

OBERWOLFACH SEMINAR: SYNTOMIC COHOMOLOGY AND p -ADIC HODGE THEORY

Date: November 18th-November 24th, 2018.

Organizers:

W. Nizioł, Lyon
B. Chiarellotto, Padua
P. Colmez, Paris

Program: An introduction to syntomic cohomology and its applications with a special focus on:

- (1) Syntomic cohomology of good and semistable reduction varieties. Syntomic cohomology over a field. Definitions, basic properties.
- (2) Regulators, syntomic realizations of motives, comparison theorems for motives.
- (3) Syntomic cohomology and p -adic nearby cycles. Construction of the period morphism, proof of the semistable comparison isomorphism.
- (4) Computation of (pro)-étale cohomology of rigid analytic spaces via syntomic cohomology. Analytic curves, general Stein spaces.
- (5) Étale cohomology of coverings of Drinfeld half-plane and its relation to p -adic local Langlands correspondence.
- (6) Étale cohomology of Drinfeld half-spaces of arbitrary dimension.

Introductory reading:

- (1) P. Colmez, G. Dospinescu, W. Nizioł, *Cohomologie p -adique de la tour de Drinfeld: le cas de la dimension 1*. arXiv:1704.08928.
- (2) P. Colmez, G. Dospinescu, W. Nizioł, *Cohomology of p -adic Stein spaces*, arXiv:1801.06686.
- (3) P. Colmez, W. Nizioł, *Syntomic complexes and p -adic nearby cycles*. Invent. Math. 208 (2017), no. 1, 1-108.
- (4) F. Déglise, W. Nizioł, *On p -adic absolute Hodge cohomology and syntomic coefficients, I*, arXiv:1508.02567.
- (5) J.-M. Fontaine and W. Messing, *p -adic periods and p -adic étale cohomology*, Current Trends in Arithmetical Algebraic Geometry (K. Ribet, ed.), Contemporary Math., vol. 67, Amer. Math. Soc., Providence, 1987, 179-207.
- (6) J. Nekovář, W. Nizioł, *Syntomic cohomology and p -adic regulators for varieties over p -adic fields*. Algebra Number Theory 10 (2016), no. 8, 1695–1790.
- (7) T. Tsuji, *p -adic étale cohomology and crystalline cohomology in the semi-stable reduction case*. Invent. Math. 137 (1999), no. 2, 233-411.

Deadline for applications: September 15th, 2018 (to seminars@mfo.de)