



# **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 2020

### January 21

No Algebra Seminar Meeting

Please think about giving a talk in the Algebra Seminar, or inviting an outside speaker.

### - January 28

**Organizational Meeting** 

### • February 4

Casey Donoven (Binghamton University)

Thompson's Group V is 3/2-Generated

**Abstract**: Every finite simple group can be generated by two elements and furthermore, every nontrivial element is contained in a generating pair. Groups with this property are said to be 3/2-generated. Thompson's group V, a finitely presented infinite simple group, is one of a small number of examples of infinite noncyclic 3/2-generated groups. I will present a constructive proof of this fact and mention extensions of this theorem to generalizations of V.

## • February 11

Cancelled

## • February 18

Last update: 2020/06/01 16:55

Eran Crockett (Binghamton University)

Universal algebra and constraint satisfaction problems

**Abstract**: Constraint satisfaction problems (CSPs) form a class of combinatorial decision problems generalizing graph colorability and Boolean satisfiability. In this expository talk, I will explain how ideas from universal algebra have been instrumental in classifying the computational complexity of CSPs.

#### February 25

Fikreab Solomon Admasu (Binghamton University)

Subgroups of the integer lattice  $\mathrm{Deg}^2$  and the higher rank discrete Heisenberg groups

**Abstract**: A sublattice L of the integer lattice  $\mbox{mathbb{Z}^d}$  is called co-cyclic when the quotient  $\mbox{mathbb{Z}^d/L}$  is a cyclic group. Approximately \$85\%\$ of sublattices of finite index in  $\mbox{mathbb{Z}^d}$  are co-cyclic. This can be proven by either counting solutions to linear congruence equations or using zeta function methods. We show a similar result holds for subgroups of the discrete Heisenberg groups \$H {2d+1}.\$

#### March 3

Matt Evans (Binghamton University)

Some recent results for spectra of commutative BCK-algebras

**Abstract**: BCK-algebras are the algebraic semantics of a non-classical logic. Like for commutative rings, there is a notion of a prime ideal in these algebras, and the set of prime ideals is a topological space called the spectrum. By work of Stone (and later, Priestley), there is a close connection between these spectra and distributive lattices with 0. In this talk I will discuss some recent results on the interplay between commutative BCK-algebras, their spectra, and distributive lattices.

#### March 10

Aparna Upadhyay (University at Buffalo)

The Benson-Symonds Invariant

**Abstract**: Let \$M\$ be a finite dimensional \$kG\$-module for a finite group \$G\$ over a field \$k\$ of characteristic \$p\$. In a recent paper Dave Benson and Peter Symonds defined a new invariant \$\gamma\_G(M).\$ This invariant measures the non-projective proportion of the module \$M\$. In this talk, we will see some interesting properties of this invariant. We will then determine this invariant for permutation modules of the symmetric group corresponding to two-part partitions and present a combinatorial formula for the same using tools from representation theory and combinatorics.

- March 17
  - Cancelled
- March 24

Cancelled

March 31

Cancelled

- April 7

Spring vacation

- April 14

Cancelled

- April 21

Cancelled

- April 28

Cancelled

May 5

Cancelled

- Pre-2014 semesters
- Fall 2014
- Spring 2015
- Fall 2015
- Spring 2016
- Fall 2016
- Spring 2017
- Fall 2017
- Spring 2018
- Fall 2018
- Spring 2019
- Fall 2019

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