

## On the Euler system of CM points on Shimura curves

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Kolyvagin's method for the Euler system of CM points on modular curves has been extended by Nekovář to the setting of Shimura curves, with applications to the BSD conjecture for modular abelian varieties. However, Nekovář's result is far from being explicit, in the sense that it relies on a given Shimura curve parameterization and on the existence of CM points of a given conductor on the relevant Shimura curve. In a joint work with M. Longo and V. Rotger, we make explicit both of these constructions.

In the case of elliptic curves, our main result can be summarized as follows. Let  $E/\mathbb{Q}$  be an elliptic curve,  $K$  be an imaginary quadratic field, and  $\chi$  be a ring class character of conductor  $c$ , and suppose that the functional equation of the twisted  $L$ -series  $L(E/K, \chi, s)$  has sign  $-1$ . Under a very mild hypothesis, we construct a ('minimal') Shimura curve parametrization  $X \rightarrow E$ , depending only on the data  $(E, K, \chi)$ , such that the set of CM points in  $X(K_c)$  is non-empty, where  $K_c$  denotes the ring class field of conductor  $c$  of  $K$ . By applying Nekovář's result, if  $L'(E/K, \chi, 1) \neq 0$  then  $(E(K_c) \otimes_{\mathbb{Z}} \mathbb{C})^{\times}$  has dimension 1, as predicted by BSD.