

Huber, A.; Kings, G.

Equivariant Bloch-Kato conjecture and non-Abelian Iwasawa main conjecture. (English)

[Zbl 1020.11067](#)

Li, Ta Tsien (ed.) et al., Proceedings of the international congress of mathematicians, ICM 2002, Beijing, China, August 20-28, 2002. Vol. II: Invited lectures. Beijing: Higher Education Press. 149-162 (2002).

Archetypal examples of algebraic/transcendental formulae expressing special values of L -functions are Dirichlet's formula for number fields or the Birch and Swinnerton-Dyer conjectural formula for elliptic curves. These have been vastly (and conjecturally) generalized by Bloch and Kato to special values of L -functions attached to motives (the so-called "Tamagawa number conjecture"), an ultimate refinement being the "equivariant Tamagawa number conjecture" (ETNC) of D. Burns and M. Flach which takes into account the Galois action on the representations afforded by the motives. The ETNC for Tate motives and absolutely Abelian number fields has been shown recently by *A. Burns* and *C. Greither* [Invent. Math., to appear], one main tool being the proof of an "equivariant Iwasawa main conjecture" (EIMC) originally proposed by Kato. The intervention of Iwasawa theory is not surprising, since motives are supposed to provide links between the Archimedean world and the p -adic world.

The purpose of this note is to give a precise relation between an ETNC "à la" Burns-Flach for an arbitrary (with noncommutative coefficients) motif and an EIMC for a tower of number fields whose Galois group is a (noncommutative) p -adic Lie group $G_\infty = \varprojlim G_n$. The statements are too technical to be summarized here, but note that the formulation does not appeal to p -adic L -functions and that, practically by definition, the ETNC for M (the motif), k (a negative integer such that $1 - k$ is "big enough") and all G_n is equivalent to the EIMC for M , k and G_∞ . Curiously enough, the two examples given by the authors – Dirichlet motives [the authors, to appear in Duke Math. J.] and motives attached to a CM elliptic curve [the second author, Invent. Math. 143, 571-627 (2001; [Zbl 1159.11311](#))] – are Abelian and character wise (viz. non-equivariant).

For the entire collection see [[Zbl 0993.00022](#)].

Reviewer: [Thong Nguyen Quang Do \(Besançon\)](#)

MSC:

[11R23](#) Iwasawa theory

[11G40](#) L -functions of varieties over global fields; Birch-Swinnerton-Dyer conjecture

Cited in **1** Review
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