

**Undergraduate Math Club
Winter 2008
2nd floor Nesbitt Common Room
Thursday, March 6, 5:10-6:00pm
(dinner with speaker afterwards)**

Apollonian circle packings

Prof. Jeff Lagarias (UM)

Abstract

Apollonian circle packings are infinite packings of circles constructed recursively from an initial configuration of four mutually touching circles by adding circles externally tangent to triples of such circles. Configurations of four mutually touching circles were studied by Descartes in 1643. If the initial four circles have integral curvatures, so do all of the circles in the packing. If, in addition, the circles have rational centers, then so do all of the circles in the packing. Why?

This talk describes results in geometry, group theory, and number theory arising from such packings. (This is joint work with Ron Graham, Colin Mallows, Allan Wilks, and Catherian Yan.)