

JEAN-LOUIS COLLIOT-THLNE**Universite de Paris-Sud***Cycles algébriques et cohomologie étale*

Résumé : On rappellera plusieurs contributions de Spencer Bloch à l'étude des cycles algébriques (en particulier cycles de torsion et corps de classes supérieurs) et on évoquera quelques-uns de leurs développements au cours des trente dernières années.

HLNE ESNAULT**Universitt Duisburg-Essen***Remarks and questions on coniveau*

S. Bloch a décomposé la diagonale sur des surfaces complexes à groupe de Chow trivial d'ordre 0 pour étudier les cycles de torsion et montrer le théorème de Mumford affirmant que la partie de torsion de la filtration de Hodge est nulle. Nous allons revoir comment on peut utiliser cette idée, avec le théorème d'intégralité de Deligne, pour trouver des points rationnels sur des corps finis. Nous allons aussi voir ce qui empêche d'utiliser cette méthode pour étudier des variétés singulières, et plus particulièrement, la réduction modulo p de variétés définies sur des corps locaux. Nous allons aussi revoir des questions et remarques sur ce sujet.

ERIC M. FRIEDLANDER**Northwestern University***Musings about algebraic cycles modulo algebraic equivalence*

tba

ALEXANDER GONCHAROV**Brown University***Motivic fundamental groups of curves and Feynman integrals*

tba

LUC ILLUSIE**Universite Paris-Sud***On Gabber's recent work in étale cohomology*

Gabber a récemment résolu des problèmes ouverts de base en cohomologie étale datant de SGA 4 et SGA 5, tels que la constructibilité des images directes de faisceaux constructibles de torsion première aux caractéristiques par des morphismes de type fini entre schémas excellents. Je donnerai un survol de ses résultats et un aperçu de la stratégie de leurs preuves.

KAZUYA KATO
Kyoto University

Non-commutative Iwasawa theory and Hilbert modular forms

The best thing in my life in the study was that in the joint work with Spencer Bloch, we formulated so called Tamagawa number conjecture on L-functions of motives. This conjecture is now generalized to the equivariant version which is understood as non-commutative Iwasawa theory of motives. In my talk, I will show how to prove a very special case of the main conjecture of the non-commutative Iwasawa theory of totally real fields.

MARC LEVINE
Northeastern University

Motivic Postnikov towers

Combining the concrete approach to the Atiyah-Hirzebruch spectral sequence arising from the work of Bloch-Lichtenbaum and Friedlander-Suslin with the abstract approach of Voevodsky gives a powerful tool for the study of cohomology theories on algebraic varieties. One can also use this machinery to construct new cohomology theories from old ones, or to break some interesting motives into simpler pieces. We will give a survey of some of the foundations as well as a number of applications.

MADHAV NORI
University of Chicago

Regularisation of infinite series and Analytic Continuation

A simple proof of analytic continuation of certain series obtained by summing over lattices in Euclidean space will be given.

ARTHUR OGUS
University of California

Hodge cohomology of invertible sheaves

Let X/k be a smooth projective scheme over a field k of characteristic zero. For integers i, j and d , let

$$S_d^{i,j} := \{L \in \text{Pic}^0(X) : \dim H^i(X, \Omega_{X/k}^j \otimes L) \geq d\}.$$

This is a closed subset of $\text{Pic}^0(X)$, and it was conjectured by Beauville and Catanese and proved by Lazarsfeld, Green, and Simpson that each of its irreducible components is a translate of a subabelian variety of $\text{Pic}^0(X)$ by a torsion point. Pink and Roessler recently

gave a new proof of this result using reduction modulo p techniques introduced by Deligne and Illusie. I will discuss an attempt (with H. Esnault) to address some remaining issues concerning the behaviour of

$$H_{Hdg}^m(L) := \bigoplus_{i+j=m} H^j(X, \Omega_{X/k}^i \rightarrow L),$$

when L has finite order.

TAKESHI SAITO
University of Tokyo

Wild ramification and the characteristic cycle of an l -adic étale sheaf

The graded quotients of the logarithmic higher ramification groups of a local field of characteristic $p \neq 0$ are abelian groups killed by p . Their character groups are canonically embedded in some spaces of twisted differential forms. Using the embeddings, we define the characteristic cycle of an l -adic sheaf, satisfying a certain conditions, as a cycle on the logarithmic cotangent bundle and prove that the intersection with the 0-section gives the characteristic class.

CHAD SCHOEN
Duke University

Some surfaces of general type in abelian varieties

We discuss two examples of smooth, projective surfaces for which the image under the Albanese map cannot be expressed as linear combinations of intersections of divisors.

VASUDEVAN SRINIVAS
Tata Institute of Fundamental Research

Oriented intersection multiplicities

Barge and Morel defined a graded “oriented Chow group” of a smooth variety over a field, which may be viewed as a quotient of a group of “oriented algebraic cycles” modulo a suitable equivalence relation. A precursor was the idea of an oriented 0-cycle, suggested by M. Nori, which led to the Euler class group, considered in works of Raja Sridharan, S. M. Bhatwadekar, S. Mandal, and others.

Fasel constructed an intersection product on the oriented Chow groups of Barge and Morel, leading to an “oriented Chow ring”, which admits a graded ring homomorphism to the “usual” Chow ring of (unoriented) cycles. In my lecture, I’ll introduce these ideas, and discuss some joint work with Fasel, about the corresponding notion of intersection multiplicities.