Marie-Claude Arnaud : *Un théorème d'Arnol'd-Liouville en basse régularité.*

Le théorème classique d'Arnol'd Liouville décrit précisément la dynamique des systèmes hamiltoniens qui ont suffisamment d'intégrales premières de classe C^2. Plus précisément, par un changement de coordonnées symplectiques C^1, le théorème transforme le hamiltonien en un hamiltonien qui ne dépend que des variables d'action. Nous nous intéressons à ce qui se passe en basse régularité, quand on obtient un homéomorphisme symplectique au lieu d'un difféomorphisme de classse C^1. En particulier, nous exposerons un travail avec Jinxin Xue qui concerne ce qui se passe quand les hamiltoniens sont C^1 et le hamiltonien initial est de Tonelli et discuterons d'autres cas. Une motivation pour étudier la basse régularité est que pour un hamiltonien de Tonelli sans points conjugués, on sait montrer l'existence d'intégrales première qui ne sont *a priori* que continues.

Adrien Boyer : *Une nouvelle preuve de la propriété de décroissance rapide (propriété RD) pour les groupes hyperboliques via leur bord.*

Je donnerai une nouvelle preuve de la propriété RD (Rapid Decay) satisfaite pour les groupes hyperboliques. Ce résultat est dû à Jolissaint et à de la Harpe dans sa totale généralité. La preuve dont je parlerai utilise des représentations unitaires provenant de l'action du groupe sur son bord de Gromov. Le principal intérêt de cette nouvelle preuve, basée essentiellement sur des techniques de "géométrie ergodique", est de proposer une nouvelle approche de la conjecture de Valette, suggérant que les réseaux cocompacts des groupes de Lie semi-simples de rang supérieur satisfont cette propriété.

Davoud Cheraghi : *Quasi-periodic dynamics in complex dimension one.*

Quasi-periodic dynamics in one complex variable reveals fascinating interplays between complex analysis and Diophantine approximations. The question of whether a quasi-periodic dynamics is conjugate to an irrational rotation (linearization) dates back to more than a century ago, with remarkable contributions by C. Siegel, A. Brjuno, and J.-C. Yoccoz. In contrast to the linearisable case, the local dynamics near non-linearizable maps is very complicated. Indeed, there is not a single example of a non-learizable map whose dynamics is completely understood. There have been major recent advances on this problem which have lead to a complete description of the topological behaviour of typical orbits. This is an introductory talk to demonstrate of some of these results.

Noé Cuneo : *An overview of non-equilibrium steady states for chains of oscillators and rotors.*

I will talk about chains of oscillators and rotors interacting with stochastic heat baths at different temperatures. I will introduce these very simple models in the framework of the (yet unsolved !) problem of heat conduction. Then, we will focus on a much more elementary question : the existence of an invariant measure (called non-equilibrium steady state), which has been proved only in some specific cases over the past 20 years. I will explain how distinct models lead to distinct difficulties, and sketch some of the ideas used to overcome them.

Bertrand Deroin : *Lyapunov exponents of the Brownian motion on a Kähler manifold.*

Pascal Hubert : *Quelques propriétés du modèles de wind-tree.*

Je présenterai le problème de wind-tree qui consiste à jouer au billard sur le plan privé d'obstacles polygonaux placés de façon périodique. Je ferai la liste des résultats connus (récurrence, non ergodicité, diffusion, orbites périodiques ...) et je raconterai plus en détails quelques résultats sur la diffusion des orbites dans ce modèle. J'insisterai sur les méthodes issues de la dynamique de Teichmüller et je mentionnerai quelques outils importants pour résoudre ces problèmes.

Fanny Kassel : *Représentations d'Anosov et trous de valeurs propres.*

Les représentations d'Anosov sont des représentations de groupes Gromov-hyperboliques à valeurs dans SL(n,R) qui sont injectives et discrètes et possèdent de bonnes propriétés dynamiques, analogues à celles des flots d'Anosov. Ces représentations ont récemment été caractérisées en termes de trous de valeurs singulières par Kapovich-Leeb-Porti et Bochi-Potrie-Sambarino. Nous donnerons une caractérisation similaire en termes de trous de valeurs propres. Il s'agit d'un travail en commun avec Rafael Potrie.

Stefano Marmi : *Diophantine type and dynamics of interval exchange maps and of translation flows.*

The notion of diophantine type of an irrational number has equivalent characterizations in terms of rigidity of irrational rotations and linear flows on tori. Recently Roth type and higher type diophantine conditions have been introduced for translation flows on higher genus surfaces and interval exchange maps. Some rigidity results have also been proved, as well as some estimates on recurrence and hitting times, providing an extension of the theory beyond the torus case which is still incomplete but nevertheless quite broad. (Based on joint works with Moussa and Yoccoz and with Kim and Marchese).

Marco Mazzucchelli : *Minimal Boundaries in Tonelli Lagrangian Systems.*

In this talk, which is based on joint work with Luca Asselle and Gabriele Benedetti, I will present a few recent results concerning action minimizing periodic orbits of Tonelli Lagrangian systems on an orientable closed surface. I will show that in every level of a suitable low energy range there is a "minimal boundary" : a global minimizer of the Lagrangian action on the space of smooth boundaries of open sets of the surface. Minimal boundaries turn out to satisfy an analogue of the celebrated graph theorem of Mather : in the tangent bundle, the union of the supports of all lifted minimal boundaries with a given energy projects injectively to the base. I will also present some corollaries of these statements to the existence of action minimizing simple periodic orbits with low energy on non-orientable closed surfaces, and to the existence of infinitely many closed geodesics on certain Finsler 2-spheres.

Eva Miranda : *Hamiltonian Dynamics of singular symplectic manifolds.*

In this talk, guided by the light of some examples from Celestial Mechanics, we will consider singular symplectic forms satisfying some transversality criteria. Two different cases will be analyzed in detail : those leading to b^m-symplectic structures and those leading to folded symplectic structures. We will present a desingularization procedure that relates the three worlds : b^m-symplectic and symplectic or folded-symplectic depending on the parity of m and describe some applications of this interaction of singular symplectic geometries to Hamiltonian Dynamics.

Yanhui Qu : *The trace dynamics of Thue-Morse Hamiltonian.*

We study the dynamics of the trace polynomials related to Thue-Morse Hamiltonian. As an application, we obtain an absolute lower bound for the dimension of the spectrum for all the coupling constant. We also discuss the existence of unbounded trace orbits at certain energies. At these energy levels, we observe "pseudo-localization".

Laurent Stolovitch : *Dynamics and singularities of Cauchy-Riemann structures.*

We study real analytic submanifolds of the complex space. If each tangent space contains a complex subspace the dimension of which is constant along the submanifold, then it is called a Cauchy-Riemann manifold. A point is called a CR singularity if the complex dimension drops at that point. The study of CR singularities was initiated by Bishop and then by Moser-Webster. We study a germ of real analytic n-dimensional submanifold of $\mathbb{C}^n$ that has a complex tangent space of maximal dimension at a CR singularity. These are higher order perturbations of a quadric. Under some assumptions, we show its equivalence to a normal form under a local biholomorphism at the singularity. We also show that if a real submanifold is formally equivalent to its "unperturbed" quadric, it is actually holomorphically equivalent

to it, if a "small divisors condition" is satisfied. The properties of geometry of these manifolds can be read off the properties of an associated dynamical system. This a joint work with Xianghong Gong (Madison).