Combinatorics Seminar

Friday October 26, 2012 at 2PM

Room MS.03

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f-vectors of three-dimensional flag Gorenstein* complexes via extremal graph theory

An f-vector of a topological space is the sequence counting the number d-dimensional faces, where $d = 0, 1, \ldots$. For example the f-vector of a 3-dimensional cube is (8,12,6) as it has 8 vertices, 12 edges and 6 faces. The following type of problems is thoroughly studied in several areas of mathematics (enumerative combinatorics, algebraic topology, theory of polytopes, ...) which f-vectors are attained in a given family of topological spaces? We determine these f-vectors for the family of three-dimensional flag Gorenstein* complexes. The main ingredient is a reduction of the problem to a problem in extremal graph theory. The talk will be self-contained (both on the topology and the graph theory side). Joint work with Michał Adamaszek.

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