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Syntomic regulators and p-adic integration. II: K_2 of curves. (English) Zbl 1001.19004

Isr. J. Math. 120, Pt. B, 335-359 (2000).

Let C be a smooth complete curve over $\mathbb{C}_p$ with good reduction. *R. Coleman* and *E. deShalit* [Invent. Math. 93, No. 2, 239-266 (1988; Zbl 0655.14010)] defined a p-adic regulator

$$r_{p,C} : K_2(\mathbb{C}_p(C)) \to \mathrm{Hom}(H^0(C, \Omega^1_{C/\mathbb{C}_p}), \mathbb{C}_p)$$

based on Coleman's p-adic integration theory. In the case that C arises via base change from a smooth surjective scheme Z over the ring of integers in a finite extension of $\mathbb{Q}_p$, the author compares the regulator of Coleman and deShalit with the syntomic regulator

$$c_2^p : K_2(Z) \to H^2_{\mathrm{syn}}(Z, 2)$$

defined by the author in the first part of this paper [*A. Besser*, Isr. J. Math. 120, Pt. B, 291-334 (2000; Zbl 1001.19003)]. The main result shows that these two regulators are in fact canonically related via Poincaré duality. The main technical tool is the notion of a local index, a generalized residue. The main result then follows from a generalization of *R. F. Coleman*'s reciprocity law [Compos. Math. 72, No. 2, 205-235 (1989; Zbl 0706.14013)] in terms of Coleman functions and local indices.

Reviewer: Manfred Kolster (Hamilton/Ontario)

MSC:

19E20 Relations of K-theory with cohomology theories
14F30 p-adic cohomology, crystalline cohomology

Cited in **4** Reviews
Cited in **13** Documents

Keywords:

syntomic cohomology; syntomic regulators; p-adic integration

Full Text: DOI

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