

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

1:00 pm Thursday, September 3, 2015 in 243 Altgeld Hall

Ilya Kapovich (Illinois)

On purely loxodromic actions

Abstract: Purely loxodromic isometric actions of finitely generated groups on Gromov-hyperbolic spaces (that is, actions where every element of infinite order in the group acts as a loxodromic isometry) appear naturally in many contexts, such as in the theories of hyperbolic, relatively hyperbolic and acylindrically hyperbolic groups, the study of convex cocompact subgroups of mapping class groups, etc. Often one needs to consider non-proper actions, and in that context the notion of an acylindrical action serves as an important substitute of being proper. We construct an example of an isometric action of the free group $F(a,b)$ on a delta-hyperbolic graph Y , such that this action is acylindrical, free, purely loxodromic, has asymptotic translation lengths of nontrivial elements of $F(a,b)$ separated away from 0, has quasiconvex orbits in Y , but such that the orbit map $F(a,b) \rightarrow Y$ is not a quasi-isometric embedding.

[Video](#)