

1106-57-231

**Christian R Millichap\*** ([christian.millichap@gmail.com](mailto:christian.millichap@gmail.com)). *Geometrically Similar Hyperbolic Pretzel Knots.*

Given a hyperbolic 3-manifold  $M$ , there are a number of geometric invariants of interest. Two such invariants are the volume of  $M$  and the length spectrum of  $M$ , that is, the set of all lengths of closed geodesics in  $M$  counted with multiplicities. It is natural to ask how often can hyperbolic manifolds have the same volume, the same length spectrum, or perhaps even both. In this talk, we shall construct large families of hyperbolic pretzel knots whose complements have both the same volume and the same initial length spectrum, but are pairwise incommensurable, i.e., they do not share a common finite sheeted cover. In particular, we shall show that the number of hyperbolic knot complements with the same volume and initial length spectrum grows at least factorially fast with the volume and the number of twist regions. This proof relies on Ruberman's work on mutations along Conway spheres in least area form that preserve volume, and expanding this analysis to see when these Conway spheres could intersect short geodesics in a hyperbolic 3-manifold. (Received August 13, 2014)