

Primes ramified in coefficient fields of modular forms

Filip Gawron

January 2026

Let $f \in S_k(\Gamma_0(N), \chi)^{\text{new}}$ be a newform of level N and nebentypus χ . Knowing N and χ , what can we say about the field \mathbb{Q}_f generated by the Fourier coefficients of f ? In particular

What can we say about primes ramifying in \mathbb{Q}_f ?

In the talk, I will show some numerical calculations in the case $k = 2$ and trivial nebentypus. I will also discuss some existing results. Finally, I will comment on my recent work about ramification occurring when the level N is non-optimal.