



**Speaker:** Sebastian Franco  
The City College of New York

Friday, April 24, 2015  
4:00 PM  
125 Hayes-Healy Hall

**Title:** Bipartite Field Theories: Quivers, Graphs and Calabi-Yau Manifolds

**Abstract:**

Over the last decade, we have witnessed remarkable progress in our understanding of Quantum Field Theories (QFTs). A common theme in many of the most recent developments has been the definition of QFTs in terms of some underlying geometric or combinatorial objects. In this seminar I will discuss Bipartite Field Theories (BFTs), a new class of QFTs embodying this general approach. BFTs are quiver gauge theories that are defined by bipartite graphs on Riemann surfaces. Remarkably, they underlie a wide spectrum of interesting systems, including: D-branes probing Calabi-Yau manifolds, their mirror configurations, integrable systems and scattering amplitudes. I will introduce new techniques for studying these quiver theories. I will explain how their dynamics is captured graphically and the interesting emergence of concepts such as Calabi-Yau manifolds, the Grassmannian and cluster algebras in their classification.