K-THEORY WORKSHOP

ABSTRACTS

Tuesday 24 July

9:30 - 10:20 Jinhyun Park

On the motivic cohomology of fat points

We give a new algebraic cycle complex that may serve as a candidate model for the motivic cohomology of singular schemes such as fat points. To test the validity of this model, we explicitly compute its simplest case. We discuss a few aspects of this model beyond those computations. This talk is based on a recent joint work with Sinan Ünver.

11:00 - 11:50 Alexander Gorokhovsky

Cyclic cohomology of pseudodifferential operators and K-theory invariants

We compare different constructions of cyclic cocycles for the algebra of complete symbols of pseudodifferential operators. Our comparison result leads to index-theoretic consequences and a construction of invariants of the algebraic K-theory of the algebra of pseudodifferential symbols. This is a joint work with H. Moscovici.

12:00 - 12:50 Alcides Buss

The smallest exact crossed product functor

Motivated by exactness obstructions, Baum, Guentner and Willett recently introduced a reformulation of the Baum-Connes conjecture for group actions on C^*-algebras in which the reduced crossed product is replaced by the minimal exact crossed product. In this talk I will give a new description of this functor that allows, among other things, to show that the associated group C^*-algebra of this functor is always the ordinary reduced group C^*-algebra. This shows that the new reformulated conjecture coincides with the old one for trivial coefficients. This talk is based on joint work with Echterhoff and Willett.

15:00 - 15:20 **Christian Wimmer**   (Contributed talk)

Genuine equivariant commutative ring spectra

Let G be a finite group. I will identify the homotopy theory of genuine G-equivariant commutative ring spectra in terms of geometric fixed points after inverting the group order. Rationally this leads to an algebraic model, namely diagrams of CDGA's indexed by the orbit category of G.

15:30 - 15:50 **Patrick McFaddin**   (Contributed talk)

Exceptional collections for some arithmetic toric varieties

Exceptional collections of a variety X are effectively decompositions of the derived category of X, analogous to an (semi-)orthonormal basis of a vector space with inner-product. The existence of exceptional collections for smooth projective toric varieties defined over the complex numbers was settled affirmatively by Kawamata using the framework afforded by the toric Minimal Model Program. The study of toric varieties defined over arbitrary fields (so-called arithmetic toric varieties) has been taken up by a number of authors, although much less is known about their derived geometry. In this talk, we will discuss an effective Galois descent result for such collections and provide applications to arithmetic toric varieties of low dimension and a high degree of symmetry.

16:00 - 16:20 **Aderemi Kuku**   (Contributed talk)

Cohomology for generalized Bredon coefficient systems and Higher Algebraic K-theory

Let C be a generalized based category, (to be defined). In this talk, we construct a cohomology theory in the category $B_R(C)$ of contravariant functors $C \to R$-Mod where R is a commutative ring with identity which generalizes Bredon cohomology involving finite, profinite or discrete groups. We then study higher K-theory of the category of finitely generated projective objects as well as the category of finitely generated objects in $B_R(C)$ and obtain several finiteness and other results.

16:50 - 17:40 **Amalendu Krishna**

de Rham-Witt sheaves and algebraic cycles

In this talk, we shall show that the sheaf of de Rham-Witt complexes on a smooth variety over a field is motivic, in the sense that it is given by algebraic cycles. This is based on a joint work with Jinhyun Park.