

Sinnott, W.

On a theorem of L. Washington. (English) [Zbl 0616.12004](#)

Journées arithmétiques, Besançon/France 1985, Astérisque 147/148, 209-224 (1987).

[For the entire collection see [Zbl 0605.00004](#).]

Let k be an abelian number field, let p be a prime number, and let k_n be the n -th layer of the cyclotomic \mathbb{Z}_p -extension of k . For a prime ℓ , let ℓ^{e_n} be the power of ℓ dividing the class number of k_n . When $\ell = p$, Iwasawa showed that there exist integers λ, μ, ν such that $e_n = \lambda n + \mu p^n + \nu$ for all sufficiently large n .

B. Ferrero and the reviewer [*Ann. Math.* (2) 109, 377–395 (1979; [Zbl 0443.12001](#))] used the theory of normal numbers to prove that $\mu = 0$. When $\ell \neq p$, the reviewer [*Invent. Math.* 49, 87–97 (1978; [Zbl 0403.12007](#))] used similar techniques to show that e_n is constant for large n . In [*ibid.* 75, 273–282 (1984; [Zbl 0531.12004](#))], the present author used the fact that p -adic L -functions are Γ -transforms of rational functions to eliminate the use of normal numbers in the proof in the case $\ell = p$. In the present paper, he uses similar techniques to give a simplification of the proof in the case $\ell \neq p$.

Reviewer: [Lawrence C. Washington](#) (College Park)

MSC:

- [11R23](#) Iwasawa theory
- [11R42](#) Zeta functions and L -functions of number fields
- [11S40](#) Zeta functions and L -functions

Cited in **3** Reviews
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Keywords:

cyclotomic fields; p -adic measures; cyclotomic \mathbb{Z}_p -extension; class number; p -adic L -functions