MINIMAL SYSTEMS OF BINOMIAL GENERATORS AND THE INDISPENSABLE COMPLEX OF A TORIC IDEAL

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1. Abstract

Let $A = \{\mathbf{a}_1, \ldots, \mathbf{a}_m\} \subset \mathbb{Z}^n$ be a vector configuration and $I_A \subset K[x_1, \ldots, x_m]$ its corresponding toric ideal. We completely determine the number of different minimal systems of binomial generators of I_A. We also prove that generic toric ideals are generated by indispensable binomials. We associate to A a simplicial complex $\Delta_{\text{ind}(A)}$. We show that the vertices of $\Delta_{\text{ind}(A)}$ correspond to the indispensable monomials of the toric ideal I_A, while one dimensional facets of $\Delta_{\text{ind}(A)}$ with minimal binomial A-degree correspond to the indispensable binomials of I_A.

This talk is based on joint work with A. Katsabekis and A. Thoma.

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