Séminaire de théorie des nombres

Le 28 janvier 2008 à 14h

Some Effectively Computable Applications of GRH

Exposé de Ben Kane (Radboud Universiteit Nijmegen et IHES)

Résumé : In this talk, we will discuss how under certain Generalized Riemann Hypotheses the following questions may be answered in an effective, explicit, and efficient manner. Firstly, we show how these assumptions give an explicit algorithm to determine the set of integers represented by a given ternary quadratic form of a certain type. Next, let the ring of integers of an imaginary quadratic field be fixed, and consider all elliptic curves with CM by this ring. We give an algorithm to determine the image of the reduction map modulo a given prime to supersingular elliptic curves, and in particular to determine if it is surjective. Finally, fix a set of positive integers S and consider the function $f(x) = \sum_{i=1}^{k} b_i T_{x_i}$, where T_n is the n-th triangular number. Under GRH, we will give an explicit algorithm to determine whether f represents every integer in S.