

Abstract

This thesis is an overview of the theory of pure motives, as well as an introduction to the Tate conjecture. After going through some preliminaries, we introduce algebraic cycles and Weil cohomology. We then give Grothendieck's classical definition of pure motives and discuss some properties. After that, we move on to André's motivated cycles introduced in [And96], and the category of pure motives they give rise to. We briefly discuss the motivic Galois groups attached to these motives.

The rest of this thesis regards the Tate conjecture, which says that the Tate classes of ℓ -adic cohomology are algebraic. Moonen showed in [Moo18] that if this is the case over a field of characteristic zero, then the Galois representations given by ℓ -adic cohomology are semi-simple. We explain the proof in detail, taking the opportunity to use the theory of algebraic cycles and motives developed in the earlier chapters.