

Colloquium

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Friday, March 28, 2014
2:00 p.m., HH-3017

The Rotation Number for Maps on Graphs

Abstract:

While studying the precession of planetary orbits, Poincare introduced the rotation number for a homeomorphism of a circle. This is the "average" angle that points traverse under the homeomorphism, and has become a fundamental tool in the theory of dynamics on the circle. The basic concept has been extended to maps on the annulus and torus, and some other settings.

We will discuss a generalization of the rotation number to maps of finite graphs which has been developed in joint work with Chris Bernhardt. Using the fundamental group and some basic covering space theory we describe a rotation element which obeys natural properties analogous to the classical rotation number. This invariant naturally takes the form of an element of a "free group with noninteger exponents". We will discuss recent results as well as some new work in progress.