

Automorphisms of an algebraic curve

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Abstract:

Let C be a (projective, geometrically irreducible, non-singular) algebraic curve defined over an algebraically closed field K and let $K(C)$ be the field of rational functions of C . The K -automorphism group $\text{Aut}(C)$ of C is defined to be the automorphism group $\text{Aut}(K(C))$ consisting of those automorphism of $K(C)$ which fix each element of K . By a classical result, $\text{Aut}(C)$ is finite if the genus g of C is at least two. It has been known for a long time that every finite group occurs in this way, that is, for any ground field K and any finite group G , there exists a curve C such that $\text{Aut}(C)=G$. In this work we focus on the following issues: upper bounds on the size of G depending on g and examples of curves defined over a finite field with very large automorphism groups.