	Monday	Tuesday	Wednesday	Thursday	Friday
8h30-9h00	Opening	Cofee and tea	Cofee and tea	Cofee and tea	Cofee and tea
9h00-10h00	Masato Tsujii	David Burguet	Mitsuhiro Shishikura	Zhiyuan Zhang	Hiroyuki Inou
10h15-11h15	Sébastien Biebler	Reimi Irokawa	Zhuchao Ji	Mao Shinoda	Davi Obata
11h30-12h30	Hiroki Takahasi	Aminosadat Talebi	Alicia Simon	Marie-Claude Arnaud	Jasmin Raissy
18h00			Celestial Observation Frédéric Dauvergne		

Denjoy subsystems and Horseshoes,
Marie-Claude Arnaud (Université de Paris)

We will describe some connections between two kinds of restricted dynamics for area preserving diffeomorphisms, horseshoes and Denjoy subsystems: this last notion has been introduced by myself and P. Le Le Calvez and we will explain it. Then we will explain that any horseshoe contains a continuous 1- parameter familly of Denjoy subsystems that is parametrized by the rotation number. After that, we will consider the inverse problem and give some partial answer: if an area preserving diffeomorphisms f has a Denjoy subsystem, does there exist an horseshoe for f, does this horseshoe contain the Denjoy subsystem, is the horseshoe close to the Denjoy subsystem?

Lattès maps and robust bifurcations,
Sebastien Biebler (Sorbonne Université)

I will show the existence of open sets of bifurcations near Lattès maps of sufficiently high degree. In particular, this implies that each Lattès map has an iterate in the closure of the interior of the bifurcation locus. To show this result, I will give a method to intersect the limit set of some particular type of IFS with a well-oriented curve. Then, I will show that a Lattès map of sufficiently high degree can be perturbed in order to exhibit this geometry.

Entropy of physical measures for C^∞ systems,
David Burguet (CNRS-Sorbonne Université)

By using Yomdin's theory we establish a bounded distorsion property for C^∞ dynamical systems. As a consequence we prove in this context that for Lebesgue almost every point x, there is

an empirical measure at x with entropy larger than or equal to the exponential growth at x of the derivative on the exterior algebra of the tangent bundle. We deduce some applications to the entropy of physical measures and the existence of SRB measures. We also present C^r counterexamples for $r < +\infty$.

An infinitely renormalizable cubic polynomial and its combinatorial class,
Hiroyuki Inou (Kyoto University)

We construct an infinitely renormalizable cubic polynomial with two distinct critical points such that the filled Julia set of every renormalization contains both of the critical points. We would also discuss its dynamical behavior and its combinatorial class.

Stabilities for families of dynamics over non-archimedean fields
Reimi Irokawa (Tokyo Institute of Technology)

Toward the understanding of bifurcation phenomena of dynamics on the Berkovich projective line over non-archimedean fields, we study the stability (or passivity) of critical points of families of polynomials parametrized by analytic curves. We construct the activity measure of a critical point of a family of rational functions,and study its properties. For a family of polynomials, we study more about the activity locus such as its relation to boundedness locus (or Mandelbrot set) and to the normality of the sequence of the forward orbit.

Non-uniform hyperbolicity in polynomial skew products,
Zhuchao Ji (Sorbonne Université)

The dynamics of Topological Collet-Eckmann rational maps on Riemann sphere are well understood, due to the work of Przytycki, Rivera-Letelier and Smirnov. In this talk we study the dynamics of polynomial skew products of $\mathbb{C}^2$. Let f be a polynomial skew products with an attracting invariant line L such that f restricted on L satisfies Topological Collet-Eckmann condition and a Weak Regularity condition. We show that the the Fatou set of f in the basin of L equals to the union of the basins of attracting cycles, and the Julia set of f in the basin of L has Lebesgue measure zero. As a consequence there are no wandering Fatou components in the basin of L (We remark that for some polynomial skew products with a parabolic invariant line L, there can exist a wandering Fatou component in the basin of L).

Stable ergodicity and other ergodic properties of a partially hyperbolic skew product derived from the standard map,
Davi Obata (Université Paris Sud)

In the last three decades, several works have been done about stable ergodicity. Due to the famous Pugh-Shub conjecture, most works were done in the partially hyperbolic scenario. In this scenario one of the key properties used is accessibility (or essential accessibility). In this talk

I will present the proof of stable ergodicity of a partially hyperbolic skew product introduced by Pierre Berger and Pablo Carrasco. It has two dimensional center, with expansion/contraction along center and it does not admit any further dominated splitting of the center, and it is non-uniformly hyperbolic. This proof does not use accessibility. Furthermore, we explain how the techniques developed also allow us to obtain ergodic properties for non conservative perturbations of the example, in particular, the uniqueness of SRB measure, and uniqueness of measure of maximal entropy.

Intrinsic ergodicity for factors of $(-\beta)$*-shift*
Mao Shinoda (École Polytechnique)

We proved that every subshift factor of $(-\beta)$ shifts is intrinsically ergodic, when β is more than the golden ratio and the $(-\beta)$-expansion of -1 is not periodic with odd period. Moreover, the unique measure of maximal entropy satisfies a certain Gibbs property. This is an application of the technique established by Climenhaga and Thompson to prove intrinsic ergodicity beyond specification. This is a joint work with Kenichiro Yamamoto in Nagaoka University of Technology.

Yoccoz tau-function and applications,
Mitsuhiro Shishikura (Kyoto University)

In 1990, Yoccoz proved that a quadratic polynomial has locally connected provided that its Julia set is connected, its periodic points are all repelling and it is only finitely renormalizable (Yoccoz parameter). He also proved that the Mandelbrot set is locally connected at those parameters. Ingredients of the proof are Yoccoz puzzles and parapuzzles and tau-function, which is a combinatorial tool to analyze recurrence of the critical point. Although puzzles and parapuzzles are widely used in complex dynamics, the part using tau-function has been typically replaced by Branner-Hubbard Tablaux in published papers. In this talk, we will give a brief introduction to tau-function approach. We also discuss its applications. For example, it can be used to prove that the Julia sets for Yoccoz parameters and also the set of Yoccoz parameters have Area zero; weak Jacobson's theorem for real maps; the rigidity of infinitely renormalizable real quadratic polynomials (Lyubich, Graczyk-Swiatek theorem). For the rigidity, we need to use the results on complex a priori bounds and the Teichmüller theory.

A dynamical Runge embedding of $\mathbb{C} \times \mathbb{C}^*$ *in* $\mathbb{C}^2$*,*
Jasmin Raissy (Université Paul Sabatier)

I will present the construction of a family of automorphisms of $\mathbb{C}^2$ having an invariant, non-recurrent Fatou component biholomorphic to $\mathbb{C} \times \mathbb{C}^*$ and which is attracting, in the sense that all the orbits converge to a fixed point on the boundary of the component. Such component is obtained by globalizing, using a result of Forstneric, a local construction, which allows to create a global basin of attraction for an automorphism, and a Fatou coordinate on it. Such Fatou coordinate is a fiber bundle map on $\mathbb{C}$, whose fiber is $\mathbb{C}^*$, forcing the global basin to be biholomorphic to

$\mathbb{C} \times \mathbb{C}^*$. The most subtle point is to show that such a basin is indeed a Fatou component. This is done exploiting Pöschel's results about existence of local Siegel discs and suitable estimates for the Kobayashi distance. This construction gives an example of a Runge embedding of $\mathbb{C} \times \mathbb{C}^*$ in $\mathbb{C}^2$, since attracting Fatou components are Runge. (Joint work with Filippo Bracci and Berit Stensønes).

***Michel Hénon's isochrone legacy in celestial mechanics and astrophysics*,**
Alicia Simon-Petit (Institut d'Astrophysique de Paris)

In physics isochrony often refers to constant-period (harmonic) oscillations. In potential theory, the notion of isochrony was extended by the mathematician and astronomer Michel Hénon in 1959 to characterize star orbits showing particular oscillatory behavior independently of their shape similarly to harmonic motions.

After introducing Michel Hénon's isochrone precise definition, based on a brilliant remark on gravitational dynamics, we will complete the set of isochrone potentials through geometrical group actions. This will allow us to highlight keplerian-like properties for the isochrones, by generalizing the Bohlin transformation, an inverse of the Levi-Civita transformation. By analogy with special relativity, the new isochrone relativity will be subsequently presented. Finally, we will discuss its consequences – a generalization of Kepler's Third law, Bertrand's theorem – to analyze the early dynamics of star clusters in astrophysics.

***Statistical instability and non-statistical dynamics*,**
Aminosadat Talebi (Université Paris Nord-Sharif University)

In this talk we present two new classes of dynamical systems with non-statistical behavior, which means that the sequence of empirical measures does not converge Lebesgue almost everywhere. A class of rational maps on the Riemann sphere and a class of Anosov-Katok maps of the annulus.

We also try to reveal what is behind the existence of such dynamics in a general family of maps. We introduce a general formalization of the concept of statistical (in)stability and show how it is related to the existence of non-statistical maps.

***Statistics of periodic orbits of infinitely renormalizable S-unimodal maps*,**
Hiroki Takahasi (Keio University)

For infinitely renormalizable Negative Schwarzian unimodal maps with bounded combinatorics, we consider large deviations for weighted periodic points and weighted equidistributions.

***Large deviations principle for S-unimodal maps*,**
Masato Tsujii (Kyushu University)

I will speak about a recent joint-work with Hiroki Takahasi (Keio Univ.), in which we proved the Large Deviations Principle of Level 2 (LDP2) for ALL S-unimodal maps. This work is based

on a recent work by Chung, Rivera-Letelier and Takahasi, where the LDP2 is proved for any non-renormalizable S-unimodal maps. To extend LDP2 to all S-unimodal maps, we provided some analysis on the process where orbits on a renormalization cycle fall in a deeper cycle. I will also give a counter-example of a bi-modal cubic map for which LDP2 does not hold.

A tentative introduction to Zimmer's conjecture for lattice actions,
Zhiyuan Zhang (CNRS-Institute of Advanced Studies)

We introduce some recent progress on Zimmer's conjecture for actions by lattices in semi-simple Lie groups by Brown, Fisher, Hutardo et al.