

Lara M. Ismert

CONTACT INFORMATION

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RESEARCH INTERESTS

Operator Algebras and Noncommutative Geometry with applications to Quantum Physics.

POSITIONS HELD

Assistant Professor of Mathematics, Embry-Riddle Aeronautical University
Prescott, Arizona USA Aug 2019–Present

Graduate Teaching Assistant, University of Nebraska
Lincoln, Nebraska USA Aug 2013–May 2019

EDUCATION

University of Nebraska, Lincoln, Nebraska USA

Ph.D. in Mathematics May 2019
Dissertation Title: *Unbounded Derivations of C^* -algebras and the Heisenberg Commutation Relation*
Advisors: Allan Donsig and David Pitts
M.S. in Mathematics May 2015

Pittsburg State University, Pittsburg, Kansas USA

B.S. in Mathematics, Magna Cum Laude May 2013
B.A. in English, Summa Cum Laude May 2013

GRANTS & FELLOWSHIPS

NSF DMS-2247587 Analysis Program: PI. *KMS States of Quantum Cuntz–Krieger Algebras* 2023-26
(\$159,926)

IPAM Workshop: Groundwork for Operator Algebras Lecture Series: Co-PI 2024
This iteration will be held at the Institute for Pure and Applied Mathematics at UCLA.

NSF DMS-2247796 Conference: Co-PI. Groundwork for Operator Algebras Lecture Series 2023
(\$50,000) *This iteration was held at Purdue University*

Postdoctoral Research Leave Fellowship, Association of American University Women 2022-23
(\$30,000) *This fellowship's purpose is to assist the candidate in obtaining tenure and further promotions by enabling them to spend a year pursuing independent research.*

Faculty Innovative Research in Science & Technology (FIRST) Grant: Co-PI. 2022-23
(\$12,500) *Funded four undergraduate student researchers to collaborate on co-led project (with M. Hamidi) entitled "Classification of quantum edge correspondences for quantum graphs over $M_2(\mathbb{C})$."* Article in preparation.

NSF DMS-2154557 Conference: PI. Young Mathematicians in C^* -algebras 2022 @ University of Oslo 2022
(\$50,000) *Travel funding for 20 US-based participants to travel to Oslo for YMC*A 2022*

Mentoring Travel Grant, NSF / Association for Women in Mathematics 2021-22
(\$4,000) *Travel funding to visit and collaborate with Michael Brannan twice at University of Waterloo.*

Faculty Research Development Program, ERAU-Prescott 2022
 (\$950) *Travel funding to attend JMM 2022 in Seattle, WA (declined)*

Arizona Space Grant Consortium Grant: PI, co-adviser 2020-21
 (\$4,000) *Funded two undergraduate student researchers to collaborate on ERAU co-led project (with M. Hamidi) entitled “Matricial Frameworks for the Mandelbrot and Julia Sets.” Publication to appear November 2023.*

Faculty Research Development Program, ERAU-Prescott 2020
 (\$1338) *Funded travel and accommodations to present two invited presentations at the 2020 Joint Math Meeting in Denver, Colorado.*

PUBLICATIONS

1. E. Babcock, D. Brindle, M. Hamidi, and **L. Ismert**. *Matricial Frameworks for the Mandelbrot and Julia Sets*. **Ball State University Undergraduate Mathematics Exchange**, Vol. 17, No.1 (2023).
2. M. Brannan, M. Hamidi, **L. Ismert**, B. Nelson, and M. Wasilewski. *Quantum edge correspondences and quantum Cuntz–Krieger algebras*. **Journal of the London Mathematical Society**, (2022).
3. L. Huang and **L. Ismert**. *The Covariant Stone-von Neumann Theorem for Actions of Abelian Groups on C^* -Algebras of Compact Operators*. **Communications in Mathematical Physics**, (2020).
4. **L. Ismert**. *Analyticity and kernel stabilization of unbounded derivations on C^* -algebras*. **New York Journal of Mathematics** 25 (2019), 914-933.
5. **L. Ismert**. *Unbounded Derivations of C^* -Algebras and the Heisenberg Commutation Relation*. **ETD collection for University of Nebraska – Lincoln**, (2019).

HONORS & AWARDS

Linda Bors Fellowship, University of Nebraska 2018
 (\$1000) *Selection based on scholarship of graduate students in the Department of Mathematics.*

Special Projects Grant Program, University of Nebraska 2017
 (\$1,000) *Selected semi-annually to promote professional development and networking opportunities for graduate students at the University of Nebraska. Funds covered travel and accommodation for Dr. Kay Kirkpatrick to give a STEM-wide colloquium in Lincoln, NE and also have a catered lunch with fifty students in STEM.*

Walter Mientka Teaching Award, University of Nebraska 2016
 (\$500) *Awarded annually to one math graduate student for outstanding teaching.*

Steven Haataja Award, University of Nebraska 2016
Annual peer vote for best talk given in the math department’s Graduate Student Seminar.

Enhancing Diversity in Graduate Education (EDGE) Participant 2013
 (\$3,500 & living) *Nationally competitive math bridge program for women entering graduate school.*

Math Department Senior of the Year, Pittsburg State University 2013

CONFERENCES, WORKSHOPS, & SEMINARS ORGANIZED

Groundwork for Operator Algebras Lecture Series 2024 @ IPAM-UCLA Jul 15-26, 2024
 Co-PI and daily lecturer for C^* -algebras curriculum. *This program will provide graduate students with an introduction to operator algebras through mini-courses, problem sessions, and expository talks.*

ASUERAU C^* -Seminar Aug 2021 - Present

Groundwork for Operator Algebras Lecture Series 2023 @ Purdue University Jun 5-17, 2023
 Co-PI, NSF DMS 2247796 and daily lecturer for C^* -algebras curriculum.

Young Mathematicians in C^*-algebras 2022 @ University of Oslo, Norway PI, NSF DMS 2154557	Aug 8-12, 2022
AMS Special Session on Advances in Operator Algebras, JMM 2022	Jan 7-8, 2022
Operator Algebras Mentor Network - Diversity, Equity & Inclusion Training	Aug 10, 2021
Operator Algebras Mentor Network - Abstract Writing Workshop	Jun 16, 2021
Operator Algebras Mentor Network - CV Critique Workshop	Jun 2, 2021
AMS Special Session on Advances in Operator Algebras, JMM 2021	Jan 7, 2021
Young Mathematicians in C^*-algebras 2019 @ University of Copenhagen, Denmark	Aug 5-10, 2019
Operator Theory Reading Seminar - University of Nebraska	Spring 2018

INVITED LECTURES & TALKS

Fields Institute - Mini-course lecturer on Actions of Tensor Categories on C^* -algebras (declined)	Nov 2023
Fields Institute - Plenary talk on Actions of Tensor Categories on C^* -algebras (declined)	Nov 7, 2023
Lecturer for Groundwork for Operator Algebras Lecture Series, Purdue U., West Lafayette, IN	Jun 5-17, 2023
Nebraska-Iowa Functional Analysis Seminar, U. Nebraska, Lincoln, NE	Mar 25, 2023
Purdue University Operator Algebras Seminar (Virtual)	Jan 31, 2023
AMS Special Session on Advances in Operator Algebras, JMM 2023, Boston, MA	Jan 7, 2023
MSRI Special Session on Dynamics and Operator Algebras, JMM 2023, Boston, MA	Jan 6, 2023
East Coast Operator Algebras Symposium, Michigan State U., Lansing, MI	Oct 23, 2022
Michigan State U. Math Physics and Operator Algebra Seminar, Lansing, MI	Sep 13, 2022
Noncommutative Geometry and Operator Algebras Seminar, University of Wollongong (Virtual)	Mar 2, 2022
Analysis Seminar, University of Waterloo, Waterloo, Ontario	Dec 8, 2021
Brazos Analysis Seminar Fall 2021 (Virtual)	Nov 14, 2021
Groundwork for Operator Algebras Lecture Series, Michigan State University, Lansing, MI	Jul 23, 2021
IPAM - Workshop on Actions of Tensor Categories on C^* -algebras (Virtual)	Jan 27, 2021
Michigan State Math Physics and Operator Algebras Seminar (Virtual)	Nov 30, 2020
Prague Noncommutative Geometry & Topology Seminar (Virtual)	Nov 10, 2020
Arizona State University C^* -Seminar (Virtual)	Sep 16, 2020
AMS Special Session on C^* -algebras, Dynamical Systems, JMM 2020, Denver, CO	Jan 17, 2020
AMS Special Session on Advances in Operator Algebras, JMM 2020, Denver, CO	Jan 16, 2020
AMS Fall Sectional Meeting: Advances in Operator Algebras, UC Riverside, CA	Nov 10, 2019
Vanderbilt University Subfactor Seminar, Nashville, TN	Apr 12, 2019
University of Texas at Tyler Mathematics Colloquium, Tyler, TX	Mar 3, 2019
MAA Special Session on EDGE for Women, JMM 2019, Baltimore, MD	Jan 17, 2019
AMS Fall Sectional: Special Session on Noncommutative Geometry, San Fran State U, CA	Oct 27, 2018
Brazos Analysis Seminar, Texas A&M University, College Station, TX	Sep 29, 2018
Young Mathematicians in C^* -algebras, Katholieke Universiteit te Leuven, Belgium	Aug 14, 2018
AMS Special Session on Advances in Operator Algebras, JMM 2018, San Diego, CA	Jan 12, 2018
Iowa-Nebraska Functional Analysis Seminar, University of Iowa, Des Moines, IA	Nov 11, 2017

LOCAL SEMINAR TALKS

ASUERAU C^* -Seminar

<i>Unbounded derivations on $B(H)$</i>	Nov 2, 2022
<i>Quantum graphs and their infinite path spaces</i>	Aug 31, 2022
<i>A Covariant Stone-von Neumann Theorem</i>	Sep 16, 2020

UNL Operator Algebras Seminar

<i>One-Parameter Semigroups, Infinitesimal Generators, and their Analytic Vectors</i> , 2 talks	Fall 2018
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<i>A Reflexive Representation for n-times Weakly D-Differentiable Operators</i> , 2 talks	Spring 2017
<i>On Weakly D-Differentiable Operators</i> , 2 talks	Fall 2016
<i>Characterization of the Extreme Points in the Closed Unit Ball of a C^*-algebra</i>	Spring 2015

UNL Graduate Student Seminar

<i>The Mathematics Behind Quantum Mechanics</i>	Fall 2015
<i>The Frobenius-Pierce Theorem: Finite-Dimensional Real Division Algebras</i>	Spring 2014

UNL Operator Theory Reading Seminar

<i>Motivation for Studying Hilbert C^*-modules</i>	Spring 2018
<i>Completely Positive Maps</i>	Fall 2017
<i>The GNS Construction for a C^*-algebra</i> , 2 talks	Fall 2015
<i>Operator-Valued Measures and von Neumann's Interpretation of Quantum Mechanics</i>	Spring 2015
<i>Hilbert Space Formulation of Quantum Mechanics and the Postulates</i>	Spring 2015
<i>The Simplicity of the Cuntz Algebra</i> , 2 talks	Fall 2014
<i>Weiner's Theorem: Inverse of a Function with Absolutely Convergent Fourier Series</i>	Spring 2014
<i>Classification of the Maximal Ideal space of the Disk Algebra</i>	Spring 2014

OTHER CONFERENCES ATTENDED

Canadian Operator Theory Symposium (Virtual)	Jun 1, 2021
Zagreb Workshop on Operator Theory (Virtual)	Jun 30, 2020
Mastery Grading Conference , (Virtual) masterygrading.com	Jun 5-6, 2020
Canadian Operator Symposium , (Virtual) The Fields Institute, Ontario, Canada	May 25-29, 2020
Nebraska-Iowa Functional Analysis Seminar , Lincoln, Nebraska	Nov 2-3, 2018
Young Mathematicians in C^*-algebras , University of Copenhagen, Denmark	Aug 7-11, 2017
Young Women in C^*-algebras , University of Copenhagen, Denmark	Aug 5-6, 2017
Great Plains Operator Theory Symposium , Texas Christian University, Fort Worth, TX	May 22-26, 2017
Iowa-Nebraska Functional Analysis Seminar , University of Iowa, Iowa City, IA	Nov 5, 2016
Great Plains Operator Theory Symposium , University of Illinois, Champaign, Illinois	May 23-27, 2016
AMS Spring Central Sectional Meeting , North Dakota State University, Bismarck, ND	April 16-17, 2016
Rocky Mountain Mathematics Consortium , University of Wyoming, Laramie, WY	Jun 1-5, 2015
Iowa-Nebraska Functional Analysis Seminar , University of Iowa, Iowa City, IA	April 19, 2014

TEACHING EXPERIENCE

Instructor of Record at Embry-Riddle Aeronautical University

MA 399: <i>Complex Variables</i> (Sp '20)
MA 399: <i>Introduction to Quantum Information Theory</i> (Sp '22)
MA 345: <i>Differential Equations & Matrix Methods</i> (1 section Sp '22, 2 sections Sp '24)
MA 335: <i>Linear Algebra I</i> (1 section Sp '24)
MA 243: <i>Calculus & Analytic Geometry III</i> (1 section F '20)
MA 242: <i>Calculus & Analytic Geometry II</i> (2 sections Sp '20, 2 sections Sp '21)
MA 241: <i>Calculus & Analytic Geometry I</i> (3 sections Fa '19)
MA 225: <i>Introduction to Discrete Structures</i> (3 sections F '21, 2 sections Sp '22, 1 section Sp '23)

Instructor of Record at University of Nebraska

MATH 800T: <i>Mathematics as a Second Language for Middle Level Teachers*</i>	Summer 2016
MATH 314: <i>Linear Algebra</i>	Spring 2019
MATH 310: <i>Introduction to Modern Algebra</i> (intro to proof writing & ring theory)	Summer 2018
MATH 208: <i>Calculus III</i> (multivariable/vector calculus)	Spring 2018, Fall 2017
MATH 203: <i>Contemporary Mathematics</i>	Spring 2016, Summer 2014
MATH 106: <i>Calculus I</i>	Summer 2017
MATH 103: <i>College Algebra and Trigonometry</i>	Fall 2016
MATH 101: <i>College Algebra</i>	Fall 2015, Fall 2014

MATH 100A: *Intermediate Algebra* Spring 2015
 *Co-instructor: taught lessons, facilitated groupwork activities, and graded student work

Teaching Assistant at University of Nebraska

MATH 208: *Calculus III* Fall 2018
 MATH 107: *Calculus II* Fall 2013
 MATH 106: *Calculus I* Spring 2014
 MATH 104: *Applied Calculus* Fall 2018

Grader at University of Nebraska

MATH 922: *Real Analysis II* (graduate measure theory) Spring 2015
 MATH 872: *General Topology II* (graduate algebraic topology) Spring 2018

CURRICULUM DEVELOPMENT

Author, Discrete Structures and Applied Linear Algebra - Open Education Resource Textbook 2023-24
Author, Course-wide College Algebra Lesson Plans Summer 2016
Programmer, Course-wide College Algebra WeBWorK Problems & Hints Summer 2015

SERVICE & OUTREACH

Treasurer, Operator Algebras Mentor Network 2022-23
Established OAMN as a US non-profit status to be able to receive tax-deductible donations

Creator & Supervisor, Math Tutor Center, ERAU-Prescott 2021-Present

Chair, Nominating & Elections Committee, Faculty Senate ERAU-Prescott 2021-22

Member, Institutional Effectiveness Committee, Faculty Senate ERAU-Prescott 2020-21

Diversity & Inclusion Coordinator, College of Arts & Sciences, ERAU-Prescott 2020 - present
In this inaugural role, I am tasked with providing vision, leadership, coordination, and planning for diversity and inclusive excellence in my college. As the college's de facto diversity leader, I maintain strong working relationships among the dean, department chairs, faculty, students, staff and external constituents.

Member, Chancellor's Retention Committee, ERAU-Prescott 2020
Review data on retention of ERAU students by demographics and degree programs. Brainstorm methods and support faculty can provide to students to improve retention.

Mentor, Operator Algebras Mentor Network 2020-Present

Co-founder & Board Member, Operator Algebra Mentor Network 2019-21
*OAMN is a mentoring network for early-career underrepresented gendered operator algebraists. I conceptualized group mentor structure to benefit graduate students and young postdocs and invited a wide array of mathematicians to serve as junior and senior mentors. I organized and led meetings and workshops in conjunction with COSy 2020, JMM 2021, COSy 2021, Operator Algebra Summer School 2021, and YMC*A 2021; and planned the first annual Mentor Training on Diversity, Equity, & Inclusion in Aug 2021.*

Secretary/Treasurer, American Mathematical Society Graduate Chapter 2017-18
Distributed travel funding to graduate students in the department of mathematics at the University of Nebraska and organized a colloquium for esteemed researcher Dr. Kay Kirkpatrick.

Invited Panelist, Nebraska Conference for Undergraduate Women in Math 2017

Technology Volunteer, Nebraska Conference for Undergraduate Women in Math 2014-18

Campuswide Workshop for Graduate Teaching Assistants, University of Nebraska

Invited Member, Workshop Planning Committee

2017

Invited Panelist, Math and Statistics Breakout Session

2014

Camp Counselor, All Girls/All Math Summer

Jul 2016

Week-long summer program for thirty high school girls from across the country. I stayed in the dorms, chaperoned all academic and extracurricular activities, and tutored girls' modular arithmetic sessions in the evenings.

Moderator, Nebraska Math Day Quiz Bowl

2014–18

Volunteered annually to moderate several rounds of Math Day Quiz Bowl, where 1,500 high school students from across Nebraska compete for honorary title and prize money.