

Kelli Karcher

Education

- 2011–present **PhD, Mathematics (expected 2020)**, *Virginia Tech, Blacksburg, VA.*
- 2009–2011 **Master of Science, Mathematics**, *Virginia Tech, Blacksburg, VA.*
- 2004–2008 **Bachelor of Arts, Mathematics**, *Virginia Wesleyan College, Summa Cum Laude, Norfolk, VA.*
- 2004–2008 **Bachelor of Science, Chemistry**, *Virginia Wesleyan College, Summa Cum Laude, Norfolk, VA.*

Master's Thesis

- title *The Space of Left Orders on a Group*
- supervisors Peter Linnell
- description The study of orderable groups is a topic that is all too often overlooked as a topic in algebra. The subject is a field of study which is directly associated with algebraic group theory, algebraic topology, and set theory. My paper acts as an introduction into the study of orderable groups. In particular, it considers whether the set of orders placed on a particular group is finite or uncountable. We prove the latter by creating a homeomorphism from the group to the Cantor set, a set which is known for its uncountability.

Experience

Teaching

- 2016–present **Math Instructor**, *Virginia Tech.*
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| Fall 2017, 2018, Spring 2017, 2018, 2019 | Applied Combinatorics |
| Spring 2016, Summer 2016 | Integral Calculus |
| Spring 2017 | Differential Equations |
| Fall 2016, 2017, Spring 2017 | Discrete Mathematics |
- 2013–2019 **Math Adjunct Instructor**, *New River Community College.*
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| Fall 2012, Fall 2014, Summer 2016, Summer 2017 | Math for Liberal Arts Majors |
| Spring 2015, Summer 2017 | Elementary Statistics |
| Fall 2015, Summer 2016, Fall 2016–Spring 2019 | Pre-Calculus with Trigonometry |
| Summer 2013 | Applied Calculus I |
| Summer 2015 | Applied Calculus II |
| Summer 2018, Summer 2019 | Discrete Mathematics |
- 2010–2016 **Graduate Teaching Assistant**, *Virginia Tech.*
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| Fall 2010, 2011 | Differential Calculus |
| Summer 2011 | Elementary Calculus |
| Summer 2015 | Business Calculus with Matrices |
| Fall 2014 | Differential Calculus for Life Sciences |
| Fall 2013, Fall 2014 | Integral Calculus for Life Sciences |
| Spring 2012, Spring 2016, Summer 2016 | Integral Calculus |
| Summer 2012, Spring 2013, Spring 2014, Spring 2015, Fall 2015 | Discrete Mathematics |
- 2010 **Online Course Coordinator**, *Virginia Tech.*
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| Summer 2010 | Business Calculus with Matrices |
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- 2008–2009 **Long-Term Substitute**, *Virginia Beach Public Schools.*
- Taught predominantly high school math courses ranging from Intro. to Algebra to AP Calculus

2007–2008 **Undergraduate Teaching Assistant**, *Virginia Wesleyan College*.

Grader and Teaching Assistant for
-Basics Concepts of Chemistry
-College Algebra

Research

2011-Present **PhD Work**, *Blacksburg, VA*.

2010-2011 **Master's Thesis**, *Blacksburg, VA*.

2007-2008 **Undergraduate Research Project**, *Norfolk, VA*.

-Title: "The Study of Crystallographic Groups"
- Supervised by Margaret Reese

2006 **Virginia Tech Undergraduate Research Workshop**, Blacksburg, VA.

- Studied Morse code algorithms, crystallographic groups
- Supervised by Va Tech Faculty including Dan Farkas, Peter Haskell, Ezra Brown

Presentations

Spring 2019 **Facing Challenges Section Leader**, *CoMINDS Conference*, The University of Tennessee.

Fall 2018 **"The Space of Orders for Some Solvable Groups"**, *Women's Intellectual Network Research Symposium*, UVA.

Spring 2018 **"Proofreading in Discrete Math: Common Misconceptions versus Serious Logical Fallacies"**, *MAA Spring Sectional Meeting*.

2016-2018 **"The Space of Orders for Some Solvable Groups"**, *Joint Math Meetings*.

Spring 2016 **"What is an Order?"**, *Temple Conference for Algebra*.

Spring 2016 **"The Space of Orders for Some Solvable Groups"**, *Underrepresented Students in Topology and Algebra Conference*.

Spring 2016 **"What is an Order?"**, *Virginia Wesleyan College Invited Speaker*.

Spring 2016 **"What does a graduate program in STEM look like?"**, *Virginia Wesleyan College Invited Speaker*.

Summer 2015 **"The Space of Orders for Some Solvable Groups"**, *MAA Mathfest*.

Summer 2015 **"What is an order?"**, *MAA Mathfest, Great Talks for a General Audience Session*.

Spring 2011 **"The Space of Left Orders on a Group"**, *Master's Defense Presentation*, Virginia Tech.

Spring 2008 **"The Study of Crystallographic Groups"**, *Natural Science and Mathematics Division Poster Presentation*, Virginia Wesleyan College.

Spring 2008 **"Women in Mathematics: Challenging Gender Typecasting in David Auburn's Proof"**, *Humanities Division Oral Presentations*, Virginia Wesleyan College.

Fall 2007 **"The Study of Crystallographic Groups"**, *Fall Research Symposium*, Virginia Wesleyan College.

Mentoring

- 2016-Present **Graduate Teaching Assistant Mentor.**
- 2016-Present **Test Writing Mentor.**
- 2014-2017 **Phase II Mentor for Graduate Teaching Assistants.**

Leadership and Service

- 2019 **Preparing for the College Classroom Invited Speaker, Virginia Tech Orientation.**
- 2019-Present **Math Department Book Club Organizer.**
- 2017-Present **Differential Calculus Coordinator.**
- 2016-Present **Math Circles Session Leader.**
- 2016-2018 **Engineering Calculus Teacher Handbook Contributor/Editor.**
- 2014-2016 **Career Day Volunteer, Women in Math Event, Virginia Tech.**
- 2015-2016 **Kids' Tech University Booth Leader, Virginia Tech.**
- 2011-Present **GTA Phase II Workshop: Confidence in Teaching and Learning Session Leader, Virginia Tech GTA Workshop.**
- 2014-2015 **GTA Phase I Workshop: Teaching Excellence Presenter, Virginia Tech GTA Workshop.**
- 2012-2016 **Association for Women in Mathematics Co-Founder and Co-President.**
- 2011-2014 **Math Department Senior Graduate Teaching Assistant.**

Awards

- 2019 **Instructor of the Year, Math Department, Virginia Tech.**
- 2018 **Principles of Effective Teaching Certificate, Virginia Tech, CETL.**
- 2017 **Mastery of Blended/Flipped Classroom Teaching, Virginia Tech NLI.**
- 2015-2017 **Academy for GTA Excellence, Virginia Tech.**
- 2014 **Graduate Teaching Assistant Excellence - Instructor Award, Virginia Tech, University Award.**
- 2013 **Award for Outstanding Teaching by a GTA, Math Department, Virginia Tech.**

Computer skills

Math Packages
Mathematica, MATLAB, Latex