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Algebraic and étale K -theory. (English) Zbl 0581.14012

Trans. Am. Math. Soc. 292, 247-280 (1985).

The authors develop étale K -theory for a noetherian $\mathbb{Z}[1/\ell]$ - algebra A and smooth schemes over A . This extends the work of *E. M. Friedlander* [Invent. Math. 60, 105–134 (1980; [Zbl 0519.14010](#)) and Ann. Sci. Éc. Norm. Supér. (4) 15, 231–256 (1982; [Zbl 0537.14011](#))]. The importance of étale K -theory is that it provides a computable target for algebraic K -theory. In fact there is a natural map

$$\phi : K_i(A; \mathbb{Z}/\ell^\nu) \rightarrow K_i^{et}(A; \mathbb{Z}/\ell^\nu)$$

which is expected (the Lichtenbaum-Quillen conjecture) to be an isomorphism for “nice” A when i is large. In fact ϕ is onto in these circumstances [the authors, the reviewer and *R. W. Thomason*, Invent. Math. 66, 481–491 (1982; [Zbl 0501.14013](#))].

The main theorem in this subject is that ϕ made “Bolt periodic” is an isomorphism [*R. W. Thomason*, Ann. Sci. Éc. Norm. Supér. (4) 18, 437–552 (1985; [Zbl 0596.14012](#))]. - The authors’ main application of étale K -theory is to show that if A is the ring of S -integers in a number field then ϕ is surjective if $i \geq 1$.

During the gestation period of this paper other authors – for example, *J. F. Jardine*, *A. A. Suslin*, *R. W. Thomason* – have increased our knowledge of algebraic K -theory and our understanding of étale K -theory. Nonetheless, although thereby partially superannuated, it is important from a historical point of view that this paper has finally appeared.

Reviewer: [V. P. Snaith](#)

MSC:

- [14C35](#) Applications of methods of algebraic K -theory in algebraic geometry
- [18F25](#) Algebraic K -theory and L -theory (category-theoretic aspects)
- [14F20](#) Étale and other Grothendieck topologies and (co)homologies
- [19F27](#) Étale cohomology, higher regulators, zeta and L -functions (K -theoretic aspects)

Cited in **7** Reviews
Cited in **63** Documents

Keywords:

étale K -theory; Lichtenbaum-Quillen conjecture

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