The SUMO Speaker Series for Undergraduates

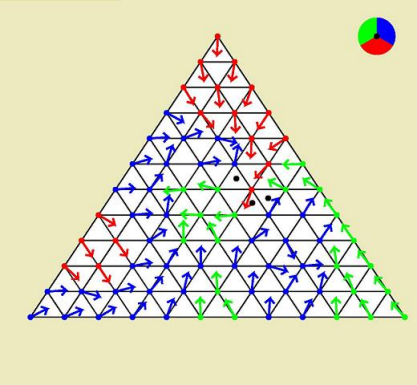
Thursday, May 15

4:15-5:05, Room 380C

(Food Provided)

Sperner's Lemma and Brouwer's Fixed Point Theorem

Professor Maryam Mirzakhani



Abstract

Brouwer's fixed point theorem states that every continuous function f from a closed ball $B^n \subset \mathbb{R}^n$ onto itself has a fixed point $f(x) = x$. In 1928, young Emanuel Sperner found a surprisingly simple proof of this theorem. In this talk, we discuss his proof, in particular Sperner's Lemma which is a statement about colorings of a subdivision of a simplex. We will discuss several interesting applications of this purely combinatorial lemma, including a cake-cutting algorithm.

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