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The Bergman Complex of a Matroid and Phylogenetic Trees

Abstract for the Combinatorics Seminar 2004 March 5

I will talk about the Bergman complex $B(M)$ of a matroid M : a polyhedral complex which arises in algebraic geometry, but which we describe purely combinatorially. We prove that a natural subdivision of the Bergman complex of M is a geometric realization of the order complex of its lattice of flats. In addition, we show that the Bergman fan $B'(K_n)$ of the graphical matroid of the complete graph K_n is homeomorphic to the space of phylogenetic trees T_n .

This is joint work with Federico Ardila.

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