Seminar on Combinatorial Computing
April 17, 2002, Wednesday, 6:30 p.m.
Room 6417, Graduate Center
365 Fifth Avenue, New York

Minor-closed graph properties are evasive and related results

Amit Chakrabarti
Princeton University

Abstract

How large a portion of a graph do we need to examine in order to decide whether or not the graph has a pre-specified property? A famous conjecture of Karp says that for monotone graph properties we need to examine the entire graph, every edge. This is usually stated succinctly as follows: "Monotone graph properties are evasive."

We show that Karp's conjecture is true for minor-closed graph properties, a family that includes planarity and bounded treewidth, amongst other properties. We also settle the conjecture for bipartite subgraph containment and make considerable progress on the conjecture for general subgraph containment properties. Our proofs are based on, and extend, the topological method of Kahn, Saks and Sturtevant.

In this talk, I shall review the basics of the topological method and then outline the proofs of the above results. Familiarity with topology will not be necessary.

For further information contact Janos Pach at pachcims.nyu.edu, or visit our website: http://cs.gc.cuny.edu/ pach/