

## EDUCATION

- Ph.D. **University of Nebraska–Lincoln**; Lincoln, Nebraska; May 2013  
Mathematics
- M.S. **University of Nebraska–Lincoln**; Lincoln, Nebraska; May 2009  
Mathematics
- B.S. **University of South Dakota**; Vermillion, South Dakota; May 2007  
Mathematics and Physics, with Honors, *Summa cum laude*

## POSITIONS HELD

- Assistant Professor of Mathematics**; Dordt College; 2014–Present
- Associate Technical Analyst**; Hyland Software, Inc.; 2013–2014
- Lecturer**; University of Nebraska–Lincoln; Fall 2013
- Graduate Teaching Assistant**; University of Nebraska–Lincoln; 2007–2013

## TEACHING

### *Dordt College:*

- Math 149 – Explorations in Modern Mathematics
- Math 152 – Calculus I
- Math 153 – Calculus II
- Math 203 – Elementary Linear Algebra
- Math 207 – Number Theory
- Math 212 – Discrete Structures
- Math 291 – Problem Solving Seminar
- Math 304 – Abstract Algebra I
- Math 342 – Special Topics: The Joy of Numbers
- Math 342 – Special Topics: Foundations of Mathematics
- Math 343 – Special Topics: Computational Algebra
- Math 344 – Colloquium

### *University of Nebraska–Lincoln:*

- ◇ *Courses Taught as Instructor of Record*
  - Math 100A – Intermediate Algebra (Associate Convener, Fall 2012)
  - Math 101 – College Algebra
  - Math 104 – Business Calculus
  - Math 203J – Contemporary Mathematics for Journalism Students
  - Math 208 – Analytic Geometry and Calculus III
  - Math 310 – Introduction to Modern Algebra
- ◇ *Courses Taught as Teaching Assistant*
  - Math 804T: Experimentation, Conjecture and Reasoning
  - Math 810T: Algebra for Algebra Teachers

◇ *Other Teaching Experience*

Algebra Qualifying Exam Workshop

Tutored students in the UNL Mathematics Resource Center, one semester/academic year

Mentored pre-graduate students in the six-week summer Nebraska IMMERSE program

## SCHOLARLY INTERESTS

I have an ongoing research interest in properties of ideals of subschemes of  $\mathbf{P}_k^N$ . More generally, I am interested in properties of homogeneous ideals in the polynomial ring  $k[X_0, X_1, X_2, \dots, X_N]$ , where  $k$  is an algebraically closed field. Recently I have become interested in building connections between properties of graphs and properties of their associated edge ideals.

I am also interested in the impact of revision on student mindset in undergraduate mathematics courses, especially via the use of mastery-based testing and specifications grading. Further, I am interested in exploring the use of web-based homework in first/second-year math courses in general, and specifically in its use to prepare students for active learning tasks in class.

## PUBLICATIONS

1. Containment problem for points on a reducible conic in  $\mathbf{P}^2$ , *Journal of Algebra*, 394(0):120–138, 2013, <http://dx.doi.org/10.1016/j.jalgebra.2013.06.032> (with A. Denkert)
2. On the Fattening of Lines in  $\mathbf{P}^3$ , *Journal of Pure and Applied Algebra*, 219(4):1055–1061, 2015, <http://dx.doi.org/10.1016/j.jpaa.2014.05.033>
3. The Waldschmidt constant for squarefree monomial ideals, *J. Algr Comb*, 2016, <http://dx.doi.org/10.1007/s10801-016-0693-7> (with C. Bocci, S. Cooper, E. Guardo, B. Harbourne, U. Nagel, A. Seceleanu, A. Van Tuyl, and T. Vu)
4. Mastery-based testing in undergraduate mathematics, *submitted*. (with J.B. Collins, A. Harsy, J. Hart, K. Haymaker, A. Hoofnagle, J. Stewart Kelly, A. Mohr, J. OShaughnessy)
5. Start a Math Teacher Circle: Connect K-12 Teachers with Engaging, Approachable, and Meaningful Mathematical Problems, *submitted*. (with T. Clark, A. Harsy, D. Klanderma, M. Maxwell, S. Robbert)
6. Comparing Powers of Edge Ideals, *in preparation* (with T. Kamp and J. Vander Woude)

## EXTERNAL GRANTS

PI, *The effects of pre-class web-based activities to motivate active learning in first- and second-year mathematics courses*, 2017; \$7,500 (funded); Co-PIs: Nathan Tintle and Valorie Zonnefeld

## PROFESSIONAL TALKS AND PRESENTATIONS

*Cut Your Cake (And Eat It, Too!)*

MAA Themed Contributed Paper Session on “My Favorite Math Circle Problem”; MathFest 2017; Chicago, IL

*An Overview of Specifications Grading*

21st ACMS Biennial Conference; Charleston Southern University, Charleston, SC, May 2017

*My Favorite Math Circle Problem: Cut Your Cake (And Eat It, Too!)*

21st ACMS Biennial Conference; Charleston Southern University, Charleston, SC, May 2017

*Specifications Grading in a First Course in Abstract Algebra*

MAA Themed Contributed Paper Session on “Teaching Abstract Algebra: Topics and Techniques”; Joint Mathematics Meetings 2017; Atlanta, GA (1/4/2017)

*Improving proof-writing with reading guides*

MAA Themed Contributed Paper Session on Encouraging Early Career Teaching Innovation; MathFest 2016; Columbus, OH (8/5/2016)

*Implementing Specifications Grading in a Linear Algebra course*

MAA Session on Assessing Student Learning: Alternative Approaches; Joint Mathematics Meetings 2016; Seattle, WA (1/7/2016)

*The importance of  $\alpha$*

MAA Invited Paper Session on Concrete Computations in Algebra and Algebraic Geometry; MathFest 2015; Washington, D.C. (8/7/2015)

*Symbolic Powers of Ideals: Problems and Progress* (15 minutes)

20th ACMS Biennial Conference, Redeemer University College, Ancaster, Ontario, Canada (5/29/2015)

*Symbolic Powers of Ideals: Problems and Progress* (50 minutes)

Mathematics Seminar; University of South Dakota (3/5/2015)

*On the Fattening of Lines in  $\mathbf{P}^3$*

Oberwolfach Mini-Workshop 1508a, Ideals of Linear Subspaces, Their Symbolic Powers and Waring Problems; Mathematisches Forschungsinstitut Oberwolfach; Oberwolfach, Germany (2/17/2015)

*On an Application of Bézout's Theorem*

Colloquium; Calvin College (2/27/2014)

*Ideals of almost collinear points in  $\mathbf{P}^2$*

Special session on Interactions Between Algebraic Geometry and Commutative Algebra; Summer 2012 Meetings of the Canadian Mathematical Society; Regina, Saskatchewan (6/2/2012)

*Containment problem for ideals of points on a reducible conic*

Special session in Algebraic Geometry and Graded Commutative Algebra; Fall 2011 AMS Central sectional meeting; Lincoln, NE (10/16/2011)

*Results on the containment problem of ideals of fat points*

Algebraic Geometry Seminar; University of Nebraska–Lincoln (4/21/2010)

*What is Algebraic Geometry?* (50 minutes)

Geometry and Physics on Graphs REU; Canisius College; Buffalo, NY (7/10/2009)

*A Fifteen-Minute Survey of Nonunique Factorization*

IMMERSE at the University of Nebraska–Lincoln (7/31/2008)

## MENTORING

**Thomas Kamp and Jason Vander Woude;** Dordt College Summer Research, “Edge Ideals of Odd Cycles”; Summer 2017

**Yonatan Ashenafi;** Kuyper (Honors) Scholars Program Project, “Algebraic interactions with graph theory”; Student presented at Math on the Northern Plains 2015, Dordt College IdeaFest 2015

## SERVICE

**Co-Organizer/Presenter;** Minicourse: “Beyond Traditional Grading Schemes: Mastery Based Grading”; MathFest 2017, Chicago, IL

**Reviewer;** MathSciNet Mathematical Reviews

**Co-Organizer;** Themed Contributed Paper Session: “Formative Assessment Techniques for Undergraduate Math Courses”, MathFest 2016, Columbus, OH

**Co-Organizer;** Dordt College Math Challenge, 2014–2016

**Presenter;** Northwest Iowa Math Teachers Circle, “Divide Your Cake (And Eat It, Too!)”; Dordt College, February 9, 2016

**Student advising;** Dordt College

**Referee;** *PRIMUS*, *Journal of Algebra and its Applications*, *Journal of Commutative Algebra*, and *Journal of Pure and Applied Algebra*

**Co-Organizer;** Project NExT Panel Session on the recruitment and retention of mathematics majors, MathFest 2015, Washington, D.C.

**Co-Organizer;** Workshop for graduate students, 20th Biennial Meeting of the Association of Christians in the Mathematical Sciences, 2015

**Committee Member;** Dordt College mathematics search committee, 2015–2017

**Organizer;** “Math on the Northern Plains 2015” MAA Regional Undergraduate Mathematics Conference

**Proctor/Organizer;** William Lowell Putnam Mathematics Competition, Dordt College 2014–present

## PROFESSIONAL DEVELOPMENT

**IBL PRODUCT Workshop**, DePaul University, June 20–23, 2017

**Project NExT Workshop**, MathFest, Washington, D.C., August 3–5, 2015

**Pre-Conference Workshop for early-career faculty**, 20th Biennial Meeting of the Association of Christians in the Mathematical Sciences; Hamilton, Ontario, May 25–27, 2015

**Oberwolfach Mini-Workshop 1508a**, Ideals of Linear Subspaces, Their Symbolic Powers and Waring Problems; Mathematisches Forschungsinstitut Oberwolfach; Oberwolfach, Germany, February 15–21, 2015

**Project NExT Workshop**, Joint Mathematics Meetings, San Antonio, TX, January 9–13, 2015

**Project NExT Workshop**, MathFest, Portland, OR, August 4–6, 2014

**Preparing Future Faculty Fellow**, University of Nebraska–Lincoln, 2012

**Summer School on Algebra and Geometry**, University of Regina, Saskatchewan, May 29–June 1, 2012

## AWARDS

**NSF Junior Oberwolfach Fellow**, Mini-Workshop: Ideals of Linear Subspaces, Their Symbolic Powers and Waring Problems, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, February 15–21, 2015

**Project NExT Gold '14 Dot**; 2014–2015

## MEMBERSHIPS

Mathematical Association of America

Association of Christians in the Mathematical Sciences

[Phi Beta Kappa](#)

Pi Mu Epsilon

Sigma Pi Sigma

## COMPUTER SKILLS

L<sup>A</sup>T<sub>E</sub>X

Microsoft Excel

GNU/Linux

Macaulay2