

# Ramification theory for inseparable coverings

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The classical ramification theory of branched coverings allows one to define a so-called ramification divisor that measures how far a finite generically étale morphism of schemes is from being étale. This applies in particular to quotient morphisms by generically free actions of finite étale group schemes. In this situation the ramification divisor also measures how far the quotient morphism is from being a torsor.

The question we raise is : what if we drop the assumption that the morphism is generically étale ? If a finite group scheme (possibly infinitesimal) acts generically freely on a scheme, is there a way to measure how far the quotient morphism is from being a torsor ?

In this talk I will present a notion of inseparable coverings and propose a definition of ramification divisor for such morphisms.