

Central extensions and \mathbb{A}^1 -fundamental groups.

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Abstract : Classical results of Matsumoto and Suslin describe the universal central extension of the group of rational points of a split, semisimple, simply connected algebraic group. These results were later extended by Brylinski and Deligne, who showed that every reductive group admits a central extension by the second K-theory sheaf K_2 , and that this central extension is universal if the reductive group under consideration is split, semisimple, simply connected and not of symplectic type. We will describe these classical results and discuss how all these results can be uniformly explained using the so-called " \mathbb{A}^1 -fundamental group" of a reductive group and describe some interesting consequences. The talk, which is based on joint work in progress with Fabien Morel, will not assume any specialized background in \mathbb{A}^1 -homotopy theory.

Pre-requisites :

Familiarity with notions in algebra and algebraic geometry.