Seminar/Talk

Asymptotic distribution of wildly ramified extensions of function fields.

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Host: Tim Browning

The asymptotic distribution of field extensions (often counted by discriminant) is a well-studied topic that aims to make the predictions of inverse Galois theory quantitative. Over number fields, precise conjectures (and partial results) give a clear idea of the situation (Wright, Malle, Bhargava, ...). A similar picture emerges for tamely ramified extensions of function fields (Ellenberg, Tran, Venkatesh, and Westerland).In contrast, the wildly ramified case remains a terra incognita: the case of abelian extensions was only recently solved (Lagemann, Klners-Mller, Potthast, Gundlach) using class field theory.In this talk, we fix a prime p>2, and we focus on p-groups G of nilpotency class 2 (the "most abelian" among non-abelian p-groups). We explain how to parametrize G-extensions of fields of characteristic p using Lie algebras and Witt vectors.Work by Abrashkin describes the ramification filtration of these extensions and reduces the counting problem (over local fields) to a "typical" arithmetic geometry problem: counting solutions to polynomial equations over finite fields.We present several instances where this local counting can be carried out.If time permits, we will also discuss results over global function fields, which follow from the local case via a local-global principle.This work is a joint collaboration with Fabian Gundlach.

Thursday, December 5, 2024 01:00pm - 03:00pm
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)

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