

abstract

COMPUTER SCIENCE/DISCRETE MATH II

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

We consider several natural problems related to the design of approximation algorithms and the analysis of their error bounds. We define a set of sufficient conditions on a function $f:D \rightarrow \mathbb{R}^+$ and its domain D , so that we can construct good approximations for it in space, time, and number of queries, which are all polylogarithmic in $|D|$ and $\max f(x)$.

Using our ideas we construct a meta algorithm for obtaining Fully Polynomial Approximation Schemes (FPTASs) for combinatorial optimization problems on several families of directed acyclic graphs.

Our results are given in a modular way, as a set of "ready-made" algorithms and computational rules, so that future (and past) approximation algorithms will be simplified by using them.

Joint work with James Orlin (MIT)