



Department of Mathematics and Statistics

Colloquium

Tuesday March 6

AMB 164 4:00 - 5:00 pm

## Searching for closed surfaces in knot complements

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### Abstract

Abstract: To investigate the structure of a 3-manifold, it is often helpful to try to understand surfaces which encode some of the topology of the manifold. Such surfaces are deemed essential. Essential surfaces come in two flavors: those with boundary and those without. Seifert surfaces and swallow-follow tori are examples of essential surfaces that one can see directly in the diagram of a knot. They are, however, far from the only essential surfaces in a knot complement. In this talk we will discuss Culler and Shalen's character variety techniques for detecting essential surfaces in 3-manifolds. We will see, in particular, that the Culler-Shalen machine does not detect every essential surface without boundary.

Refreshments at 3:45