

CALCULATING CLASS NUMBERS VIA SPECIAL TYPES OF UNITS

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In the maximal real subextensions K^+ of p -th cyclotomic fields $\mathbb{Q}(\zeta_p)$, there exist a group of cyclotomic units C inside the ring of integers with the property that their index $\mathcal{O}_{K^+}/C$ has the same order as the class group $\mathcal{C}\ell_{K^+}$. Schoof proved that this can be used to calculate prime powers factors of the class number h^+ very efficiently. Furthermore, it turns out that ray class extensions of imaginary quadratic fields of prime conductor are very similar to K and K^+ , and there exist a group of elliptic units E which have similar properties as C . We look at how Schoof's method can be generalized to this case.