

Cornell Dynamical Systems Seminar

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*Group actions on the circle (after joint works with B.
Deroin, D. Filimonov, A. Navas)*

A well-known conjecture concerning actions on the circle, says that if a finitely generated C^2 -action on the circle is minimal (that is, there are no nontrivial closed invariant subsets), then it is Lebesgue-ergodic (that is, there are no nontrivial measurable invariant subsets). This conjecture was proven by Herman and Katok for the case of one circle diffeomorphism, and by Sullivan for groups that allow local expansion at every point; later, Hurder generalized Sullivan's strategy to groups that have positive expansion exponent. An obstacle to the application of Sullivan's strategy is the presence of "non-expandable points". Two examples of actions possessing such points are $PSL(2, Z)$ and the Ghys-Sergiescu smooth realization of the Thompson group acting on the circle. We give a sufficient condition for actions possessing non-expandable points to be ergodic (a condition that holds for both $PSL(2, Z)$ and the Thompson group action). Also, under this assumption we deduce some surprising structure properties for the action. And finally, we prove that every free finitely-generated groups of analytic circle diffeomorphisms satisfies this condition, thus for such groups the conjecture becomes proven (together with some additional conclusions on the structure of a group).

Monday, October 18, 2010, 2:30pm, in 230 Malott Hall