

BRIEF SUMMARY OF PhD THESIS

Title: **The relationship between adjusted Hilbert coefficients and sequentially generalized Cohen-Macaulay modules.**

Specialization: Algebra and Number theory.

Code: 62.46.01.04.

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New results presented in the thesis

The most important result of the thesis is proving the following theorem.

Main Theorem. *Assume that R is a homomorphic image of a Cohen-Macaulay local ring. Then, the module M is sequentially generalized Cohen-Macaulay if and only if the set of polynomials $\mathcal{P}_{\mathcal{D}}(M)$ is finite.*

Above result is proved in the following two steps.

1. Let M be a sequentially generalized Cohen-Macaulay module. We establish uniform bounds for the Castelnuovo-Mumford regularity of associated graded module $G_{\mathfrak{q}}(M)$ for all distinguished parameter ideals \mathfrak{q} of M .
2. For a distinguished parameter ideal \mathfrak{q} of M , then there exists an integer n_0 such that the adjusted Hilbert-Samuel function $H_{\mathfrak{q},M}^{ad}(n) \geq 0$ for all $n \geq n_0$. Moreover, if M is a sequentially generalized Cohen-Macaulay then n_0 exists independently of the choice of \mathfrak{q} .

Scientific advisors

Hanoi, January 28, 2016
PhD student

Prof. Dr. Sc. Nguyen Tu Cuong

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