

# Kevin Ahrendt

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## Curriculum Vitae

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### Education

- May 2017 **PhD in Mathematics**, *University of Nebraska-Lincoln*.  
Dissertation: *The Existence of Solutions for a Nonlinear, Fractional Self-Adjoint Difference Equation*  
Supervisor: Professor Allan Peterson
- May 2014 **MS in Mathematics**, *University of Nebraska-Lincoln*.
- May 2012 **BS in Mathematics**, *University of Nebraska-Lincoln*.  
Thesis: *On the Asymptotic Properties of the Generalized Exponential Function over Isolated Time Scales*  
Supervisors: Professors Allan Peterson & Mohammad Rammaha

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### Instructional Experience

- August 2017 **Teaching Post-Doctoral Fellow**, *Colorado School of Mines*.  
*through Present* *Courses Taught:*
  - Calculus I - Fall 2017
  - Calculus II - Spring 2017 (Anticipated)
- August 2012 **Graduate Teaching Assistant**, *University of Nebraska-Lincoln*.  
*through May 2017* *Courses Taught as Instructor of Record:*
  - College Algebra - Fall 2013
  - College Algebra and Trigonometry - Fall 2015
  - Contemporary Mathematics - Spring 2014, Spring 2015, Fall 2016 (Co-convener in Fall 2016)
  - Differential Equations - Spring 2016
- July 2015 **Instructor for the NebraskaMATH Program**, *University of Nebraska-Lincoln*.  
I was part of the instructional team for a two week course for in-service K-3 teachers where we focused on how to teach and understand math at the elementary school level.

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### Undergraduate Research Mentoring and Participation

#### Research Mentoring

- Fall 2017 **Faculty Research Mentor**, *Colorado School of Mines*.  
*through Present* I am working with five undergraduate students, including one that has funding through a *Mines Undergraduate Research Fellowship*, on original research dealing with properties of the Caputo fractional difference.

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- Summer 2014 **Graduate Student Mentor for an REU in Applied Math**, *University of Nebraska-Lincoln*.  
With Professor Allan Peterson, I mentored five undergraduate students studying fractional difference equations. Responsibilities included teaching introductory material, guiding and assisting their original research, and preparing their work for presentation and publication.
- Research Participation*
- Summer 2011 **Participant in an REU in Applied Math**, *University of Nebraska-Lincoln*.  
With two other undergraduate students, I researched fractional difference equations which led to a published paper and a poster presentation at the Joint Mathematics Meetings.
- Spring 2009 **Participant in the Research for Undergraduates in Theoretical Ecology**  
through Fall 2009 **Program**, *University of Nebraska-Lincoln*.  
Alongside three other undergraduate students, I helped develop a mathematical model to predict the flowering season of Capsella plants.

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## Publications

**Initial and Boundary Value Problems for the Caputo Fractional Self-Adjoint Difference Equations**, *Enlightenment in Pure and Applied Mathematics*, Volume 2 (2016) Issue 1, (with Lydia Dewolf, Liam Mazurowski, Kelsey Mitchell, Tim Rolling, and Dominic Veconi).

**Laplace Transforms for the Nabla-Difference Operator and a Fractional Variation of Parameters Formula**, *Communications in Applied Analysis*, Volume 16 (2012) Issue 3, (with Lucas Castle, Michael Holm, and Katie Yochman).

**Some results on the convergence of the generalized exponential function on time scales**, *Communications in Applied Analysis*, Volume 16 (2012) Issue 3, (with Chris Ahrendt).

**Green's Function for a Three-Point BVP Involving a Nabla Caputo Fractional Difference**, (in preparation).

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## Presentations

### *Invited Talks*

- September 2017 **Exploring Fractional Derivatives on a Discrete Domain**, *Colorado School of Mines*, Math Club Presentation.  
I gave an introductory talk on my research area to the math club for the purpose of recruiting undergraduates for research.
- October 2011 **Nabla Laplace Transforms and Fractional Calculus**, *Fall Central AMS Sectional Meeting (University of Nebraska-Lincoln)*, Special Session on Dynamic Equations on Time Scales.
- October 2011 **Some Results on the Convergence of the Generalized Exponential Function on Time Scales**, *Fall Central AMS Sectional Meeting (University of Nebraska-Lincoln)*, Special Session on Dynamic Equations on Time Scales, (with Chris Ahrendt).

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### *Contributed Talks, Seminars, and Posters*

- January 2017 **Unique Solutions to Nonlinear Boundary Value Problems with a Fractional Self-Adjoint Difference Equation**, *Joint Mathematics Meeting (Atlanta, GA)*, Contributed Papers Session.
- Spring 2014 **Fractional Calculus Seminar**, *University of Nebraska-Lincoln*.
- through Spring 2017 I presented material every other week over several different papers and original research.
- January 2012 **Introduction to the Nabla Discrete Fractional Calculus**, *Joint Mathematics Meetings (Boston, MA)*, Undergraduate Poster Session, (with Lucas Castle and Katie Yochman).

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### **Service**

- Fall 2017 **Co-Advisor to Math Club**, *Colorado School of Mines*.
- through Present My duties include organizing meetings and generating creative activities.
- Summer 2016, 2017 **Academic Advisor for New Student Enrollment**, *University of Nebraska-Lincoln*.
- I helped advise incoming freshmen by interviewing students to determine the appropriate math course based on their background and mathematical knowledge.
- 2012 **Math Day Volunteer**, *University of Nebraska-Lincoln*.
- through 2016 I served as a moderator for the quiz bowl portion of UNL's math day, where over a thousand Nebraska high school students participate in individual and team mathematics competitions.

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### **Professional Development**

- Fall 2016 **Teaching Mentor Program**, *University of Nebraska-Lincoln*.
- through Spring 2017 I worked with a math faculty member to discuss and improve aspects of my teaching.
- Spring 2016 **Professional Development Seminar**, *University of Nebraska-Lincoln*.
- This seminar, run by the math department, helped prepare graduate students for working in academia.
- August 2015 **Precalculus Instructor Workshop**, *University of Nebraska-Lincoln*.
- This was a workshop over several days on active based learning, including sessions focused on how to reach students with different backgrounds and implementing group work in the classroom.

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