



CENTRO DE
MATEMÁTICA
UNIVERSIDADE DO PORTO

CMUP Post-doc Meeting

November 26, 2021

Room FC1.027

www.cmup.pt/

Hour	Speaker	Talk
14:00	Helena Reis CMUP	<i>Opening session</i>
14:05	Victor Vargas  Dynamical Systems	<i>Thermodynamic formalism for discrete time linear dynamical systems</i> In this talk will be presented some results about existence of σ -additive Borel probability measures with non-trivial support and invariant by the action of a weighted shift $L : X \rightarrow X$, where X is either the Banach space $c^0(\mathbb{R})$ or $l^p(\mathbb{R})$ ($1 \leq p < \infty$). In order to do that, we adapt well known techniques of the classical thermodynamic formalism to the setting of the so called weighted shifts defining a transfer operator depending of a potential $A : X \rightarrow \mathbb{R}$ satisfying suitable conditions and we prove that any fixed point μ_A of the dual of the transfer operator results in an invariant probability measure with full support. Furthermore, we are able to show that any μ_A obtained through this technique satisfies a variational principle of the pressure and, thus, it is an equilibrium state. In addition, we also show existence of accumulation points at zero temperature of the family $(\mu_t A)_t > 1$ in the weak* topology.
14:50	Adjaratou Arame Diaw  Geometry	<i>Resolution of the singularities of a pair of foliations in dimension 2 and classification (online session)</i> According to the well-known theorem of A. Seidenberg, it is possible to reduce the complexity of a singularity of a holomorphic foliation defined on a complex surface to obtain a foliation with a very simple singularity in the sense of Seidenberg. In this talk, we propose to generalize Seidenberg's theorem to the pair of foliations. Indeed, given a pair of singular holomorphic foliations on a compact complex surface: <ul style="list-style-type: none"> • What is the simplest and most accessible local model of the pair of foliations after simultaneous reduction of its singularities? • Is it possible to know the analytic type of the pair of foliations after solving its singularities?
15:35	Coffee Break	
16:00	Claude Marion  Algebra	<i>Free groups and finite groups: a few problems</i> Given a free group F of finite rank and a pseudovariety V of finite groups (a class closed under taking subgroups, homomorphic images and finite direct products), one can endow F with the pro- V topology. Examples of pseudovarieties include the sets of all finite groups, all groups of odd order, all nilpotent groups and all solvable groups. Given a finitely generated subgroup H of F , a natural question arises: (i) Are some pro- V topological properties, for example denseness or closedness, decidable for H ? On another area, following the classification of finite simple groups in the 1980s, it was established that every finite simple group can be generated by two elements. Some natural questions arise: (ii) Can we impose some restrictions on a pair of generators? (iii) What are the graph-theoretical properties of the generating graph of a finite simple group? (iv) Given a subgroup H of a finite simple group, what can be said about the minimal number of generators for H ? We will discuss some of these problems.
16:45	Alfonso Tortorella  Geometry	<i>Advances in Jacobi geometry through the boundary of Poisson and Contact Geometry</i> Over the last decades both Poisson geometry and contact geometry have developed into full-fledged research areas of pure Mathematics with plenty of notable applications at the crossroads of Geometry and Physics. Contact, locally conformal symplectic (lcs) and Poisson geometries share a common extension, namely Jacobi geometry. Since it unifies several important geometric theories, Jacobi geometry has a built-in potential to highlight the rich interplay and powerful connection between Poisson and contact geometry. In the last years, I have been interested in unlocking this potential by addressing fundamental questions about Jacobi, Poisson, and related geometries using techniques from deformation theory, functional analysis, Lie theory and the geometry/algebra of PDEs. In this talk, I will try to briefly tell you more about my activity in this direction. to know the analytic type of the pair of foliations after solving its singularities?
17:30	Closing session	