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Refined conjectures on Fitting ideals of Selmer groups

Fix an odd prime number p and let K_n be the nth layer of the cyclotomic $\mathbb{Z}_p$-extension of $\mathbb{Q}$. Kim and Kurihara showed that the Pontryagin dual of the Selmer group over K_n attached to an elliptic curve E with good ordinary reduction at p is generated by the Mazur-Tate element at level K_n. When the reduction is supersingular at p, they show that the same result holds, up to an explicit error term. In this talk, we discuss generalization of these results for the Selmer group of E over the $\mathbb{Z}_p^2$-extension of an imaginary quadratic field where p splits.