

Kevin C. Gerstle

Hillsdale College
Department of Mathematics
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EDUCATION

Ph.D., Mathematics: University of Iowa, Iowa City, IA – 2016

Advisor: Dr. Miodrag Iovanov

Thesis: *On the Green Rings of Pointed, Coserial Hopf Algebras*

Certificate in College Teaching: University of Iowa, Iowa City, IA – 2015

Office of Graduate Teaching Excellence

M.S., Mathematics: University of Iowa, Iowa City, IA – 2013

B.A., Psychology, Mathematics: Kenyon College, Gambier, OH – 2011

Minor: Chinese

Graduated *magna cum laude*

EMPLOYMENT

2018 – Current: Assistant Professor of Mathematics – Hillsdale College

2016 – 2018: Visiting Assistant Professor of Mathematics – Oberlin College

2011 – 2015: Instructor/Teaching Assistant (Mathematics) – University of Iowa

RESEARCH INTERESTS

Simulation of Brownian motion. Harmonic analysis. Hopf algebras. Representation theory. AMS Classification Code 42, 16 (primary), 18, 97 (secondary).

PUBLICATIONS

Articles

- *Incorporating Meaningful Reflection into Calculus Assignments*. PRIMUS. 29(1), 71-81, 2019
- *Studying Harmonic Measure through Brownian Motion Simulation and Teleportation* (with M. Schaum), in proceedings of Midstates Conference For Undergraduate Research in Computer Science and Mathematics, 2017
- *Project-Based Learning in Undergraduate Analysis*, in preparation

Reviews

- Daniel Balacu et al. *Quasi-Hopf Algebras: A Categorical Approach* (Cambridge University Press, 2019), reviewed for MAA at <https://www.maa.org/press/maa-reviews/quasi-hopf-algebras-a-categorical-approach>

UNDERGRADUATE RESEARCH STUDENTS

Abigail Price, Hillsdale '22

- Study of decomposing partition numbers via recursive formulas – 2019

Yuanzhe Liu, Oberlin '21

- Study of harmonic measure distribution functions with focus on domains with fractal boundary shapes through MATLAB simulation – 2018
- Presented his work at the MAA Ohio Spring Section Meeting – April 2018

Miranda Schaum, Oberlin '21

- Study of harmonic measure distribution functions with focus on circle domains through MATLAB simulation – 2017, 2018
- Co-wrote paper summarizing her findings and presented her work at the Midstates Conference For Undergraduate Research in Computer Science and Mathematics – November 2017

HONORS AND AWARDS

Selected Honors/Awards:

- Project NExT Fellow (Blue '17 dot): Mathematical Association of America – 2017-2018
- Professor Props award for outstanding services to the Oberlin College First-Year Student Community – 2017
- Outstanding Teaching Assistant Award from Council of Teaching: University of Iowa – 2015
- Ballard-Seashore Dissertation Fellowship: University of Iowa – 2015
- 1st place in Mathematics department Three Minute Thesis competition (for talk “The Green Rings of Pointed, Coserial Hopf Algebras”): University of Iowa – 2015
- Catharine Wegner Outstanding Mathematics TA Award: University of Iowa – 2014
- Solomon R. S. Kaspar Award for excellence in mathematics and computer science: Kenyon College – 2011
- Distinguished Academic Scholarship: Kenyon College – 2007-2011
- National Merit Scholarship – 2007

Other Honors/Awards:

- Academy of Inquiry Based Learning travel scholarship for Inquiry-Based Learning Workshop in Mathematics – 2016
- Iowa Section NExT Fellow – 2015
- MAA travel grant to attend MathFest – 2015
- Nominated for Hancher-Finkbine Medallion for learning, loyalty, and leadership; invited to attend annual distinguished student leaders dinner: University of Iowa – 2015
- “Thank-A-Teacher” honor: University of Iowa – 2013
- Pre-Comprehensive Exam Summer Fellowship: University of Iowa – 2013
- University of Iowa VIGRE travel funding to attend MathFest– 2012
- Mathematics Department Summer Fellowship: University of Iowa – 2012
- Inducted into Sigma Xi Scientific Research Society, Denison University chapter – 2011
- Inducted into Pi Mu Epsilon, Ohio Pi chapter – 2009

TEACHING EXPERIENCES

Hillsdale College:

Courses taught:

- *Discrete Mathematics* – Spring 2020
- *Non-Euclidean Geometry* – Spring 2020

- *Calculus I* – Spring 2020
- *Abstract Algebra* – Fall 2019
- *Integrated Calculus I-A* – Fall 2019
- *Game Theory* – Spring 2019
- *Multivariable Calculus* – Spring 2019
- *Complex Analysis* – Fall 2018
- *Calculus II* – Fall 2018

Honors students:

- Elise Siffring – Algorithmic and high frequency financial trading (did not complete thesis) – 2019

Summer Science Camp:

- Taught at week-long summer camp for high school students – Summer 2019
- Mini-courses taught: Cryptography

Oberlin College:

Courses taught:

- *Calculus Ib: Integration and Applications* – Spring 2018, Spring 2017
- *Linear Algebra* – Fall 2017
- *Calculus I* – Fall 2017
- *Calculus Ia: Limits, Continuity, and Differentiation* – Fall 2017, Fall 2016
- *Multivariable Calculus* – Spring 2017
- *Calculus II* – Fall 2016

University of Iowa:

Instructor:

(Responsible for all course-related duties)

- *Qualifying Examination Preparation Seminar in Algebra* (Graduate level course) – Summer 2015
- *Elementary Functions* (Precalculus) – Spring 2014
- *Intermediate Algebra* – Fall 2012

Teaching Assistant:

- *Engineering Math II: Multivariable Calculus* (with Mathematica) – Fall 2015
- *Abstract Algebra II* (Graduate level course) – Spring 2015
- *Abstract Algebra I* (Graduate level course) – Fall 2014
- *Calculus I* – Fall 2013
- *Logic of Arithmetic* (for Elementary Education majors) – Spring 2012, Spring 2013
- *Calculus for the Biological Sciences* – Fall 2011

New TA Workshop – Summer 2014

- Led summer workshop for new graduate student teaching assistants in mathematics

Kenyon College:

Apprentice Teacher :

- *Intermediate Chinese* – Fall 2009, Spring 2010
 - *Introduction to Chinese* – Fall 2008, Spring 2009
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PRESENTATIONS

Conference Presentations

- “Project-Based Learning in Analysis,” Contributed Paper Session on Encouraging Effective Teaching Innovation, MAA Mathfest, Cincinnati, OH – August 2019
- “A Prisoner’s Showdown: Introducing Game Theory through Competition,” National Inquiry-Based Learning and Teaching in Mathematics Conference, Denver, CO – June 2019
- “Project-Based Learning in Complex Analysis,” MAA Michigan Section Meeting, University of Detroit Mercy, Detroit, MI – April 2019
- “Studying Harmonic Measure through Brownian Motion Simulation and Teleportation,” Joint Mathematics Meetings (MAA General Contributed Paper Session on Interdisciplinary Topics in Mathematics), San Diego, CA – January 2018
- “Reflections on Assigning Both Online and Written Homework in Calculus,” Joint Mathematics Meetings (MAA Session on The Creation and Implementation of Effective Homework Assignments), Atlanta, GA – January 2017
- “Green Rings of Pointed, Coserial Hopf Algebras,” Joint Mathematics Meetings (MAA General Contributed Paper Session on Algebra), Seattle, WA – January 2016
- “Algebras and Coalgebras,” MAA Iowa Section Meeting, Graceland University, Lamoni, IA – October 2015
- “Group Based Learning in the TILE Environment” (poster with C. Patterson), PosterFest 2015: A Poster Session of Scholarship by Early Career Mathematicians and Graduate Students, MAA MathFest, Washington, D.C. – August 2015
- “Hopf Algebras: Linear Algebra in Action,” Great Talks for a General Audience: Coached Presentations by Graduate Students session, MAA MathFest, Washington, D.C. – August 2015
- “The Green Rings of Pointed, Coserial Hopf Algebras,” Jakobsen Graduate Conference, University of Iowa, Iowa City, IA – March 2015
- “Harmonic Measure Distribution Functions in Complex Domains” (poster), Summer Science Poster Session, Kenyon College, Gambier, OH – September 2010
- “Harmonic Measure Distribution Functions in Complex Domains,” Pi Mu Epsilon National Meeting, MAA MathFest, Pittsburgh, PA – August 2010

Other Invited Talks

- “H-Functions – Now with Teleportation!,” Andrews University, Berrien Springs, MI – September 2018
- “Harmonic Measure and the Art of Teleportation,” Kenyon College, Gambier, OH – November 2017
- “Representations: Algebra with a Dash of Green,” Kenyon College, Gambier, OH – September 2015
- “SURPRISE! The Birthday Problem: Combinatorial and Algebraic Perspectives,” Luther College, Decorah, IA – November 2014
- “Brownian Motion and HMD-Functions,” Truman State University, Kirksville, MO – April 2014
- “Brownian Motion and HMD-Functions,” Wartburg College, Waverly, IA – March 2014

Departmental Talks

- “Binomial Coefficients: Learning How (Not) to Share,” KME Initiation Ceremony, Hillsdale College – October 2018
- “Harmonic Measure and the Art of Teleportation,” IFS Seminar, Oberlin College – October 2017
- “Rings of Representations,” IFS Seminar, Oberlin College – November 2016
- “The Auslander-Reiten Translations,” Algebra Seminar, University of Iowa – March 2016
- “Simple, Projective, and Injective Modules,” Algebra Seminar, University of Iowa – October 2015

- “Mordell’s Theorem on Elliptic Curves,” Algebra Student Seminar, University of Iowa – September 2015
- “The Green Rings of Pointed, Coserial Hopf Algebras,” Mathematics departmental Three Minute Thesis Competition, University of Iowa – April 2015
- “Iterated Ore Extensions,” Algebra Reading Seminar, University of Iowa – March 2015
- “Gaussian Polynomials,” Graduate and Undergraduate Student Seminar, University of Iowa – February 2015
- “Green Rings of Hopf Algebras,” Algebra Seminar, University of Iowa – February 2015
- “Green Rings of Hopf Algebras,” Graduate Student Group Representation/Cohomology Seminar, University of Iowa – February 2015
- “SURPRISE! The Birthday Problem: Combinatorial and Algebraic Perspectives,” Graduate and Undergraduate Student Seminar, University of Iowa – October 2014
- “Representation Rings of Hopf Algebras,” Algebra Seminar, University of Iowa – April 2014
- “Green Rings of Monomial Hopf Algebras,” Graduate Student Group Representation/Cohomology Seminar, University of Iowa – November 2013
- “Rational Points on Elliptic Curves,” Graduate and Undergraduate Student Seminar, University of Iowa – October 2013
- “Brownian Motion and HMD-Functions,” Graduate and Undergraduate Student Seminar, University of Iowa – April 2013
- “Harmonic Measure Distribution Functions in Complex Domains,” Kenyon College – October 2010

PROFESSIONAL DEVELOPMENT

Workshops attended:

- Minicourse “Beyond Traditional Grading Schemes: Mastery Grading” – MAA Mathfest, Cincinnati, OH, August 2019
- Attended National IBLT (Inquiry-Based Learning and Teaching in Mathematics) Conference, Denver, CO, June 2019
- MAA Project NExT – 2017-2018
- An Introduction to Character Theory and the McKay Conjecture – MSRI, Berkeley, CA, July 2016
- Inquiry-Based Learning Workshop in Mathematics – Academy of Inquiry Based Learning, Cal Poly San Luis Obispo, San Luis Obispo, CA, June-July 2016
- Iowa Section NExT – Graceland University, Lamoni, IA, October 2015
- Teaching your Research Workshop Series – University of Iowa, Summer 2015
 - Workshop series on course design and how to design an undergraduate course based on one’s PhD research
 - Designed course: “Mathematical Quivers” for undergraduate students post-Linear Algebra
- Improving your Students’ Critical Thinking Skills – Center for Teaching, University of Iowa, July 2015
- Entering Mentoring: A Seminar to Train the Next Generation of Scientists – Professional Development Series, University of Iowa, May 2015
- Teaching your Research and Creating Theme-Based Classes – Center for Teaching, University of Iowa, April 2015
- Pedagogical Trends in Higher Education – Center for Teaching, University of Iowa, February 2015
- Effective Teaching Institute – Center for Teaching, University of Iowa, January 2015
- Interactions between Analysis and Geometry Tutorials – UCLA, Los Angeles, CA, March 2013
- Intensive Mathematics: a Mentoring, Education, and Research Experience (IMMERSE): University of Nebraska, Lincoln, NE, Summer 2011
 - Attended six-week summer program for students beginning Ph.D. programs in mathematics
 - Analyzed research articles in algebra and analysis

Education courses taken: University of Iowa

- *TILE* (Transform, Interact, Learn, Engage) *Pedagogy and Practice* – Spring 2015
 - Course on teaching students in collaborative classroom making efficient use of technology; included practice component
 - *Topics in Topology: Mentoring Undergraduates on Research in Data Analysis* – Spring 2015
 - *PhD ePortfolio in College Teaching* – Spring 2015
 - *Teaching and Learning in Higher Education* – Fall 2013
 - *Seminar in College Teaching* – Fall 2012
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SERVICE

College/University:

Committee member – Hillsdale College

- Faculty Library Committee – 2019-
- Search committee for Physics search – 2019-
- Search committee for Mathematics search (resulted in hiring of Paulina Volosov) – 2019

Student organization advisor – Hillsdale College

- Kappa Mu Epsilon (Math honors society) – 2019-
- Hillsdale Smash Bros. Club – 2019-

CCA Faculty Panel Member – Hillsdale College

- Understanding China – 2019

Science and Technology Research Opportunities for a New Generation (STRONG) Mentor – Oberlin College, 2017

- Served as an organizer of summer program for incoming Oberlin students from underrepresented groups to participate in STEM research with Oberlin professors and meet other students interested in STEM
- Led summer session “STRONG Skill Session: Math for Scientists II: Calculus” – July 2017

Jakobsen Graduate Conference – University of Iowa

- *Coordinating Co-chair*: Served as organizer of graduate/professional student research conference – 2015-2016
- Moderator of session “Explorations of the Past” – March 2016
- Moderator of session “Diversity in the Classroom” – March 2015

Graduate Council Member – University of Iowa, 2015-2016

- Served as Physical Sciences graduate student representative to executive committee of graduate faculty
- Evaluated graduate programs across the university as well as faculty rules and regulations

Graduate Student Senate (GSS) Senator – University of Iowa, 2015-2016

- Served as representative of the math department to representative/administrative body of graduate students. Promoted interests of the math department to this body and served as member of the Jakobsen Graduate Conference committee

Fall/Spring Undergraduate Research Festival (FURF/SURF) Judge – University of Iowa, 2013, 2014, 2015

- Served as judge of posters from STEM disciplines in undergraduate poster session

Center for Teaching – University of Iowa, 2015

- *Micro-Teaching Workshop*: Organizer for workshop for teachers at the University, offering feedback on proffered lectures

Departmental:

Committees – Hillsdale College

- Served on committee to rewrite departmental student evaluation forms – 2018

Math Majors Committee Liaison – Oberlin College

- Served as faculty liaison to committee of math majors – 2017-2018

Math Graduate Board – University of Iowa

- *General Liaison*: Communicated with graduate student groups outside the math department as well as with faculty, administration, etc. in the math department to discuss issues brought forth by math graduate students – 2015
- *Travel Committee member*: Served on committee to distribute funding to students asking for travel compensation for conferences – 2013-2014
- *Newsletter and T-Shirt Chair*: Compiled/edited newsletters for the department as well as selling departmental shirts – 2013
- *GAUSS (Graduate and Undergraduate Student Seminar) Chair*: Organized weekly seminars for graduate and undergraduate students in mathematics; recruited and scheduled many different speakers from the student population – 2012

Algebra Student Seminar - Organizer – University of Iowa, 2015-2016

- Created and organized weekly graduate student seminar for topics from algebra

Professional:

Reviewer

- MAA
- PRIMUS – 2018
- The College Mathematics Journal – 2017

Joint Mathematics Meetings

- Session organizer for Project NExT session “Teaching classes having diverse mathematical backgrounds” – January 2018

Iowa Mathematical Modeling Competition Judge – Iowa City, IA

- *Presentation judge* – November 2013, November 2014
- *Abstract judge* – November 2014

Mathematics Grad School Panel member: Luther College, Decorah, IA – November 2014

- Served as member on panel to discuss graduate school with math undergraduate students

Community:

Math Day Co-Founder and Organizer – Lucas Elementary School, Iowa City, IA, 2014, 2015, 2016

- Served as organizer of event teaching math skills through educational games to third-grade students at racially diverse local elementary school
- Recruited undergraduate students from Logic of Arithmetic and Geometry for Elementary Teachers courses at University of Iowa to volunteer at the event

Sonia Kovalevsky Day – Iowa City, IA

- Served as organizer of event for female high school students to stimulate interest in mathematics
- *Games organizer* – April 2015

- *Registration*: Greeted and registered participants for the event; served as photographer for event – April 2014
 - *Parent/Teacher Talk organizer* – April 2013
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OTHER EDUCATIONAL/RESEARCH EXPERIENCES

Summer Science Scholar: Kenyon College, Gambier, OH – Summer 2010

- Advisor: Dr. Marie Snipes
- Research project: Harmonic Measure Distribution Functions in Complex Domains

Research Assistant: University of Louisville, Louisville, KY – Summer 2007

- Advisor: Dr. G. Rafael Fernandez-Botran
 - Assisted in several laboratory experiments in the study of gangliosides and their role in tumorigenesis
 - Analyzed data obtained from laboratory work and extrapolated conclusions on tumor growth
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PROFESSIONAL MEMBERSHIPS

- Mathematical Association of America (MAA), 2015-Present
 - Kappa Mu Epsilon, 2019-Present
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COMPUTER SKILLS

Languages: C++, Python

Mathematical/Educational Software: L^AT_EX, Mathematica, MATLAB, R, Maple, Minitab, WebAssign, WeBWorK, Blackboard