

Workshop: Surfaces in São Paulo

Minicourses

São Sebastião, SP, Brasil - April 7 to 11, 2014

Danny Calegari (University of Chicago, USA)

Title: *Surfaces, dynamics and 3-manifolds*

Abstract: The theme of this minicourse is the interaction between two different views of 3-manifolds: as *geometric objects*; and as *dynamical objects*. From the first viewpoint we have the theory of hyperbolic (and other geometric) structures, decompositions, moduli, etc.; while from the second viewpoint we have surface dynamics, foliations, laminations, flows, etc. In each domain separately there is a well-developed and successful theory in which some structures are more prominent than others, but it remains a challenging task to perceive the structures that are natural in one viewpoint from the other. A third viewpoint is that of combinatorics and computation - this viewpoint connects up to geometric group theory and has ramifications beyond 3-dimensions.

Michael Handel (City University of New York, USA)

Title: *Outer automorphisms of free groups and mapping class groups*

Abstract: The outer automorphism group $\text{Out}(F_n)$ of the free group of rank n is the group of automorphisms of F_n modulo the group of inner automorphisms of F_n . The mapping class group $\text{MCG}(S)$ of a finite type surface S is the group of isotopy classes of homeomorphisms of S . I will discuss the connections between $\text{MCG}(S)$ and surface dynamics and then the connections between $\text{MCG}(S)$ and $\text{Out}(F_n)$ that have been established over the past 25 years. Finally, I will talk about current research on $\text{Out}(F_n)$ including the action of $\text{Out}(F_n)$ on hyperbolic complexes such as free factor complexes and free splitting complexes.