

Séminaire

Autour des Cycles Algébriques

organisé par A. Cadoret - B.Kahn - A. Pirutka

Place Jussieu, 75005 Paris

Octobre 2014

- | | | |
|----------|--|--|
| 29/10/14 | 14h30-15h30
Jussieu, salle
15-16-413 | Hiroyasu Miyazaki (University of Tokyo)
Special values of zeta functions of singular varieties over finite fields via higher Chow group.

We give a formula of special values at non-positive integers of the zeta function of a variety over a finite field, via Bloch's higher Chow group. In the case that the variety is proper and smooth, this result was proved by M. Kerz and S. Saito. To generalize the result to the case that the variety is arbitrary, we use a tool called «weight complex», which was introduced by H. Gillet and C. Soulé. In the calculation of special values, we need the fact that the weight complex of a variety is «bounded» in some sense, which is already known by Gillet and Soulé under the assumption of the existence of resolution of singularities. In this talk, it will be explained that the boundedness is also valid for varieties over any perfect field, in particular, over a finite field. |
| 29/10/14 | 16h-17h
Jussieu, salle
15-16-413 | Alexander Merkurjev (UCLA, Los Angeles)
Reduced Whitehead group and algebraic cycles.

Let D be a finite dimensional central division algebra over a field F . The Whitehead group $K_1(D)$ is the factor group of the multiplicative group of D modulo the commutator subgroup. The reduced Whitehead group $SK_1(D)$ is the kernel of the reduced norm map $K_1(D) \rightarrow K_1(F)$. If the degree of D is square-free, an old theorem of Wang states that $SK_1(D) = 1$. Suslin conjectured that in all other cases $SK_1(D)$ is nontrivial generically. I plan to report on the history and recent (modest) progress on Suslin's Conjecture. |
| 29/10/14 | 17h30-18h30
Jussieu, salle
15-16-413 | Bin Zhao (UCLA, Los Angeles)
On the Mumford-Tate conjecture for abelian fourfolds.

The Mumford-Tate conjecture is a conjecture relating the Galois representation and the Hodge structure of an abelian variety over a number field. In case of abelian fourfolds, the work of Moonen and Zarhin implies that in almost all cases, the endomorphism algebra of an abelian fourfold together with its action on the tangent space of the abelian variety determines its Mumford-Tate group and image of associated Galois representation, which implies the Mumford-Tate conjecture. The only exceptional case is when the abelian fourfolds have trivial endomorphism algebra. In this case, the abelian fourfold can be either a 'generic' point on the Siegel moduli space or a non CM point on a Shimura curve constructed by Mumford. The abelian varieties coming from the Shimura curves have been extensively studied by Noot. In this talk, I will introduce a new idea attacking the Mumford-Tate conjecture for abelian fourfolds, mainly based on previous work of Noot and formal linearity of Shimura varieties of Hodge type. |