VCU Discrete Mathematics Seminar

Characterization of cycle obstruction sets for improper coloring planar graphs

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Wednesday, Feb. 7 1:00-1:50 4145 Harris Hall



For nonnegative integers k, d_1, \ldots, d_k , a graph is (d_1, \ldots, d_k) -colorable if its vertex set can be partitioned into k parts so that the ith part induces a graph with maximum degree at most d_i for all $i \in \{1, \ldots, k\}$. A class C of graphs is *balanced k-partitionable* and *unbalanced k-partitionable* if there exists a nonnegative integer D such that all graphs in C are (D, \ldots, D) -colorable and $(0, \ldots, 0, D)$ -colorable, respectively, where the tuple has length k.

A set X of graphs is an *obstruction set* of a graph class C if containing none of the graphs in X as a subgraph guarantees membership of C. In other words, a graph G is a member of C if G does not contain any graph in X as a subgraph. This paper characterizes all cycle obstruction sets of planar graphs to be balanced k-partitionable and unbalanced k-partitionable for all k; namely, we identify all inclusion-wise minimal cycle obstruction sets for all k.

For the DM seminar schedule, see:

http://www.people.vcu.edu/~dcranston/DM-seminar