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Bloch–Kato conjecture for convolution L -functions

We give evidence for the Bloch–Kato conjecture for the convolution L -function of two elliptic modular forms. Let f be a newform of weight 2 and g be a newform of weight $2k$, $k \leq 7$, of level $\Gamma_0(q)$ for an odd prime q such that they have irreducible mod p Galois representations for p an odd prime different from q . Let M be the motive associated to the mod p Galois representation $\rho_f \otimes \rho_g$. We show that under suitable conditions on p

$$\mathrm{val}_p(L_{\mathrm{alg}}(0, M)) \leq \mathrm{val}_p(\# \mathrm{Sel}((M)(-k))).$$

This is carried out by studying congruences between Yoshida lift of f, g and stable forms on $\mathrm{GSp}(4)$.

This is joint work with Kris Klosin.