November 2: Tsao-Hsien Chen (MIT), "Gamma-sheaves on reductive groups."

Let F be a local non-archimedian field. Let G be a reductive group over F.Given a map $\rho : G^\vee \to GL_n(\mathbb{C})$, local Langlands conjecture predicts the existence of a stable distribution $\phi_{G,\rho}$ on $G(F)$ (people called it gamma function on $G(F)$). Kazhdan and Braverman propose a general framework for an explicit construction of $\phi_{G,\rho}$. Later, they consider the toy model of this problem, i.e. when F is a finite field. In this setting, the function (or distribution) $\phi_{G,\rho}$ can be described using Deligne-Lusztig theory. They conjecture that this function $\phi_{G,\rho}$ comes from geometry, i.e. there should be a perverse sheaf $\Phi_{G,\rho}$ (they called it gamma sheaf) such that the Frobenius trace of $\Phi_{G,\rho}$ is equal to $\phi_{G,\rho}$. They give a conjectural candidate for the sheaf $\Phi_{G,\rho}$ and assuming certain cohomology vanishing of $\Phi_{G,\rho}$ they prove that the Frobenius trace of $\Phi_{G,\rho}$ is equal to $\phi_{G,\rho}$. In the talk, I will first introduce the work of Kazhdan and Braverman on the gamma function and gamma sheaf. Then, I will explain how their work is related to the recent work of Bezrukavnikov, Finkelberg and Ostrik on character sheaves and explain an approach to their conjecture about cohomology vanishing.