Seminar on Combinatorial Computing
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Room 6417, Graduate Center
365 Fifth Avenue, New York

Embedding trees in Pseudorandom Graphs

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Abstract

We present a simple randomized algorithm which finds near-optimal embeddings for a tree T in a graph G satisfying a certain pseudorandomness property. The size of T can be a constant fraction of the size of G, and the maximum degree of T can be close to the minimum degree of G. As a toy example, we prove that any C_4-free graph of minimum degree d contains every tree of size ϵd^2 and maximum degree at most $(1-2\epsilon)d$. We obtain similar results for graphs of given girth, $K_{s,t}$-free graphs, random graphs and most generally graphs satisfying a certain pseudorandomness property. These results extend a classic result of Friedman and Pippenger about embedding trees in expanding graphs.

Joint work with Benny Sudakov.

For further information contact Janos Pach at pach@cims.nyu.edu,
or visit our website
http://www.math.nyu.edu/p̃ach/public_html/combinatorics_seminar.html