

Séminaire de théorie des nombres

Le 7 juin 2010 à 14h

Darmon points and special values of L -functions

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Résumé : We describe an explicit rigid analytic uniformization of the maximal toric quotient J of the Jacobian of a Shimura curve over \mathbb{Q} at a prime ℓ dividing exactly the level. As a corollary, a proof of a conjecture formulated by Matthew Greenberg is deduced; this allows the construction of local Stark-Heegner points (or, as might also be called, Darmon points) on J and its quotients.

We shall also explain the following arithmetic application of our results. Let E be an elliptic curve over \mathbb{Q} and let K be a real quadratic field such that the root number of E/K is $+1$. Generalizing previous work of Bertolini-Darmon-Dasgupta, we establish a formula relating the special value of the L -series of E over ring class field extensions H/K at the critical point with the specialization of Darmon points in the group of connected components of a quotient of the Jacobian of a suitable Shimura curve obtained by raising the level.

As a corollary, if one assumes that local Darmon points are global and satisfy a suitable reciprocity law, the machinery of Kolyvagin can be used to prove the vanishing of the Selmer group of E/H .

This is joint work with Matteo Longo and Stefano Vigni.