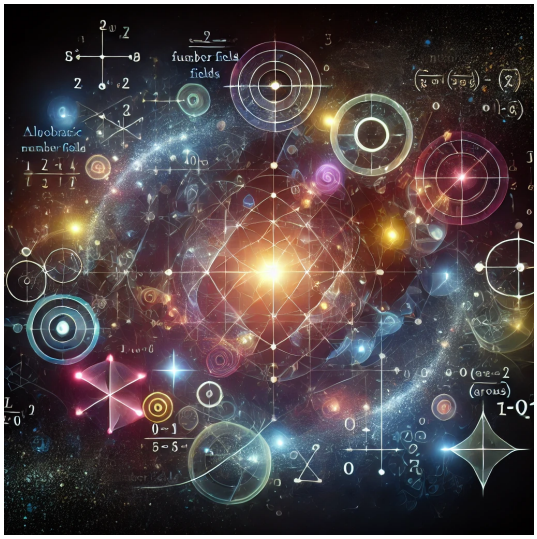
Algebraic Number Theory II

Lecturer: Prof. Dr. Georg Tamme

Date: Tue 10-12, 04-422, Thu 10-12, 05-522

This is a continuation of the course Algebraic Number Theory I. The heart of algebraic number theory is class field theory, which describes the abelian Galois extensions of a given number field in terms of the arithmetic of the field. There are several possible approaches to class field theory, and we will follow the "local" approach of Chevalley and Artin and Tate, first establishing class field theory for local fields and then assembling the local results to global class field theory.

Some key words: group cohomology, Galois cohomology, Brauer groups, Adèles



Class Field Theory [ChatGPT]

According to ChatGPT, *the dark, starry background in the above picture symbolizes the infinite complexity* of class field theory. Hopefully, the lecture course can bring some light into this darkness.

Prerequisites: Algebra 1 (ring theory, Galois theory); also Algebra 2 (commutative algebra) is highly recommended, though not strictly necessary. Algebraic Number Theory I is of course also recommended, though it should be possible to follow large parts of this lecture course without it, provided one has some basic knowledge about local fields.

Literature:

J. Neukirch, *Algebraische Zahlentheorie*, Springer.
J. Neukirch, *Algebraic Number Theory*, Springer.
J. Neukirch, *Klassenkörpertheorie*, Springer.
J.-P. Serre, *Local Fields*, Springer.

Additional literature will be announced in the lecture.