



Seminar

K-Theory, Quadratic Forms and Number Theory

Title: The Tate module of Deligne's 1 motive and class groups as Galois modules

Speaker: Professor Cornelius Greither (Universitaet der Bundeswehr Muenchen)

Date: Wed 25th November 2009 at 3:00PM

Location: Mathematical Sciences Seminar Room

Abstract: We consider a G -Galois covering $X \rightarrow Y$ of curves over a finite field. Deligne defined a certain 1-motive in this context (it is not necessary to know anything about motives for this talk!), and the ℓ -adic Tate module M of this motive is a finitely generated free $f\mathbb{Z}_{\ell\ell}$ -module with action of G and Frobenius. It is closely linked to the ℓ -part of the class group of arX (the curve X base-changed to the algebraic closure of the base field), but it behaves better algebraically. In ongoing joint work, Popescu and I study M as a Galois module. Applications include the calculation of Fitting invariants of class groups of curves, and an a priori lower bound on class groups of some Fermat curves.