On the p-adic Stark conjecture at $s = 1$ and applications to equivariant Tamagawa number conjecture

Henri JOHNSTON
University of Exeter

Let E/F be a finite Galois extension of totally real number fields and let p be a prime. The "p-adic Stark conjecture at $s = 1$" relates the leading terms at $s = 1$ of p-adic Artin L-functions to those of the complex Artin L-functions attached to E/F. We prove this conjecture unconditionally when $E/\mathbb{Q}$ is abelian. Moreover, we also show that for certain non-abelian extensions E/F the p-adic Stark conjecture at $s = 1$ is implied by Leopoldt's conjecture for E at p.

As an application, we provide strong new evidence for special cases of the 'equivariant Tamagawa number conjecture' for Tate motives and the closely related 'leading term conjectures' at $s = 0$ and $s = 1$. This is work with Andreas Nickel.