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Classification of Torsors and Subtle Stiefel-Whitney classes

Friday, June 27, 2014 9:00 AM (1 hour)

This is a joint work with Alexander Smirnov. I will describe a new homotopic approach to the classification of torsors of algebraic Groups. It extends the approach of Morel-Voevodsky, where torsors are interpreted as Hom's to the classifying space of the group in the A^1-homotopy category of Morel-Voevodsky. In the case of the orthogonal group O(n), we introduce new invariants: "Subtle Stiefel-Whitney classes"which are much more informative than the classical ones (defined by J.Milnor). These invariants distinguish the triviality of the torsor (quadratic form), see powers I^n of the fundamental ideal, contain Arason and higher invariants, and are related to the J-invariant of quadrics (thus, connecting previously isolated areas). These classes are also essential for the motivic description of some natural varieties related to a quadratic form.

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