Coates, John
On p-adic L-functions. (English) [Zbl 0706.11064]
Sémin. Bourbaki, Vol. 31, 41e année (1988/1989), Exp. No. 701, Astérisque 177-178, 33-59 (1989).

The principal conjecture of this article asserts that there is a two-variable p-adic L-function interpolating special values of a complex motivic L-function. To be more precise, let H and D denote, respectively, the Galois groups of the field generated by all p-power roots of unity and of its maximal real subfield, and let $\psi : H \to \mathbb{Z}_p^*$ be the canonical isomorphism defined by the action of H on the group of all p-power roots of unity. Then, according to the author's conjecture, there is a unique "pseudo-measure" μ on D such that $L(\chi, n) := \int_D \psi \chi^n \, d\mu$ is equal to a properly normalised special value of a certain motivic L-function; here $n \in \mathbb{Z}$, and χ ranges over all the Dirichlet characters of p-power conductor, with $\chi(-1) = (-1)^n$.

According to the author, this conjecture is basically taken from his joint work with *B. Perrin-Riou* [cf. Algebraic number theory - in honour of K. Iwasawa, Proc. Workshop Iwasawa Theory Spec. Values L-Funct., Berkeley/CA (USA) 1987, Adv. Stud. Pure Math. 17, 23–55 (1989; Zbl 0783.11039)] however, P. Deligne "pointed out that there is a much more elegant and succinct way of expressing our conjectures using the local ε-factors of the motive".

The relevant definitions and results concerning p-adic analogues of Dirichlet L-functions and complex motivic L-functions are reviewed in some detail. In the introduction, the author states a theorem from his forthcoming joint work with M. Flach. This theorem relates the value at $s = 1$ of the complex L-function attached to the motive, which is the symmetric square of an elliptic curve, with Kummer's theory.

For the entire collection see [Zbl 0691.00001].

Reviewer: B. Z. Moroz

MSC:

11G40	L-functions of varieties over global fields; Birch-Swinnerton-Dyer conjecture
11R23	Iwasawa theory
11S40	Zeta functions and L-functions
14G10	Zeta functions and related questions in algebraic geometry (e.g., Birch-Swinnerton-Dyer conjecture)

Cited in **2** Reviews
Cited in **6** Documents

Keywords:

cyclotomic fields; two-variable p-adic L-function; special values; complex motivic L-function; pseudo-measure

Full Text: Numdam EuDML