

Séminaire de théorie des nombres

Le 9 juin 2008 à 14h

Eisenstein Series and the Gross–Stark Conjecture

Exposé de Samit Dasgupta (Harvard University)

Résumé : Let H/F denote a finite extension of number fields. In the 1970s, Stark stated a series of conjectures relating the leading terms of the partial zeta-functions of H/F to the absolute values of certain units in H . The most explicit of these conjectures, known as the “rank one abelian Stark conjecture”, applies when H/F is an abelian extension and all its partial zeta-functions vanish at $s = 0$. In 1982, Gross stated certain p -adic analogues of Stark’s conjectures, including an analogue of the rank one abelian conjecture. In this talk we present an attack on Gross’s p -adic analogue of Stark’s rank one abelian conjecture that yields very strong partial results. Our technique is to consider certain p -adic families of modular forms constructed from Eisenstein series, and to study their associated Galois representations. The methods draw strongly from those of Ribet in his proof of the converse to Herbrand’s theorem, and those of Greenberg and Stevens in their proof of the Mazur-Tate-Teitelbaum conjecture. This is joint work with Henri Darmon and Rob Pollack.