

# Primes ramified in coefficient fields of modular forms

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Let  $f \in S_k(\Gamma_0(N), \chi)^{\text{new}}$  be a newform of level  $N$  and nebentypus  $\chi$ . Knowing  $N$  and  $\chi$ , 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.