1116-57-2971   **Rosemary K Guzman*** (`rguzma1@illinois.edu`), Mathematics Department, 1409 W Green St, Urbana, IL 61801. *Extending the* $\log(2k-1)$*-Theorem.*

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 $\geq \log(2k-1)$. 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. (Received September 23, 2015)