

abstract

COMPUTER SCIENCE/DISCRETE MATH I

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

A graph separator is a set of edges whose deletion partitions the graph into two (or more) pieces. Finding small graph separators is a fundamental combinatorial problem with numerous applications. Interest in it also derives from its theoretical connections to spectral methods, linear/semi-definite programming, high dimensional geometry and measure concentration.

In this talk I will speak about approximation algorithms for this problem that are (within poly log factors) as fast as max-flow computations. The analysis of these algorithms is based on a cut-matching game, a new embedding of the graph in \mathbb{R}^n called the walk-embedding, and the notion of `{\em expander flows}`, introduced in [ARV], which constitute an interesting ``certificate" of a graph's expansion.

Based on joint work with Khandekar and Rao, and Orrechia, Schulman and Vishnoi.