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Uniform p -adic cell decomposition and local zeta functions. (English) Zbl 0666.12014
J. Reine Angew. Math. 399, 137-172 (1989).

We prove a cell decomposition theorem for p -adic fields, uniform in the prime p , and give some applications of this theorem.

A first implication is a uniform quantifier elimination for the fields of p -adic numbers.

As a second application, we reprove results of Denef on the dependence on p of the Igusa local zeta function. In this context we also obtain new results on p -adic integrals over sets definable in a language with cross section.

Reviewer: Johan Pas (Leuven)

MSC:

11S40 Zeta functions and L -functions
03C10 Quantifier elimination, model completeness, and related topics
03C60 Model-theoretic algebra
11U09 Model theory (number-theoretic aspects)

Cited in **7** Reviews
Cited in **52** Documents

Keywords:

cell decomposition theorem for p -adic fields; uniform quantifier elimination; Igusa local zeta function

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