Castelnuovo-Mumford regularity

Dorin Popescu

Let k be a field and $A = k[X_1, \ldots, X_n]$. The Castelnuovo-Mumford regularity is a kind of measure for the complexity of the graded minimal free resolution of graded finite A-modules. Let I be a homogeneous ideal of A and $<$ the reverse lexicographic order on the monomials of A. The initial ideal $in(I)$ is the ideal generated by the leading monomials with respect to $<$ of all polynomials of I. Bayer and Stillmann showed that $reg(I) = reg(inf(I))$ for a generic linear transformation f of X. The ideal $inf(I)$ is a good monomial ideal and we study formulas for its regularity.