

SUMMARY OF PH.D. THESIS

Title: The splitting of local cohomology module and applications.

Speciality: Algebra and number theory.

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The aim of this thesis is to prove Theorems on the splitting of local cohomology and their applications in many problems of Commutative Algebra.

New results presented in the thesis

The main results of this thesis are the followings.

1. We construct a method to prove a short exact sequence of local cohomology modules is split based on the structure of module of extensions.
2. We prove a splitting theorem for local cohomology provided that $H_a^i(M)$ is finitely generated for some positive integer t and $i < t$. Some applications about the asymptotic behavior of systems of parameters of generalized Cohen-Macaulay modules are given..
3. We use the splitting of local cohomology to prove some asymptotic behaviors of good systems of parameters of sequentially generalized Cohen-Macaulay modules.
4. We prove a splitting theorem for local cohomology for local rings.
5. We construct a degree of modules called unmixed degree and prove that this

degree is just satisfying the conditions for a degree to be an extended degree in sense of W. Vasconcelos.

6. We prove the finiteness of the set of associated primes of the first local cohomology module which is not finitely generated and its support is not finite.
7. We study the finiteness of certain sets of associated primes related to the finiteness dimension of M with respect to an ideal \mathfrak{a} .

Supervisor

Hanoi, March 20, 2013
Ph.D. Student

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