

BI-CO MATHEMATICS COLLOQUIUM

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“Cusp Volumes of Alternating Knots”

Monday, November 23, 2015

Talk at 4:00 – Park 338

Tea at 3:30 – Park 355, Math Lounge

Abstract:

Alternating knots are some of the simplest knots to describe, and they occur frequently in low crossing knot tables. They can often be studied by geometry: most admit a hyperbolic metric. However, it is difficult to relate the hyperbolic geometry of these knots to their diagrams. Based on a large amount of experimental evidence, there are several open conjectures on how geometry and knot diagrams relate. In this talk, we will address one such conjecture, concerning cusp volume. We will first spend some time discussing knots and geometry, then define the cusp volume, and show that the cusp volume of a hyperbolic alternating knot can be bounded above and below in terms of the twist number of an alternating diagram of the knot. All these estimates are explicit. This is joint work with Marc Lackenby.

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