Abstract

The computation of the Hilbert-Samuel multiplicity of an ideal of finite co-length is one of the main tools used to calculate geometric invariants of singularities and it is a challenging problem in commutative algebra to show methods which allow us to compute such multiplicity. One of the main tools to compute it is the determinacy of the integral closure of such ideal.

In a general setup, the notion of integral closure of ideals was extended to modules by Rees, moreover the Hilbert-Samuel multiplicity of an ideal was generalized to modules by Buchsbaum and Rim.

In this talk we shall show how to determine these multiplicities using appropriate Newton polyhedra which are related to the ideal or the module.