

NON-POSITIVE CURVATURE IN MANIFOLDS AND GROUPS

CATERINA CAMPAGNOLO (UAM - UNIVERSIDAD AUTÓNOMA DE MADRID)

Title: Simplicial volume as a geometric invariant

Abstract: Introduced by Gromov in the 80s, the simplicial volume is a homotopy invariant of manifolds, but it has straight away proven to have deep connections with their geometry. Outstanding illustrations of this are Gromov's Main Inequality relating the Riemannian and the simplicial volume of manifolds, or the Gromov-Thurston Proportionality Principle, showing in particular that the simplicial volume of hyperbolic manifolds is proportional to their hyperbolic volume. In this talk we will review simplicial volume and some highlights of the theory, before speaking of newer results in joint work with Shi Wang.

IRENE PASQUINELLI (UNIVERSITY OF BRISTOL)

Title: Mapping class group orbit closures for non-orientable surfaces

Abstract: The space of measured laminations on a hyperbolic surface is a generalisation of the set of weighted multi curves. The action of the mapping class group on this space is an important tool in the study of the geometry of the surface. For orientable surfaces, orbit closures are now well-understood and were classified by Lindenstrauss and Mirzakhani. In particular, it is one of the pillars of Mirzakhani's curve counting theorems. For non-orientable surfaces, the behaviour of this action is very different and the classification fails. In this talk I will review some of these differences. I will talk about some of these results and classify mapping class group orbit closures of (projective) measured laminations for non-orientable surfaces. This is joint work with Erlandsson, Gendulpe and Souto.

ANDREA SEPPI (UNIVERSITÉ GRENOBLE ALPES)

Title: Fuchsian and Hitchin representations, and their affine deformations

Abstract: Roughly speaking, Higher Teichmüller theory investigates deformations of Fuchsian representations when one embeds the isometry group of the hyperbolic plane into a larger Lie group G , and their associated geometric structures. For instance, Hitchin representations in $G = \mathrm{SL}(3, \mathbb{R})$ correspond to convex projective structures on surfaces. In this talk, I will give an overview of recent and not-so-recent results when G is a semi-direct product, namely for affine deformations of Fuchsian and Hitchin representations, in relation with certain geometric structures on three-manifolds.

LEONE SLAVICH (UNIVERSITÀ DI PAVIA)

Title: Hyperbolic manifolds and geodesic immersions.

Abstract: A (complete, finite-volume) hyperbolic manifold is said to be arithmetic if its fundamental group is commensurable with the integer points of a rational algebraic group G . The arithmetic properties of a hyperbolic manifold are encoded by two algebraic invariants introduced by Vinberg: the adjoint trace field k (which is an algebraic number field) and the ambient group (which is an algebraic k -group). We will see how it is possible to use these invariants to construct explicitly and classify (almost) all geodesic immersions between arithmetic hyperbolic manifolds.