Global fields and their L-functions

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Stellingen

behorende bij het proefschrift

Global Fields and Their L-functions

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1. The isomorphism class of a number field K is determined by the collection of ζ-functions of all finite abelian extensions of K.
2. The fact above can be used to give an alternative proof of the Neukirch-Uchida Theorem for the case of non-normal extensions of the field of rational numbers.
3. There are two non-isomorphic elliptic curves over $\mathbb{F}_{29}$ with degree seven maps to $\mathbb{P}^1$ that are arithmetically equivalent in the sense of Chapter 3.
4. Let E be an elliptic curve defined over a finite field $\mathbb{F}_q$, $q = p^n$, $p > 3$ with $j \notin \{0, 1728\}$. The set of zeta-functions of genus 2 abelian coverings of E depends only on the number of $\mathbb{F}_q$-rational 2-torsion points of E.
5. For an imaginary quadratic number field K let $\mathcal{G}_K^{ab}$ denote the Galois group of the maximal abelian extension of K. Imaginary quadratic fields K with the discriminant occurring in the list:
$$\{-35, -51, -91, -115, -123, -187, -235, -267, -403, -427\}$$
all share the same isomorphism class of $\mathcal{G}_K^{ab}$.
6. There are infinitely many isomorphism classes of pro-finite groups that occur as $\mathcal{G}_K^{ab}$ for some imaginary quadratic number field K.
7. The isomorphism class of a pro-finite group $\mathcal{G}_K^{ab}$ determines the characteristic of the global function field K, but not the cardinality of its constant field.
8. It is well-known that torsion points of Drinfeld modules of rank one can be used to construct curves with many points over finite fields. In a similar manner torsion points of higher rank Drinfeld modules can be used to construct isospectral global function fields.