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The Equivariant Tamagawa Number Conjecture for Abelian Extensions of Imaginary Quadratic Fields.

Let K be an imaginary quadratic field and F an abelian extension of K with Galois group G . We will discuss the proof, with certain restrictions, of the equivariant Tamagawa number conjecture for the motive $h^0(\mathrm{Spec}(F))(j)$ with the action of G , where $j < 0$. In this setting, the conjecture is best understood as a generalization of the analytic class number formula. We compute the $\mathbb{Z}_l[G]$ lattice determined by the image of the tuple $(L'(\chi, j))_\chi$ in $\mathrm{Det}_{\mathbb{Q}_l[G]} \mathrm{R}\Gamma_c(\mathbb{Z}[\frac{1}{S}], \mathrm{H}_{\mathrm{et}}^0(\mathrm{Spec}(F \otimes \bar{F}), \mathbb{Q}_l(j)))$, where χ runs over the rational characters of G . To complete the proof, we show that this is the same as the natural lattice given by $\mathrm{Det}_{\mathbb{Z}_l[G]} \mathrm{R}\Gamma_c(\mathbb{Z}[\frac{1}{S}], \mathrm{H}_{\mathrm{et}}^0(\mathrm{Spec}(F \otimes \bar{F}), \mathbb{Z}_l(j)))$. (Received February 22, 2005)