Speaker: Alexander Smith

Title: 2^{∞}-Selmer groups, 2^{∞}-class groups, and Goldfeld's conjecture

Abstract: Take $E/\mathbb{Q}$ to be an elliptic curve with full rational 2-torsion (that satisfies some extra technical assumptions). In this talk, we will show that 100% of the quadratic twists of E have rank less than two, thus proving that the BSD conjecture implies Goldfeld's conjecture in these families. To do this, we will extend Kane's distributional results on the 2-Selmer groups in these families to 2^k-Selmer groups for any $k > 1$. In addition, using the close analogy between 2^k-Selmer groups and 2^{k+1}-class groups, we will prove that the 2^{k+1}-class groups of the quadratic imaginary fields are distributed as predicted by the Cohen-Lenstra heuristics for all $k > 1$.