L-functions for Quadratic Characters and Annihilation of Motivic Cohomology Groups

Jonathan W. Sands

Abstract. Let n be a positive even integer, and let F be a totally real number field and L be an abelian Galois extension which is totally real or CM. Fix a finite set S of primes of F containing the infinite primes and all those which ramify in L, and let S_L denote the primes of L lying above those in S. Then $\mathcal{O}_L^S$ denotes the ring of S_L-integers of L. Suppose that ψ is a quadratic character of the Galois group of L over F. Under the assumption of the motivic Lichtenbaum conjecture, we obtain a non-trivial annihilator of the motivic cohomology group $H^2_{\mathcal{M}}(\mathcal{O}_L^S, \mathbb{Z}(n))$ from the lead term of the Taylor series for the S-modified Artin L-function $L^S_{L/F}(s, \psi)$ at $s = 1 - n$.