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Global fields and their L-functions

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Stellingen

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Global Fields and Their L-functions

van Pavel Solomatin

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.