**Speaker** : Chris Hall

Title : Expander finiteness and expanders in arithmetic geometry

Abstract : Let K be the rational function field  $K = \mathbb{Q}(t)$  and let A/K be an abelian variety. We may regard A as a one-parameter family of abelian varieties (over  $\mathbb{Q}$ ), and it is natural to ask how the monodromy groups of the corresponding Tate modules vary in the family. In this talk we will sketch diophantine techniques which give a handle on the problem. We will then sketch how to apply the techniques to show that if A is (geometrically) simple and non-isotrivial over K, then there are only finitely many parameters defined over a number field of bounded degree for which the corresponding fiber is not simple. Faltings' theorems play a key role, but as we will explain, recent advances in expander graphs play a significant role as well.