

The Gross - Kuz'min conjecture for CM fields

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Let $A' = \varprojlim_n$ be the projective limit of the p -parts of the ideal class groups of the p -integers in the \mathbb{Z}_p -cyclotomic extension $\mathbb{K}_{\infty}/\mathbb{K}$ of a CM number field \mathbb{K} . We prove in this paper that the T -part $(A')^{-(T)} = 0$. This fact has been explicitly conjectured by Kuz'min in 1972 and was proved by Greenberg in 1973, for abelian extensions \mathbb{K}/\mathbb{Q} . Federer and Gross had shown in 1981 that $(A')^{-(T)} = 0$ is equivalent to the non-vanishing of the p -adic regulator of the p -units of \mathbb{K} .

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