Abstract: Let $X$ be a smooth projective algebraic curve over $\mathbb{C}$. In this talk I will discuss recent work with Hausel and Letellier on the geometry of the moduli space $M_B$ of representations of $\pi_1(X)$ to $G = GL_n(\mathbb{C})$ and that of an associated quiver variety. The space $M_B$ is the Betti realization of $H^1(X, G)$ in non-abelian Hodge theory. Other realizations are: Dolbeault, the moduli space of semistable Higgs $G$-bundles on $X$ and de Rham: the moduli space of flat $G$-connections on $X$. I will explain how counting points of $M_B$ over a finite field $k$, using a combination of techniques from combinatorics and the representation theory of $GL_n(k)$, connects to Macdonald polynomials, which, in turn, suggests a natural conjectural form for the mixed Hodge polynomial of $M_B$. 

THURSDAY, October 4
4:00 p.m.
Room 2-143