MIT MATHEMATICS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MATHEMATICS

Simple Person's
Applied Math Seminar
(SPAMS)

Thursday, February 17, 2022

6:00pm − 6:45pm   Room : 2 - 132

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(MIT Mathematics)

"Nested Dissection Meets IPMs: Planar Min-Cost Flow in Nearly-Linear Time"

Abstract

We present a nearly-linear time algorithm for finding a minimum-cost flow in planar graphs with polynomially bounded integer costs and capacities. The previous fastest algorithm for this problem is based on interior-point methods (IPMs) and works for general sparse graphs in $O(n^{1.5} poly(\log n))$ time [Daitch-Spielman, STOC'08]. Our results immediately extend to all families of separable graphs. This is joint work with Sally Dong, Yu Gao, Gramoz Goranci, Yin Tat Lee, Richard Peng, and Sushant Sachdeva.