

Stanford Department of Mathematics Number Theory Seminar

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2:30–3:30pm, 383N

Distributions of unramified extensions of global fields

Melanie Wood
UC Berkeley

Abstract

Every number field K has a maximal everywhere unramified extension K^{un} , with Galois group $\text{Gal}(K^{\text{un}}/K)$ (whose abelianization is the class group of K). As K varies, we ask about the distribution of the groups $\text{Gal}(K^{\text{un}}/K)$.

We give a conjecture about this distribution, which we also conjecture in the function field analog. We give some results about $\text{Gal}(K^{\text{un}}/K)$ that motivate us to build certain random groups whose distributions appear in our conjectures. We give theorems in the function field case (as the size of the finite field goes to infinity) that support these new conjectures. In particular, our distributions abelianize to the Cohen-Lenstra-Martinet distributions for class groups, and so our function field theorems give support to (suitably modified) versions of the Cohen-Lenstra-Martinet heuristics.

This talk is on joint work with Yuan Liu and David Zureick-Brown.