



## The Algebra Seminar

Unless stated otherwise, the seminar meets Tuesdays in room WH-100E at 2:50 p.m. There will be refreshments served at 4:00 in room WH-102.

Organizers: [Alex Feingold](#) and [Hung Tong-Viet](#)

To receive announcements of seminar talks by email, please join the seminar's mailing list.

### Spring 2019

#### ▪ January 22

[Organizational Meeting](#)

**Title of Talk**

**Abstract:** Please come or contact the organizers if you are interested in giving a talk this semester or want to invite someone.

#### ▪ January 29

[Ben Brewster \(Binghamton University\)](#)

**The values of the Chermak-Delgado measure**

**Abstract:** Let  $G$  be a finite group. For  $H \leq G$ ,  $m_G(H) = |H| |C_G(H)|$ . Let  $m^*(G) = \max\{m_G(H) \mid H \leq G\}$  and  $CD(G) = \{H \leq G \mid m_G(H) = m^*(G)\}$ . Then  $CD(G)$  is a self-dual modular sublattice of the subgroup lattice of  $G$ . It is known that if  $|G| > 1$ , then not every subgroup of  $G$  is a member of  $CD(G)$ , that is,  $|\{m_G(H) \mid H \leq G\}| > 1$ . Following some ideas of M. Tarnauceanu, we examine possibilities for  $|\{m_G(H) \mid H \leq G\}|$ , its form and the distribution of subgroups of same measure.

#### ▪ February 5

[Alex Feingold \(Binghamton University\)](#)

**An introduction to Lie algebras**

**Abstract:** A Lie algebra is a vector space equipped with a bilinear product, denoted by  $[\cdot, \cdot]$ , such that  $[x, x] = 0$  and  $[x, [y, z]] + [y, [z, x]] + [z, [x, y]] = 0$  (Jacobi Identity). I will give an introduction to the basic ideas

and examples.

- **February 12**

[Canceled due to inclement weather](#)

- **February 19**

[Daniel Rossi \(Binghamton University\)](#)

***The structure of finite groups with exactly three rational-valued irreducible characters***

**Abstract:** Many results in the character theory of finite groups are motivated from the question: to what extent do the irreducible characters of a group  $G$  control the structure of  $G$  itself? Recently, it has been observed that certain results along these lines can be obtained when one looks not at the set of all irreducible characters of  $G$ , but only the subset of those characters taking values in some appropriate field. In this talk, I'll characterize the structure of finite groups which have exactly three rational-valued irreducible characters (for solvable groups, this characterization is due to J. Tent). I will attempt to give some of the flavor of the proof - which at one point includes a surprise cameo by the complex Lie algebra  $\mathfrak{sl}(n)$ .

- **February 26**

[Casey Donovan \(Binghamton University\)](#)

***Thompson's Group  $V$  and Finite Permutation Groups***

**Abstract:** Thompson's group  $V$  is group of homeomorphisms of Cantor space. It acts by exchanging finite prefixes in infinite strings over a two-letter alphabet. Generalizations of  $V$  called  $V_n$  act on  $n$ -letter alphabets. I will present more generalizations that add the action of finite permutation groups to the finite prefix exchanges. For a finite permutation group  $G$  on  $n$  points, the group  $V_n(G)$  marries the finite prefix exchanges with iterated permutations from  $G$ . The primary theorem I will present states that  $V_n$  is isomorphic to  $V_n(G)$  if and only if  $G$  is semiregular (i.e.  $G$  acts freely). The proof involves the use of automata and orbit dynamics.

- **March 5**

[Matt Evans \(Binghamton University\)](#)

***Title of Talk***

**Abstract:** Text of Abstract

- **March 12**

[Hung Tong-Viet \(Binghamton University\)](#)

***Title of Talk***

**Abstract:** Text of Abstract

- **March 19**

[Spring Break](#)

***No Talk***

**Abstract:** Text of Abstract

- **March 26**

[Dikran Karagueuzian \(Binghamton University\)](#)

**Title of Talk**

**Abstract:** Text of Abstract

▪ **April 2**

[John Brown \(Binghamton University\)](#)

**Title of Talk**

**Abstract:** Text of Abstract

▪ **April 9**

[Jonathan Doane \(Binghamton University\)](#)

**Title of Talk**

**Abstract:** Text of Abstract

▪ **April 16**

[Speaker](#)

**Title of Talk**

**Abstract:** Text of Abstract

▪ **April 23**

[Joseph Cyr \(Binghamton University\)](#)

**Title of Talk**

**Abstract:** Text of Abstract

▪ **April 30**

[Speaker](#)

**Title of Talk**

**Abstract:** Text of Abstract

▪ **May 7**

[Speaker](#)

**Title of Talk**

**Abstract:** Text of Abstract

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- [Pre-2014 semesters](#)
  - [Fall 2014](#)
  - [Spring 2015](#)
  - [Fall 2015](#)
  - [Spring 2016](#)
  - [Fall 2016](#)

- [Spring 2017](#)
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- [Spring 2018](#)
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