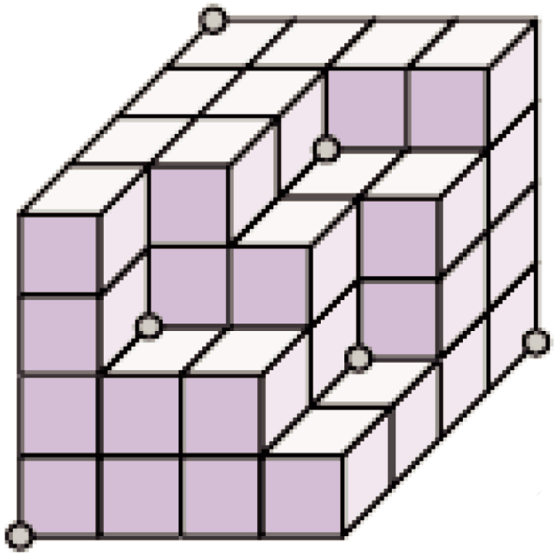
The Oliver Club

www.math.cornell.edu/~oliver/

Irena Peeva, Cornell University

Hilbert Functions



The polynomial ring $C[x_1,\ldots,x_n]$ is graded by setting the degree of each variable to be one. An ideal is called homogeneous if it can be generated by homogeneous polynomials. The Hilbert function is an invariant which measures the size of a homogeneous ideal; it also encodes important numerical information (for example, dimension and multiplicity). Macaulay's Theorem provides a characterization of the Hilbert functions. Hartshorne's Theorem shows how to construct a sequence of deformations connecting two given homogeneous ideals with the same Hilbert function. The key idea in the proofs of both theorems is to study the properties of lex ideals, which are special monomial ideals. I will discuss analogues of these results over quotient rings.

Thursday, October 2, 2008
at 4:25 PM in 406 Malott Hall

Refreshments will be served at 3:55 PM in the Mathematics Department lounge (532 Malott Hall).