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

12:00 pm, Thursday, January 28, 2016, 243 Altgeld Hall

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Extending the $\log (2k-1)$-Theorem

Abstract: In this talk, I discuss current work that expands the scope of the $\log (2k-1)$-Theorem of Anderson, Canary, Culler and Shalen. This was a seminal result in that it articulated a relationship between a set of k freely-generating isometries of hyperbolic 3-space and how they interacted with points in hyperbolic 3-space; namely, under certain conditions, at least one of the given isometries must move a point P by a distance $\ge \log(2k-1)$. The result lay the foundation for future novel geometric-topological results. Here I discuss an expansion of the theorem, wherein we consider sets of length-n words contained in a rank-2 free group Ξ on 2 letters (one can consider ≥ 2 letters via the same methods), and present a generalized version that restricts how these isometries displace points in hyperbolic 3-space. This has application to classifying certain hyperbolic 3-manifolds in that the volume of the resulting manifold M gotten by quotient of hyperbolic 3-space with Ξ, is expected to have a bounded volume which is improved from known volume bounds.

Video