

Geometry, Groups and Dynamics/GEAR Seminar (held at the Illinois hub of GEAR)

12:00 pm, Tuesday, April 12, 2016, 243 Altgeld Hall

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Subset currents on surface groups

Abstract: Subset currents on free groups and on surface groups, which were introduced by I. Kapovich and T. Nagnibeda in 2013, are the generalization of geodesic currents on surface groups originally studied by Bonahon in late 1980s. The space of geodesic currents on the fundamental group $\pi_1(S)$ of a closed hyperbolic surface S can be thought of as a measure-theoretic completion of the set of all conjugacy classes in $\pi_1(S)$. Similarly, subset currents are measure-theoretic generalizations of conjugacy classes of finitely generated subgroups of $\pi_1(S)$. Geodesic currents have been successfully used in the study of the Teichmüller space and the mapping class group of S . In this talk I will discuss some new results on subset currents on surface groups. To every nontrivial finitely generated subgroup $H \leq \pi_1(S)$ we associate a "counting subset current" η_H . We prove that the set of all scalar multiples of counting currents is dense in the space of all subset currents on S , generalizing a result of Kapovich and Nagnibeda in the free group case. We extend Bonahon's "geometric intersection number" between geodesic currents to an intersection number between subset currents. We also construct a continuous linear "Euler characteristic" functional on the space of subset currents on S such that, when evaluated on a counting current η_H , this functional computes the Euler characteristic of the surface corresponding to the core of the cover of S corresponding to H .

Video (unavailable)