

# Séminaire de théorie des nombres

Le 07 mai 2018 à 14h (Jussieu)

## Mazur's Eisenstein ideal

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**Résumé :** In his landmark 1976 paper "Modular curves and the Eisenstein ideal," Mazur studied congruences modulo  $p$  between cusp forms and an Eisenstein series of weight 2 and prime level  $N$ . He proved a great deal about these congruences, and also posed some questions : how many cusp forms of a given level are congruent to the Eisenstein series? How big is the extension generated by their coefficients? In joint work with Preston Wake, we give an answer to these questions in terms of cup products (and Massey products) in Galois cohomology. We may also indicate some partial generalisations of Mazur's results to square-free level  $N$ .