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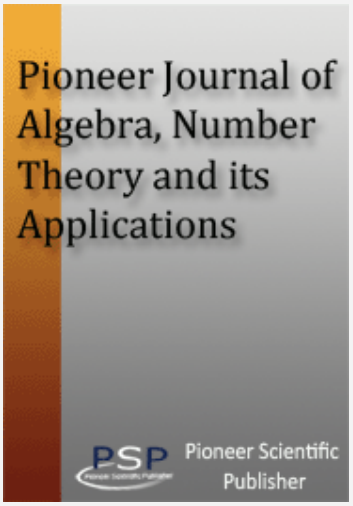

ON THE CLASSICAL MAIN CONJECTURE FOR IMAGINARY QUADRATIC FIELDS

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Abstract

Let p be a prime number, and let k be an imaginary quadratic number field in which p decomposes into two distinct primes $\mathfrak{p}$ and $\overline{\mathfrak{p}}$. Let k_∞ be the unique $\mathbb{Z}_p$-extension of k which is unramified outside of $\mathfrak{p}$, and let K_∞ be a finite extension of k_∞, abelian over k. In case $p \notin \{2, 3\}$, we prove that in K_∞, the characteristic ideal of the projective limit of the p-class group coincides with the characteristic ideal of the projective limit of units modulo elliptic units. Our approach is based on Euler systems, which were first used in this context by Rubin in [Karl Rubin, On the main conjecture of Iwasawa theory for imaginary quadratic fields, Inventiones Mathematicae 93 (1988), 701-713]. For $p \in \{2, 3\}$, we obtain a divisibility relation, up to a certain constant.

Keywords and phrases: elliptic units, Euler systems, Iwasawa theory.