**Speaker:** Daniel Litt

**Title:** Finiteness results for monodromy representations

**Abstract:** I'll discuss analogues of the Shafarevich and Fontaine-Mazur finiteness conjectures for function fields over algebraically closed fields in arbitrary characteristic, and a weak variant of the Frey-Mazur conjecture for function fields in characteristic zero. For example, I'll show that if $X$ is a normal, connected variety over the complex numbers, the set of representations of $pi_1(X^{an})$ into $GL_n(\mathbb{Q}_p)$, which arise from geometry, is finite (this is a mild strengthening of a result of Deligne, who proved the result with $\mathbb{Q}_p$ replaced by $\mathbb{Q}$). These results follow from an analysis of the Galois action on the deformation rings of residual representations of the fundamental group of $X$.