



Universiteit
Leiden
The Netherlands

Global fields and their L-functions

Solomatin, P.

Citation

Solomatin, P. (2021, March 2). *Global fields and their L-functions*. Retrieved from <https://hdl.handle.net/1887/3147167>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/3147167>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <https://hdl.handle.net/1887/3147167> holds various files of this Leiden University dissertation.

Author: Solomatin, P.

Title: Global field and their L-functions

Issue Date: 2021-03-02

Abstract

Artin L -functions associated to continuous representations of the absolute Galois group \mathcal{G}_K of a global field K capture a lot of information about \mathcal{G}_K as well as arithmetic properties of K . In the first part of the present thesis we develop basic aspects of this framework, starting from the well-known theory of arithmetically equivalent number fields which corresponds to the case of permutation representations of \mathcal{G} . Then, based on work of Bart de Smit, we show how to completely recover the isomorphism class of K using Artin L -functions of monomial representations, i.e. representations induced from abelian characters. This allows us to provide an alternative approach to the famous Neukirch-Uchida theorem, which is a central result in anabelian geometry. In the second part of the thesis we shift our attention towards the case of global function fields and show two different approaches to possible generalizations of the results from the first part. Finally in the last part of the dissertation we study invariants of the maximal abelian quotient \mathcal{G}_K^{ab} of \mathcal{G} . In particular, we provide more examples of non-isomorphic imaginary quadratic number fields K whose \mathcal{G}_K^{ab} share the same isomorphism class and also prove that infinitely many non-isomorphic pro-finite groups occur as \mathcal{G}_K^{ab} for some K . We finish the section with a complete classification of \mathcal{G}_K^{ab} in the case of global function fields.