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Unlabeling Graph Colorings and Acyclic Orientations

Abstract for the Combinatorics Seminar 2014 September 24

Several well-known graph invariants have a geometric interpretation via hyperplane arrangements. In this talk I review geometric methods for computing the chromatic polynomial and the number of acyclic orientations of a given graph. I then provide a compatible interpretation of Hanlon's work on unlabeled graph coloring and acyclic orientations. By extending these tools I give counting formulas for the number of labeled and unlabeled k-colorings of a signed graph, and its number of labeled and unlabeled acyclic orientations.

This is joint work with Matthias Beck.

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