Prof. Dr. Werner Bley
Prof. Dr. Cornelius Greither
Prof. Dr. Christian Liedtke
Prof. Dr. Andreas Rosenschon
Prof. Dr. Stefan Schreieder   Wintersemester 2017/18

Arithmetische und Algebraische Geometrie
Mittwoch 16-18, Theresienstr. 39, B 251

18.10.2017

25.10.2017 Paul-Arne Ostvaer, University of Oslo.
Titel: "$\mathbb{A}^1$ contractible varieties".
Abstrakt: We will discuss examples of smooth affine varieties which are contractible in the setting of $\mathbb{A}^1$ homotopy theory.

8.11.2017

15.11.2017

22.11.2017 Gebhard Martin, TUM.
Titel: "Numerically trivial automorphisms of Enriques surfaces in positive characteristic".
Abstrakt: While it was already known to A. Hurwitz in 1893 that the automorphism group of a complex curve of general type acts faithfully on the (singular) cohomology of the curve, there is still no satisfying answer for the corresponding question in the case of smooth and projective algebraic surfaces, even over the complex numbers. The first examples of surfaces for which the action of the automorphism group on cohomology is not faithful, even though the group is discrete, were Enriques surfaces. In 1984, S. Mukai and Y. Namikawa obtained a complete classification of complex Enriques surfaces with such numerically trivial automorphisms. I will explain how to obtain the classification of the possible numerically trivial automorphism groups of Enriques surfaces in arbitrary positive characteristic. This is joint work with I. Dolgachev.

29.11.2017 Stefan Schreieder, LMU.
Titel: "On the number and boundedness of minimal models of general type".
Abstrakt: We give an overview of the birational classification of higher dimensional complex projective varieties. We then focus on varieties of general type, which is the largest class in this classification. We prove that all minimal models of varieties of general type, bounded volume and given dimension form a bounded family. Similar arguments can be used to prove that the number of minimal models of an n-dimensional smooth complex projective variety can be bounded in terms of its volume, and, if n=3, also in terms of its Betti numbers. The latter solves a conjecture of Cascini and Lazic. This is joint work with Martinelli and Tasin.

6.12.2017 Fabrizio Catanese, Universität Bayreuth (Vortrag an der TUM).

13.12.2017 Vladimir Lazic, Universität Saarbrücken. Titel: "Morphisms from a Calabi-Yau"
Abstrakt: An important problem in the theory of Calabi-Yau varieties is the existence

of morphisms to other varieties - this is a version of the abundance conjecture. I will present the context and previous work on the problem, and explain recent progress in a joint work with Thomas Peternell.

19.12.2017 Jean Fasel, Université Grenoble. LECTURE AT 10.15 IN B252. Titel: "Borel-Moore homology and Chow-Witt groups of possible singular varieties"
Abstrakt: (joint work with Frdric Dglise). In this talk, we present MW-motivic cohomology and its associated Borel-Moore homology. We will perform a few computations of these (co-)homology groups, and recover Chow-Witt groups of possibly singular schemes as a special case. This shows that the latter are obtained via an explicit complex, covariantly functorial for proper morphisms (with an explicit push-forward morphism) and covariantly functorial for tale morphisms.

20.12.2017 Tariq Syed, LMU. Titel: "The cancellation problem of projective modules and the generalized Vaserstein symbol"
Abstrakt: We begin with a discussion of the cancellation problem of projective modules. In particular, we will outline the methods used by Fasel-Rao-Swan in the proof of the most recent result on stably free modules. Motivated by this, we introduce the usual Vaserstein symbol and explain current work on its generalization.

10.1.2018 Andreas Höring, Université Nice. Title: "Projective manifolds with nef anticanonical bundle"
Abstrakt: Manifolds with nef anticanonical bundle arise as an interpolation between manifolds with trivial canonical bundle (which are described by the Beauville-Bogomolov decomposition) and Fano manifolds, but they come with many new features. In particular $-mK_X$ might not have global sections, so we do not have a natural starting point for the investigation of the geometry. I will introduce this class of varieties with some examples and then talk about a surprisingly simple decomposition result: if a projective manifold with nef anticanonical bundle is simply connected, then it is a product of a manifold with trivial canonical bundle and a rationally connected manifold. This is joint work with Junyan Cao.

17.1.2018

24.1.2018 Patrick Graf, Universität Bayreuth. Titel: "The Lipman–Zariski conjecture for low-genus surface singularities"
Abstrakt: The Lipman–Zariski conjecture asserts that a complex algebraic variety with locally free tangent sheaf (i.e. locally free module of derivations) is necessarily smooth. I will explain why it suffices to consider normal surface singularities, and then prove the conjecture for surfaces whose singularities are "not too far" from being rational, in the sense that their geometric genus is low. As an application, I will give several global statements. For example, a normal compact complex surface whose smooth locus has trivial tangent bundle is already smooth (and hence it is a complex 2-torus).

31.1.2018 Evgeny Shinder, University of Sheffield. Titel: "Variation of stable birational types"
Abstrakt: It is an old question in Algebraic Geometry how birational types and stable birational types behave in families. After recalling specialization results (joint with J.Nicaise) that stable birational types, in particular stable rationality, specialize in smooth and mildly singular families, I will explain how this leads to the idea of variation of stable birational types. The methods rely on the Grothendieck ring of varieties and the specialization map.

7.2.2018