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Department of Mathematics and Computer Science

Colloquium

Drawing and Morphing Graphs on Surfaces

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Abstract:

In his famous paper "How to draw a graph" in 1962, Tutte proposed a simple method to produce a straight-line embedding of a planar graph in the plane, known as Tutte's spring theorem. This construction provides not only one embedding of a planar graph, but infinite many distinct embeddings of the given graph. This observation leads to a surprisingly simple proof of a classical theorem proved by Bloch, Connelly, and Henderson in 1984 stating that the space of geodesic triangulations of a convex polygon is contractible. In this talk, we will introduce spaces of geodesic triangulations of surfaces, review Tutte's spring theorem, and present this short proof. We will briefly report the recent progress in identifying the homotopy types of spaces of geodesic triangulations of more complicated surfaces. This is joint work with Tianqi Wu and Xiaoping Zhu.

4 – 5pm, Wednesday, May 3, 2023

Room 204, Smith Hall