USNA Math Department Colloquium

Effective hyperbolic geometry

Prof. David Futer (Temple University)

Date: Wednesday, 4 September 2013

Time: 3:45-4:45pm*

Location: Chauvenet 110

Abstract: Powerful theorems of Thurston, Perelman, and Mostow tell us that almost every 3-dimensional manifold admits a hyperbolic metric, and that this metric is unique. Thus, in principle, there is a 1-to-1 correspondence between a combinatorial description of a 3-manifold and its geometry. The existence of this 1-to-1 correspondence has been known, at least conjecturally, for over 30 years. On the other hand, only in the last few years have we begun to see the outlines of a concrete dictionary between combinatorial features and geometric measurements. I will survey some of what is known and unknown, paying special attention to the case where the manifold is the complement of a knot in 3-space.

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*The talk will be preceded by tea and cookies starting at 3:30pm.