricted three body problem beyond the Routh mass ratio*

The equilibrium Lagrangian points L4 and L5 in the RPC3BP undergo a bifurcation at the mass ratio known as Routh mass-ratio. Indeed, they are elliptic for values of mass ratio smaller than Routh mass-ratio, and a complex saddle afterwards.

This is an example of a Hamiltonian-Hopf bifurcation. In this Hamiltonian setting, it is well known that the existence of transversal homoclinics associated to L4 (and L5) and they invariant manifolds, it give rise to rich dynamics : a plethora of horseshoes and what is known as the bluesky catastrophe.

We prove that, for any value of the mass ratio close enough and bigger than the Routh mass ratio, the invariant manifolds of L4 indeed intersect along a transverse homoclinic orbit, provided some constant is different from zero.

This is a join work with P. Martín and D. Scarcella.

Ana Chavez Caliz *Outer symplectic billiard map at infinity*

The outer billiard map was introduced by Neumann in the late 1950s and further developed by Moser in the 1970s. One of the questions studied by Moser was the behavior of the map at infinity : depending on the smoothness of the billiard table, orbits may remain bounded or escape to infinity. In this talk, we consider the generalization of this system to symplectic vector spaces of arbitrary dimension and describe its behavior at infinity. Our main results are : (1) the second iterate of the outer symplectic billiard map is approximated at infinity by the flow of a Hamiltonian vector field defined via symplectic polarity and central symmetrization ; (2) the escape of orbits to infinity is at most of order square root of k after k-iterations ; and (3) periodic orbits far from the table must have large period. This is joint work with Peter Albers and Serge Tabachnikov.

Dmitry Dolgopyat *Mixing properties of random transformations*

We discuss methods to study statistical properties of random dynamical spaces concentrating on homogeneous systems.

Charles Favre *Rigidity in non-Archimedean dynamics*

J.w. with Juan Rivera-Letelier. We explore the general ergodic properties of rational maps defined over a non-Archimedean complete field of residual characteristic zero. We prove an analog of Zdunik's theorem in this context. If the equilibrium measure is sufficiently regular, then the support of the Julia set is included in a segment. This result has various applications to the degeneration of complex rational maps and the blow-up of the multipliers of the family.

Beatrice Langella *Energy cascades for quantum harmonic oscillators in dimension 2*

Abstract : In this talk I will consider a class of linear Schrödinger equations, whose Hamiltonian is given by bounded, time periodic perturbations of the 2-dimensional Harmonic oscillator. Under complete resonance assumptions, I will show that a generic class of perturbations admits solutions whose Sobolev norms undergo infinite growth as time tends to infinity. The proof combines pseudo-differential normal form, Mourre theory, and techniques from dynamical systems, in order to identify the good class of perturbations admitting energy cascades. This is a joint work with A. Maspero and M. T. Rotolo.

Eva Miranda *Chaotic by Nature : Trajectories of the Undecidable*

A new perspective is reshaping the crossroads of geometry, dynamics, and computation : fluids can compute. In 2021, we showed that fluid trajectories can be undecidable, their behavior defying all algorithmic prediction. This result emerged from contact geometry, a natural stage where complexity and dynamics intertwine. In this lecture, I will follow the path from the seminal correspondence of Etnyre and Ghrist—identifying Reeb vector fields with Beltrami flows—toward a computational theory of fluid dynamics. Through Reeb embeddings, one can construct Turing-complete stationary solutions of the Euler equations : flows that emulate the computation of a universal Turing machine. Pushing further, I will explain how cosymplectic geometry provides the right framework to realize Turing-complete stationary solutions of the Navier–Stokes equations, thereby giving a positive answer to a question posed by Terence Tao. I will conclude with an outlook on Topological Kleene Field Theory, a nascent model of computation fusing topology, geometry, and logic, which reveals deep structural limits to prediction—not only in fluid dynamics, but also in celestial mechanics.

Amir Mohammadi *Dynamics on homogeneous spaces : a quantitative viewpoint*

Rigidity phenomena in homogeneous spaces have been extensively studied over the past few decades with several striking results and applications. In this talk, we will highlight developments related to the quantitative aspects of this analysis, with an emphasize on recent progress and the key techniques that play a central role.

Laura Monk *Typical hyperbolic surfaces have an optimal spectral gap*

The first non-zero Laplace eigenvalue of a hyperbolic surface, or its spectral gap, measures how well-connected the surface is : surfaces with a large spectral gap are hard to cut in pieces, have a small diameter and fast mixing times. For large hyperbolic surfaces (of large area or large genus g, equivalently), we know that the spectral gap is asymptotically bounded above by 1/4. The aim of this talk is to present joint work with Nalini Anantharaman, where we prove that most hyperbolic surfaces have a near-optimal spectral gap. That is to say, we prove that, for any ?¿0, the Weil-Petersson probability for a hyperbolic surface of genus g to have a spectral gap greater than 1/4- ? goes to one as g goes to infinity. This statement is analogous to Alon's 1986 conjecture for regular graphs, proven by Friedman in 2003. I will present our approach, which shares many similarities with Friedman's work, and introduce new tools and ideas that we have developed in order to tackle this problem.

Alessandra Nardi *Birkhoff attractors for dissipative symplectic billiards*

This talk introduces a dissipative variant of symplectic billiards within strictly convex planar domains. In this setting, the associated billiard map is no longer conservative and therefore admits a compact invariant set—known as the Birkhoff attractor. The complexity of this attractor depends on both the dissipation rate and the geometry of the billiard table. We will discuss the qualitative features of the Birkhoff attractor in two distinct regimes, determined by the strength of dissipation and the shape of the domain.

Boris Solomyak *Fourier decay and absolute continuity for homogeneous self-similar measures in $\mathbb{R}^d$.*

We consider homogeneous self-similar iterated function systems (IFS) $f_j(x) = Ax + a_j$, for $j = 0, ..., m$, with A a contracting linear similarity (an orthogonal matrix times $0 < \lambda < 1$) in $\mathbb{R}^d$. Given a probability vector, there exists a unique invariant Borel probability measure for the IFS, which is called a self-similar measure. In the special case $d = 1$ and $m = 1$, i.e., a homogeneous linear IFS of two functions, this measure is known as an "infinite Bernoulli convolution". The properties of such measures have been extensively studied, but many questions remain open. Under some assumptions, we show that "almost all" homogeneous self-similar measures in dimensions greater or equal to 3 have a power Fourier decay. Combined with recent results of Corso and Shmerkin [preprint 2024], this yields some "almost sure" results on absolute continuity of the measure. In dimensions 1 and 2 this was known earlier. I will survey the background and known results in this direction in the introductory part of the talk.