

Séminaire de théorie des nombres

Le 18 septembre 2006 à 14h

Arithmetic Dynamics and Nonarchimedean Green Functions

Exposé de Joseph H. Silverman (Brown University)

Résumé : The arithmetic dynamics in the title refers to the study of number theoretic questions coming from discrete dynamical systems obtained by iteration of maps on algebraic varieties. An important tool in arithmetic dynamics is the canonical height \hat{h}_ϕ associated to a morphism $\phi : \mathbb{P}^N \rightarrow \mathbb{P}^N$ of degree $d \geq 2$ and defined by the usual Tate limit $\hat{h}_\phi(P) = \lim_{n \rightarrow \infty} d^{-n} h(\phi^{on}(P))$. In this talk I will discuss two questions :

(1) Under what circumstances can two morphisms have the same canonical height ?

(2) To what extent does the sup norm $\sup_{P \in \mathbb{P}^N} |\hat{h}_\phi(P) - \hat{h}_\psi(P)|$ provide a good measure of the “arithmetic distance” between ϕ and ψ ?

Nonarchimedean Green functions arise naturally in answering the first question, and I will describe their construction and some of their basic properties. This is a joint work with Shu Kawaguchi.