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An Application of Oriented Matroids in Behavioral Sciences

Abstract for the Combinatorics Seminar 2017 November 7

Additive conjoint measurement (ACM) is a theory that allows one to deal with non-quantitative objects in quantitative terms. For instance, consider a problem in data analysis: we hypothesize that a quantity f depends on two independent variables. The variables take values in sets A and B, respectively, which are preordered but may not be numerical. For instance, f might be the price a customer is willing to pay for a shirt, A is the set of possible colors, B is the set of possible styles, and each of A and B is preordered by the customer's preference. ACM gives a framework to test our hypothesis based on incomplete information about f and to make quantitative sense of A and B. I'll discuss recent work with John Dunn that formulates ACM in terms of oriented matroids.
