Séminaire de théorie des nombres

Le 18 juin 2012 à 14h (Jussieu)

Thom-Sebastiani Theorem in Characteristic p

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Abstract : Let k be a perfect field of characteristic p, let $f_i : X_i \to \mathbb{A}^1_k$ $(i = 1, 2)$ be two k-morphism of finite type, and let $f : X_1 \times_k X_2 \to \mathbb{A}^1_k$ be the morphism defined by $f(z_1, z_2) = f_1(z_1) + f_2(z_2)$. For each $i \in \{1, 2\}$, let x_i be a k-rational point in the fiber $f_i^{-1}(0)$ such that f_i is smooth on $X_i - \{x_i\}$. Using the ℓ-adic Fourier transformation and the stationary phase principle of Laumon, we prove that the vanishing cycle of f at $x = (x_1, x_2)$ is the convolution product of the vanishing cycles of f_i at x_i $(i = 1, 2)$.