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Mathematics Colloquium

Circle packings and Delaunay circle patterns for complex projective structures

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Abstract

Circle packings have been of interest to geometers throughout history. In the context of hyperbolic geometry, Thurston gave a beautiful extension of the works of Koebe and Andreev, showing that a triangulation of a surface determines a unique hyperbolic structure where that triangulation is realized as the dual graph of a circle packing. As a natural generalization, we study circle packings on complex projective structures, a bundle of geometric structures over Teichmuller space. The subset of complex projective structures realizing a circle packing with a fixed dual graph is no longer a unique point. In fact, evidence suggests that this subset is homeomorphic to Teichmuller space via the bundle projection, a conjecture of Kojima, Mizushima, and Tan. In joint work with Jean-Marc Schlenker, we show that this map is proper, giving partial support for the conjecture. In our proof, we work with the more general notion of Delaunay circle patterns. I will give an introductory overview of definitions and results, provide some visuals, and an outline of our argument.

Wednesday, April 18 2018, 4pm

Smith Hall 204

Tea and refreshments will be served at 3:45pm.