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On Galois cohomology of p -adic fields. (Sur la cohomologie galoisienne des corps p -adiques.)
(French) [Zbl 0967.11050](#)
Bull. Soc. Math. Fr. 126, No. 4, 563-600 (1998).

This work follows *J.-M. Fontaine's* paper [The Grothendieck Festschrift, Vol. II, Prog. Math. 87, 249-309 (1990; [Zbl 0743.11066](#))] where he constructs an equivalence between the category of \mathbb{Z}_p -adic representations of the absolute Galois group G_K of a local field K of mixed characteristic $(0, p > 0)$ and a category of modules over a certain ring, endowed with two operators satisfying special properties. We give here an explicit construction of the cohomology groups of a \mathbb{Z}_p -adic representation of G_K killed by a power of p , using these new objects. When K is a finite extension of \mathbb{Q}_p , we show then how one can find again Tate's classical results about these groups: the finiteness and the calculation of the Euler-Poincaré characteristic. The methods used seem to be rather simpler than the standard cohomological arguments because we don't need sophisticated theories like local class field theory and everything is essentially explicit. One gets also interesting information about the structure of the modules associated with representations and a 3-step filtration on their Galois cohomology.

Reviewer: [Florence Soriano-Gafiuk \(Schweyen\)](#)

MSC:

[11S31](#) Class field theory; p -adic formal groups
[14F30](#) p -adic cohomology, crystalline cohomology
[14L05](#) Formal groups, p -divisible groups

Cited in **6** Reviews
Cited in **19** Documents

Keywords:

[ring of Fontaine](#); [Galois cohomology](#); [\$p\$ -adic field](#)

Full Text: [DOI](#) [Link](#) [Numdam](#) [EuDML](#)

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