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Classification of Factored Gain-Graphic Arrangements

Abstract for the Combinatorics Seminar 2012 December 4

Determining when an arrangement of hyperplanes is free is a complicated algebraic question, so combinatorial properties and methods are often used to study freeness. One such property is inductive factorization, which implies freeness.

I will introduce arrangements of hyperplanes and a generalization of graphs known as gain-graphs, as well as the notions of factorization and inductive factorization for an arrangement. A particular class of arrangements is associated with gain graph; I will give a classification of all factored gain graphic arrangements in purely gain-graph theoretic terms.

Time permitting, I will discuss what remains to be done to extend this classification of factored gain-graphic arrangements to a classification of inductively factored gain-graphic arrangements.