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Title: "Rationality of Quotient Varieties"

Abstract: We will discuss some questions related to the rationality of quotient varieties V/G where G is an algebraic group and V is a faithful complex linear representation of G . The first examples of nonrational and even nonstably rational varieties V/G were obtained by showing that a birational invariant, the so-called unramified Brauer group, is nontrivial for some series of groups. In fact, this invariant coincides with the cohomological (or Grothendieck's) Brauer group of a smooth projective model for V/G . However, the unramified point of view enables one to dispense with the construction of an explicit smooth model, and even with the existence of such a model. This obstruction is the first of the series of birational invariants of V/G constructed via group cohomology. Some recent results when G is a finite simple group will be presented.