

Binomial arithmetical rank of toric ideals associated to graphs

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A basic problem in Commutative Algebra asks one to compute the least number of polynomials needed to generate a toric ideal up to radical. This number is commonly known as the arithmetical rank of a toric ideal. A usual approach to this problem is to restrict to a certain class of polynomials and ask how many polynomials from this class can generate the toric ideal up to radical. Restricting the polynomials to the class of binomials we arrive at the notion of the binomial arithmetical rank of a toric ideal. In the talk we study the binomial arithmetical rank of the toric ideal I_G of a finite graph G in two cases:

1. G is bipartite.
2. I_G is generated by quadratic binomials.

In both cases we prove that the binomial arithmetical rank equals the minimal number of generators of I_G .

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