TBA

Mardi 29 Janvier 2019, 14 :30
IHES, Amphithéâtre Léon Motchane(Cours de l'IHES)
Domaines : math

Titre : *Chaotic Properties of Area Preserving Flows (1/4)*

Orateur : **Corinna Ulcigrai (University of Zurich & University of Bristol)**

Résumé : *Flows on surfaces are one of the fundamental examples of dynamical systems, studied since Poincaré ; area preserving flows arise from many physical and mathematical examples, such as the Novikov model of electrons in a metal, unfolding of billiards in polygons, pseudo-periodic topology. In this course we will focus on smooth area-preserving -or locally Hamiltonian-flows and their ergodic properties. The course will be self-contained, so we will define basic ergodic theory notions as needed and no prior background in the area will be assumed. The course aim is to explain some of the many developments happened in the last decade. These include the full classification of generic mixing properties (mixing, weak mixing, absence of mixing) motivated by a conjecture by Arnold, up to very recent rigidity and disjointness results, which are based on a breakthrough adaptation of ideas originated from Marina Ratner's work on unipotent flows to the context of flows with singularities. We will in particular highlight the role played by shearing as a key geometric mechanism which explains many of the chaotic properties in this setup. A key tool is provided by Diophantine conditions, which, in the context of higher genus surfaces, are imposed through a multi-dimensional continued fraction algorithm (Rauzy-Veech induction) : we will explain how and why they appear and how they allow to prove quantitative shearing estimates needed to investigate chaotic properties.*