Prof. Dr. Christian Liedtke
Prof. Dr. Andreas Rosenschon
Prof. Dr. Stefan Schreieder

Sommersemester 2018

Motivic Cohomology

Wednesday 14-16, Theresienstr. 39, B 045

Schedule

18.4. (Stefan Schreieder) **Classical Motives**[9], see also [6]. Survey of the basic definitions and properties [9, section 1].

25.4. (Christian Liedtke) **Applications of Classical Motives** [9]. Applications of Classical Motives: Manin's Identity Principle, computation of the motive of a projective bundle [9, section 2]. Also, motives of curves, abelian varieties and surfaces [9, section 3], see also [8].

9.5. (Christian Liedtke)**The category of finite correspondences and presheaves with transfers** Explain the category of finite correspondences and define presheaves with transfers [7, Lecture 1, 2] up to and including Definition 2.14; omit the appendix 1A.

16.5. (Kai Behrens) **Numerical equivalence and semi-simplicity** [5].

23.5 (Claudia Stadlmayr) **Motivic cohomology** [7]. Define the motivic complex $\mathbb{Z}(q)$ and explain first properties [7, Lecture 3]. Sketch a proof of the quasi-isomorphism $\mathbb{Z}(1) \sim \mathcal{O}^{\times}[-1]$ from [7, Lecture 4].

13.6. (Oliver Gregory) **Relation with Milnor K-theory** [7]. Cover [7, Lecture 5].

20.6. (Stefan Schreieder) **Higher Chow groups** [1]. Definition and basic properties of higher Chow groups.

27.6 (Andreas Rosenschon) **Cycle maps and étale motivic cohomology**[2],[3], [4]. Construction of cycle maps and comparison results.

4.7. (Fabien Morel) **Voevodsky triangulated category of mixed motives**.

Literatur

[1] Bloch, Spencer, *Algebraic cycles and higher K-theory*, Adv. in Math., 61, 1986, 267–304.

[2] Bloch, Spencer, *Algebraic cycles and the Beĭlinson conjectures*, in: The Lefschetz centennial conference, Part I (Mexico City, 1984), Contemp. Math., 58, 65–79, Amer. Math. Soc., Providence, RI, 1986.

[3] Geisser, Thomas and Levine, Marc, *The K-theory of fields in characteristic p*, Invent. Math., 139, 2000, 459–493.

[4] Geisser, Thomas and Levine, Marc, *The Bloch-Kato conjecture and a theorem of Suslin-Voevodsky*, J. Reine Angew. Math., 530, 2001, 55–103.

[5] Jannsen, Uwe, *Motives, numerical equivalence, and semi-simplicity*, Invent. Math., 107, 1992, 447–452.

[6] Manin, Ju. I., *Correspondences, motifs and monoidal transformations*, Mat. Sb. (N.S.), 77 (119), 1968, 475–507.

[7] Mazza, Carlo and Voevodsky, Vladimir and Weibel, Charles. *Lecture notes on motivic cohomology*, Clay Mathematics Monographs, 2, American Mathematical Society, Providence, RI; Clay Mathematics Institute, Cambridge, MA, 2006.

[8] Murre, J. P., *On the motive of an algebraic surface*, J. Reine Angew. Math., 409, 1990, 190–204.

[9] Scholl, A. J., *Classical motives*, in: Motives (Seattle, WA, 1991), Proc. Sympos. Pure Math., 55, 163–187, Amer. Math. Soc., Providence, RI, 1994.