- **September 1**
  Organizational Meeting

- **September 8**
  Tuval Foguel (Adelphi University)
  Partition Numbers of Finite Groups

  Abstract: A group partition is a group cover in which the elements have trivial pairwise intersection. Here we define the partition number of a group - the minimal number of subgroups necessary to form a partition - and examine some of its properties, including its relation to the covering number.

- **September 15**
  No Meeting

  Abstract: None

- **September 22**
  No Meeting

  Abstract: None

- **September 29**
  Mathew Wolak (Binghamton University)
  The centers of universal enveloping algebras of contracted Lie groups

  Abstract: Lie group contraction is a process which ``flattens out'' a Lie group. We explore how the center of the universal enveloping algebra of a contracted Lie group relates to that of the original group. We will look in particular at the Galilean group and a contraction of SU(n).

- **October 6**
  Ben Brewster (Binghamton University)
  The Chermak-Delgado Lattice

  Abstract: The Chermak-Delgado is the lattice introduced by Chermak and Delgado [3] and presented in a more limited form by Isaacs [5]. In a finite group, there are finite lattices – the subgroup lattice, the lattice of subnormal subgroups and the subgroups which have maximal measure in the limited measure present by Isaacs. These are listed in a nested order here. Recently there has been interest in the nature of these lattices. I will review some of the properties of the Chermak-Delgado lattice. Then as time allows, I will describe some of these developments as presented in [1,2,4,6]. References: 1. Brewster, Hauck and Wilcox, Groups whose Chermak-Delgado lattice is a chain. J. Group Theory 17 (2014) 253-279. 2. Brewster, Hauck and Wilcox, Quasi-Antichain Chermak-Delgado Lattices of finite groups. Arch. Math. 3. Chermak and Delgado, A measuring argument for finite groups. Proc. AMS 107 (1989) 907-914. 4. Cocke, Subnormality and the Chermak-Delgado Lattice, (private communication) 5. Isaacs, Finite Group Theory. A.M.S. 2008 6. McCulloch, Chermak-Delgado simple groups. (private communication)

- **October 13**

Robert Bieri (Binghamton University)
Groups of piecewise isometric permutations of lattice points

Abstract: An orthant (of the orthogonal integral lattice) $L\subseteq \mathbb Z^n$ is the image of the standard orthant $\mathbb ℕ^n$ under an affine-orthogonal transformation. And a permutation $p: S\longrightarrow S$ of a subset $S\subseteq \mathbb Z^n$ is piecewise-Euclidean-isometric (pei), if S is a disjoint union of finitely many orthants, $S = \bigcup_{i}L_i$, on each of which p restricts to an isometric embedding $L_i\rightarrow S$. I will talk about the group $\text{pei}(S)$ of all pei-permutations of various subsets S and its subgroup $\text{pet}(S)$ of all piecewise-Eucliden-translation permutations. In the case when S consists of the lattice points on the union of n positive coordinate axes then $\text{pet}(S)$ is the Houghton group H_n. This is joint work with Heike Sach: we prove finiteness properties of some pei- and pet- groups, and have, as a consequence, that $\text{pei}(\mathbb Z^n)$ admits a K(G,1)-complex with finite $(2^n – 1)$-skeleton. An interesting point is that prominent groups like Richard Thompson's group V crop up when we extend the consideration to the $\text{SL}_2(\mathbb Z)$-lattice in the hyperbolic plane. .

- **October 20**
  Adam Allan (Binghamton University)
  Algorithmic Detection of Self-Injectivity

Abstract: In this talk I will briefly review what it means for a finite dimensional associative algebra over a field k to be self-injective and then I will present newly discovered results for the computational verification of when an algebra is self-injective. These are of interest both for computer algebra and for establishing bounds on certain invariants for an algebra. Some examples of these methods applied to centralizer algebras will also be included.

- **October 27**
  David Biddle (Binghamton University)
  On The Probability of Generating a Finite Nilpotent Group

Abstract: One can define the probability of generating a f.g. group G by k (random uniform) elements by defining $P_k(G)=|S_k(G)|/|G|^k$ where $S_k(G)$ is the set of ordered generating k-tuples of G. First we demonstrate for all groups of size $|G|\leq 2^m$ we have $P_k(G)\geq P_k(\mathbf{Z/2}^m)$. We then give bounds on $P_k(G)$ based on simply the minimum number of generators of G (or 'rank of G) if G is finite nilpotent. We combine these to show that for any finite group G and $1>\epsilon >0$, for $k>\log_2(|G|/\epsilon)+2$, we have $P_k(G)>1-\epsilon$.

- **November 3**
  Eran Crockett (Binghamton University)
  Dualizability in Congruence Distributive Varieties (first part of the admission to candidacy exam)

Abstract: We show that a finite algebra that generates a congruence distributive variety is dualizable if and only if it has a near unanimity term operation.

- **November 10**
  Joseph Cyr (Binghamton University)
  Some Mal'cev Conditions on Congruence n-Permutable Varieties

Abstract: A (strong) Mal'cev condition provides an equivalence between some property of a variety and the existence of certain terms satisfying given identities. I will introduce the theorem due to Mal'cev for which this topic gets its name and then prove a generalized version of that theorem. I will also show how this relates to groups and other algebras.

- **November 17**
  Daniel Franz (University of Virginia)
  Quantifying the Residual Finiteness of Linear Groups

  Abstract: In a similar vein as subgroup growth, one can study the residual finiteness growth of a residually finite group, which measures how well a group is approximated by its finite quotients. I will introduce this recently developed invariant and give examples for certain groups. I will then focus on linear groups, for which the normal and non-normal residual finiteness growth functions are polynomial. Specifically, I will compute the exact asymptotics for these growth functions for Chevalley groups over rings of integers in both characteristic 0 and p, which are polynomial of degree the dimension of the group and the codimension of a maximal parabolic subgroup, respectively.

- **November 24**
  Matt Evans (Binghamton University)
  A Dual Equivalence for Distributive Nearlattices

  Abstract: In 1936, M.H. Stone showed that there is a duality between the category of Boolean algebras and the category of Stone spaces. This talk will present a result of Celani and Calomino (2014) demonstrating a dual equivalence between distributive nearlattices and N-spaces which extends the well-known Stone duality.

- **December 1**
  (Binghamton University)
  A long title of the talk

  Abstract: content of the abstract.

- **December 8**
  Joseph Mennuti (Binghamton University)
  An Alternative Proof of Lagrange's Four-Square Theorem

  Abstract: The classical proof of Lagrange's Four-Square Theorem is a modular arithmetic type argument, but this will be a proof that involves the quaternions.

- **December 15**
  John Brown (University)
  An Introduction to Milnor K-Theory

  Abstract: We will define the Milnor K-Theory of a field, have some quick examples, and finish with a discussion of the transfer/norm map.