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Title: Local Cohomology of bigraded Rees algebras and normal Hilbert polynomials

Abstract: Rees studied the normal Hilbert polynomials of two ideals to generalize Zariski's product theorem for complete ideals so that it is applicable to ideals in two dimensional local rings having rational singularities.

We approach Rees's theorem via a simple calculation of local cohomology of bigraded Rees algebras. As a consequence we show that Rees's theorem is really about vanishing of certain graded components of these local cohomology modules.

This generalization enables us to relate the Cohen-Macaulay property of normalization of bigraded Rees algebra of two \mathfrak{m} -primary ideals I and J with the constant term of the normal Hilbert polynomials of IJ .

This is joint work with Shreedevi Masuti.