

Elliptic units for real quadratic fields

Hugo Chapdelaine

october 2005

Abstract

Let K be a real quadratic number field. Let p be a prime inert in K . We denote the completion of K at the place p by K_p . In this paper we give a p -adic construction of special points in K_p^\times . Those special points are conjectured to be global p -units in ray class fields of K . The construction is a slight generalization of a previous construction obtained by Darmon-Dasgupta. The idea consists essentially in using a family of Eisenstein series (twisted by additive characters) of varying weight and use their moments to construct \mathbb{Z}_p -valued measures on $\mathbb{Z}_p \times \mathbb{Z}_p$. We also construct p -adic zeta functions for which we prove an analogue of the so called Kronecker's limit formula.