Abstract

Monomials are the link between Commutative Algebra and Combinatorics. In this thesis we concentrate on monomial ideals. With a simplicial complex Δ one can associate two squarefree monomial ideals: the Stanley-Reisner ideal I_Δ whose generators correspond to the non-faces of Δ, or the facet ideal $I(\Delta)$ whose generators correspond to the facets of Δ. To a semi-lattice we associate a squarefree monomial, which is called Hibi ideal. The homological properties of Stanley-Reisner ideal, facet ideal and Hibi ideal are studied in this thesis.