

Bertolini, Massimo; Darmon, Henri

The p -adic L -functions of modular elliptic curves. (English) [Zbl 1048.11051](#)

Engquist, Björn (ed.) et al., Mathematics unlimited – 2001 and beyond. Berlin: Springer (ISBN 3-540-66913-2/hbk). 109-170 (2001).

The authors survey their papers [Invent. Math. 126, 413–456 (1996; [Zbl 0882.11034](#)); Invent. Math. 131, 453–491 (1998; [Zbl 0899.11029](#)); Ann. Math. 146, 111–147 (1997; [Zbl 1029.11027](#)); Duke Math. J. 98, 305–334 (1999; [Zbl 1037.11045](#)), a.o.] about anti-cyclotomic p -adic L -functions, p -adic uniformisation of Shimura curves, Heegner points (CM points) and their images under parametrisations of elliptic curves by these Shimura curves. They also report on more recent and yet unpublished work of their own containing results beyond the rank-one case proving in several cases that the anticyclotomic p -adic L -function attached to an elliptic curve over \mathbb{Q} and an imaginary quadratic field K vanishes at least to the expected order. Such a result is not known for the classical L -function aside from the rank-zero and rank-one cases.

In the final section they survey Darmon's work giving a p -adic construction of points of elliptic curves over \mathbb{Q} that are defined over real quadratic fields.

For the entire collection see [[Zbl 0955.00011](#)].

Reviewer: [Olaf Ninnemann \(Berlin\)](#)

MSC:

- [11G40](#) L -functions of varieties over global fields; Birch-Swinnerton-Dyer conjecture
- [01A67](#) Future perspectives in mathematics
- [11G18](#) Arithmetic aspects of modular and Shimura varieties
- [11F85](#) p -adic theory, local fields
- [11-02](#) Research exposition (monographs, survey articles) pertaining to number theory

Cited in **6** Documents