# Algebraic Approaches to Enumerating Field Extensions

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111 Cummington Mall, MCS B21
Tea and cookies in MCS 144

**Abstract:** There are, roughly speaking, two ways to count field extensions. One (the "parametrization approach", or "Bhargavology") is to parametrize them by lattice points in certain vector spaces, up to the action of some group. A second is to use Kummer theory and class field theory; in some cases, this leads to "nice" Dirichlet series representations for certain sets of field discriminants.

In this talk I'll give an overview of this second approach, highlighting work with Cohen concerning $S_3$, $A_4$, $S_4$, and $D_\ell$ fields, and also mentioning work with Barquero-Sanchez and Masri connecting it to the Colmez conjecture. I'll also mention some interesting related work being done by others, as well as some connected open problems.