



Number Theory Seminar

On the Semisimplicity of Geometric Monodromy Action in \mathbb{F}_ℓ -Coefficients

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Abstract

Let X/\mathbb{F}_q be a smooth separated geometrically connected variety and $f : Y \rightarrow X$ a smooth projective morphism. Let \bar{x} be a geometric point of X and $w \in \mathbb{Z}_{\geq 0}$. A celebrated result of Deligne states that the geometric étale fundamental group $\bar{\Pi} := \pi_1^{\text{ét}}(X_{\mathbb{F}_q}, \bar{x})$ is semisimple on the \mathbb{Q}_ℓ -cohomology group $H^w(Y_{\bar{x}}, \mathbb{Q}_\ell)$ for all prime ℓ not dividing q . By comparing the invariant dimensions of sufficiently many ℓ -adic and mod ℓ representations arising from $H^w(Y_{\bar{x}}, \mathbb{Q}_\ell)$ and $H^w(Y_{\bar{x}}, \mathbb{F}_\ell)$ respectively, we prove that $\bar{\Pi}$ is semisimple on $H^w(Y_{\bar{x}}, \mathbb{F}_\ell)$ for all sufficiently large ℓ , generalizing Deligne's result to \mathbb{F}_ℓ -cohomology. This is a joint work with Anna Cadoret and Akio Tamagawa.

Date: April 30, 2018 (Monday)

Time: 3:00 – 4:00pm

Venue: Room 210, Run Run Shaw Bldg., HKU