Gradswantag Spring 2019

APM 7321

June 1, 2019

- 10:30 - 11:00
  Coffee, Tea, and Snacks

- 11:00 - 11:50
  Title: Harish-Chandra modules over the Lie algbera $\mathfrak{sl}(2, \mathbb{C}) \times \mathfrak{sl}(2, \mathbb{C})$
  Speaker: Daniel Kongsgaard
  Abstract: Given a Lie algebra L and a Lie subalgebra L_k, an L module M is a Harish-Chandra module for the pair (L, L_k) if it can be written as a direct sum $M = \oplus M_i$ of finite dimensional simple L_k modules, where for each M_{i_0} there are only finitely many M_i equivalent to M_{i_0} in the decomposition. In this talk we discuss the classification of Harish-Chandra modules over $\mathfrak{sl}(2, \mathbf{C}) \times \mathfrak{sl}(2, \mathbb{C})$.

- 12:00-12:50
  Lunch and Coffee Break (Lunch not provided)

- 1:00-1:50
  Title: Geometric Invariant Theory
  Speaker: Shubham Sinha
  Abstract: In this talk I will try to build intuition for Geometric Invariant Theory (GIT) using examples and provide an application in the theory of Moduli space of sheaves. This subject was developed by Mumford to understand quotients by group actions in algebraic geometry, which is used to construction of moduli spaces.

- 2:00-2:50
  Title: FS^{op} Modules and Compactification of Moduli Space
  Speaker: Amy Huang
  Abstract: Recently, the technique of FI-modules have been proven to be very successful in studying the (co)homology of families of moduli spaces. But it fails to explain phenomenons of families of natural complication of those moduli families. I will try to survey the recent result of successful usage of another combinatorial category FS^{op} of studying the cohomology of $\overline{M}_{g,n}$ when n goes to infinity. And maybe discussing some of my dreams of trying to extend the result.