Title: Independence of families of ℓ-adic representations and uniform constructibility

Abstract: Let k be a number field, $\overline{k}$ an algebraic closure of k, $\Gamma_k = \mathrm{Gal}(\overline{k}/k)$. A family of continuous homomorphisms $\rho_\ell : \Gamma_k \to G_\ell$, indexed by prime numbers ℓ, where G_ℓ is a locally compact ℓ-adic Lie group, is said to be independent if $\rho(\Gamma_k) = \prod \rho_\ell(\Gamma_k)$, where $\rho = (\rho_\ell) : \Gamma_k \to \prod G_\ell$. Serre gave a criterion for such a family to become independent after a finite extension of k. We will explain Serre's criterion and show that it applies to families coming from the ℓ-adic cohomology (or cohomology with compact support) of schemes separated and of finite type over k. This application uses a variant of Deligne's generic constructibility theorem with uniformity in ℓ.