Iwasawa Theory For $K_{2n}O_F$

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Abstract

Let F be a number field. For a prime p, let F_∞/F be the cyclotomic $\mathbb{Z}_p$-extension and let F_n be the unique intermediate field for F_∞/F such that $[F_n : F] = p^n$, $n \geq 0$. Let $p^{e(i)_n}$ be the exact power of p diving $\sharp K_{2i}(O_{F_n})\{p\}$. We generalize the classical Iwasawa Theorem to all $K_{2i}(O_{F_n})$. More precisely, we show that for any $i \geq 1$, there exist integers n_i and ν_i such that, for all $n \geq n_i$,

$$e(i)_n = \lambda n + \mu p^n + \nu_i,$$

where λ and μ are the classical Iwasawa invariants independent of i and n, and ν_i is a constant independent of n. We will also discuss the applications. This is the joint work with Qingzhong Ji.