Seminar on Combinatorial Computing
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Room 3212, Graduate Center
365 Fifth Avenue, New York

Acyclic edge colorings of graphs

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Abstract

A proper coloring of the edges of a graph G is called *acyclic* if there is no 2-colored cycle in G. The *acyclic edge chromatic number* of G, denoted by $a'(G)$, is the least number of colors in an acyclic edge coloring of G. For certain graphs G, $a'(G) \geq \Delta(G)+2$ where $\Delta(G)$ is the maximum degree in G. It is known that $a'(G) \leq 16\Delta(G)$ for any graph G. We prove that there exists a constant c such that $a'(G) \leq \Delta(G)+2$ for any graph G whose girth is at least $c\Delta(G)\log\Delta(G)$, and conjecture that this upper bound for $a'(G)$ holds for all graphs G. We also show that $a'(G) \leq \Delta + 2$ for almost all Δ-regular graphs. (Joint work with N. Alon and A. Zaks.)

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or visit our website: http://math.gc.cuny.edu/Seminars/Combinatorics.html