

Seminar on Combinatorial Computing
March 12, Wednesday, 6:30 p.m.
Room 6417, Graduate Center
365 Fifth Avenue, New York

The Erdős-Szekeres theorem with forbidden order types

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Abstract

According to the Erdős-Szekeres theorem, among n points in general position, there are always $c \log n$ in convex position, and this bound cannot be improved asymptotically.

Is it possible to improve the $c \log n$ bound, if we assume that our set of n points does not contain a certain type of subconfiguration? Here is a trivial example: Suppose that our point set does not contain a four-point subconfiguration whose convex hull is a triangle. Then all n points are in convex position, that is, instead of $c \log n$ points, we can find n points in convex position. We illustrate this phenomenon (first noticed by Solymosi) with some nontrivial examples, and we also show some cases when the $c \log n$ bound cannot be substantially improved.

Joint work with Gyula Károlyi.

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or visit our website
http://www.math.nyu.edu/~pach/public_html/combinatorics_seminar.html