

UBC Number Theory Seminar: September 29, 2021

Speaker: Francesc Castella (UC Santa Barbara)

Title: Heegner points and generalised Kato classes

Abstract: For an elliptic curve E/\mathbb{Q} and a fixed prime p , a celebrated " p -converse" to a theorem of Kolyvagin takes the form of the implication: If the p^∞ Selmer group of E has \mathbb{Z}_p -corank one, then a certain Heegner is non-torsion. The Gross–Zagier formula then allows one to conclude that E has analytic rank one. Following the pioneering work of Skinner and Wei Zhang, a growing number of results are known in the direction of this p -converse. In this talk, I'll describe the proof of a result in the same spirit for elliptic curves of rank two, in which Heegner points are replaced by certain generalised Kato classes introduced by Darmon and Rotger. The talk is based on joint work with M. L. Hsieh.