Spring 2025

- **January 21** Organizational Meeting
  Speaker: NA
  Title:
  Abstract:

- **January 28** No Talk (Slot taken by Interview Candidate)
  Speaker:
  Title:
  Abstract:

- **February 4**
  Speaker: Adrian Vasiu (SUNY Binghamton)
  Title: Matrix invertible extensions over commutative rings A
  Abstract: We report on some parts of the paper at the link https://arxiv.org/abs/2404.05780

- **February 11**
  Speaker: Hari Asokan (SUNY Binghamton)
  Title: Elimination Theory and Resultants I
  Abstract: Elimination Theory is used to study systems of polynomial equations in several variables. In this introductory talk we will discuss some classical results related to elimination theory and resultants of systems of polynomial equations.

- **February 18**
  Speaker: Hari Asokan (SUNY Binghamton)
  Title: Elimination Theory and Resultants II
  Abstract:

- **February 25**
  Speaker: Adrian Vasiu (SUNY Binghamton)
  Title: Matrix invertible extensions over commutative rings B
  Abstract: We first present several criteria on a 2×2 unimodular matrix to be simply extendable or extendable. Then we recall basic properties of stable ranges of rings and show their relevance to the study of different classes of rings such as EDR, Hermite, Bézout, SE_2, E_2, and π_2.

- **March 4**
  Speaker: Ruoxi Li (University of Pittsburgh)
  Title: Motivic Classes of Varieties and Stacks with Applications to Higgs Bundles
  Abstract: In this talk, we will first discuss the motivations for motivic classes coming from point counting over finite fields. Then we will give the definitions of the motivic classes of varieties, in particular we explain that an extra relation is needed in finite characteristic. We will introduce symmetric powers and motivic zeta functions that are universal versions of local zeta functions. For the second part of the talk, we will focus on the motivic classes of stacks. In particular, we will give the explicit formulas for the motivic classes of moduli of Higgs bundles.

- **March 18**
  Speaker:

Title:
Abstract:

- **March 25**
  Speaker:
  Title:
  Abstract:

- **April 1**
  Speaker: Effie Shani (SUNY Albany)
  Title: Almost Trivial Units in Group Rings
  Abstract: We study units in group rings $R[G]$ of finite abelian groups G with coefficients in rings R of algebraic integers in number fields. Let Σ be the sum of all the elements of G in the group ring $R[G]$. Units of the form ug in $R[G]$ (or $ug+(\Sigma)$ in $R[G]/(\Sigma)$, respectively) for $u\in R^\times$ and $g\in G$ are called trivial units. Units in $R[G]$ that project to trivial units in $R[G]/(\Sigma)$ are called almost trivial units. Higman in 1939 classified all finite groups G for which $\mathbb{Z}[G]$ contains only trivial units, and Herman and Li in 2005 generalized his results to coefficients in rings of algebraic integers. We characterize all finite abelian groups G and rings of algebraic integers R such that the only units of the reduced group ring $R[G]/(\Sigma)$ are trivial units (and so all units of the group ring $R[G]$ are almost trivial units). This is joint work with Anupam Srivastav, which extends the results of Brian Rich’s and my Ph.D. theses under Srivastav’s supervision.

- **April 8**
  Speaker: Alexander Betts (Cornell University)
  Title: Galois sections and p-adic obstructions
  Abstract: Grothendieck's anabelian programme is an attempt to study the arithmetic of curves over number fields through their etale fundamental groups. The centrepiece of this programme is the still-unproven Section Conjecture, which asserts that the rational points on a curve X should be in bijection with the set of splittings of a certain homotopy exact sequence on fundamental groups. In this talk, I will describe what is known about the Section Conjecture, and outline a few of my own results, which attempt to control splittings of the homotopy exact sequence using p-adic obstruction theory.

- **April 15**
  Speaker: Sarah Lamoureux (SUNY Binghamton)
  Title: Cofinality of Ordered Modules over an Ordered Integral Domain
  Abstract: A subset C of a poset P is cofinal if for all p in P, there is a c in C such that p \leq c. The cofinality of P is the smallest cardinality of a cofinal subset of P. In this talk, A is a (totally) ordered integral domain such that whenever 0 < a < b, there is a c > 0 such that b < ac. We present two structure theorems for a (totally) ordered A-module M based on its cofinality. The first is for the case when M is A-CPA (there exists an m in M such that A_{>0}m is a cofinal set); the second is for the case when M is not A-CPA. (Both theorems require either M or a particular submodule to be A-divisible.) We'll mention as well how these notions of “cofinality” and “A-CPA” relate to a larger project about valuation rings.

- **April 29**
  Speaker: Andreea Iorga (Cornell University)
  Title: Realising certain semi-direct products as Galois groups
  Abstract: In this talk, I will prove that, under a specific assumption, any semi-direct product of a p-group G with a group of order prime-to-p can appear as the Galois group of a tower of extensions M/L/K with the property that M

is the maximal pro-p extension of L that is unramified everywhere, and Gal(M/L) = G. At the end, I will show that a nice consequence of this is that any local ring admitting a surjection to Z_5 or to Z_7 with finite kernel can be written as a universal everywhere unramified deformation ring.

- **May 6**
  Speaker: Mithun Padinhare Veettil (SUNY Binghamton)
  Title: Some results on Locally Integer Polynomials
  Abstract: Locally Integer Polynomial (LIP) functions are Z-valued functions on an infinite subset X of Z that are given by polynomials with integer coefficients in every finite subset of X. In this talk, we will explore some properties of rings of LIP functions.