

Math/Stat Colloquium



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Arithmetic of Apollonian Circle Packings

The concept of an Apollonian circle packing traces back to the Greek astronomer Apollonius of Perga who circa 200 BCE discovered the following theorem: to any three mutually tangent circles, there are precisely two circles mutually tangent to all three. Starting from four mutually tangent circles and continually adding newer circles tangent to three of the previous circles yields an infinite configuration known as an Apollonian circle packing. If each of the four initial circles has integer curvature, then amazingly all circles in the packing will have integer curvature. Given such a packing, there are many questions a number theorist might ask. For example, are there infinitely many circles with prime curvature? In this talk, we introduce and discuss the arithmetic of Apollonian circle packings. We will also discuss some new results on the prime components of Apollonian circle packings.

Tuesday, September 24th
SC 199, Refreshments 4:15pm, Lecture 4:30pm