Seminar on Combinatorial Computing
October 20, Wednesday, 6:30 p.m.
Room 6417, Graduate Center
365 Fifth Avenue, New York

Edge Guarding a Planar Graph

Raghavan Dhandapani
Courant Institute, NYU

Abstract

In the context of a planar graph, an *edge guard* is said to *guard* (or cover) all the faces of a planar graph incident to at least one vertex of a given edge.

In 2003, Bose, Kirkpatrick and Li used a weaker version of the familiar notion of a 2-coloring of a planar graph, called the face-respecting 2-coloring, that, while permitting monochromatic edges, does not permit any monochromatic faces, to show that $\frac{n}{3}+q$ edge guards are always sufficient to guard any planar graph, where q is the number of quadrilateral faces of the graph.

We improve this bound to $\frac{n}{3}$ thereby eliminating the explicit dependence on the number of quadrilateral faces. Since it is also known that $\frac{n}{3}$ guards are sometimes necessary to guard a planar graph, this bound is tight.

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