

# Lara M. Ismert

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## RESEARCH INTERESTS

Operator Algebras, Functional Analysis, Noncommutative Geometry, and applications to Quantum Mechanics, Quantum Information, and Topological Insulators.

## POSITIONS HELD

**Postdoctoral Fellow**, University of New Mexico June 2025–Present  
Albuquerque, New Mexico USA

**Assistant Professor of Mathematics**, Embry-Riddle Aeronautical University Aug 2019–Jan 2025  
Prescott, Arizona USA

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

## EDUCATION

**Certificate in Quantum Computing, Erdős Institute:** [Certificate] [Projects] July 2025

**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-2514264 Collaborative: Conference:** Co-PI. Groundwork for Operator Algebras Lecture Series (\$49,992) *The 2027 iteration will be at University of Montana, Missoula, MT.* 2026-27

**NSF DMS-2514263 Collaborative: Conference:** Co-PI. Groundwork for Operator Algebras Lecture Series (\$50,000) *The 2026 iteration will be at Michigan State University, East Lansing, MI.* 2026-27

**NSF DMS-2603107 Analysis Program:** PI. KMS States of Quantum Cuntz–Krieger Algebras 2023-26 (\$159,926) (originally NSF DMS-2247587 prior to transfer)

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

**Postdoctoral Research Leave Fellowship**, Association of American University Women (AAUW) 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 at Univ. Oslo 2022 (\$49,895) *Travel funding for 20 US-based participants to travel to Oslo for YMC\*A 2022*

**Arizona Space Grant Consortium Grant:** PI, co-adviser  
(\$4,000) *Funded two undergraduate student researchers, culminated in publication*

2020-21

#### RESEARCH ARTICLES

1. M. Hamidi, L. Ismert, and B.A. Nelson. *Simplicity of Cuntz–Pimsner algebras for quantum graphs*. To appear: **Bulletin of the London Mathematical Society**, (2026).
2. Anna Duwenig, Kari Eifler, Priyanga Ganesan, Lara Ismert, Viviana Meschitti, Sarah Plosker & Karen Strung, *The Operator Algebras Mentor Network: Impact of Community-Based Mentoring*. **Journal of Humanistic Mathematics**, Volume 15 Issue 1 (January 2025), pages 334-354.
3. M. Brannan, M. Hamidi, L. Ismert, B.A. Nelson, and M. Wasilewski. *Quantum edge correspondences and quantum Cuntz–Krieger algebras*. **Journal of the London Mathematical Society**, (2022).
4. 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).
5. L. Ismert. *Analyticity and kernel stabilization of unbounded derivations on  $C^*$ -algebras*. **New York Journal of Mathematics** 25 (2019), 914-933.
6. L. Ismert. *Unbounded Derivations of  $C^*$ -Algebras and the Heisenberg Commutation Relation*. **ETD collection for University of Nebraska – Lincoln**, (2019).

#### UNDERGRADUATE RESEARCH & ONLINE TEXTBOOKS

1. M. Hamidi, L. Ismert, and B. Solie. *Discrete Mathematics with Applications to Probability, Statistics, and Linear Algebra*. **Eagle Pubs** (2024, December 13).
2. 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).

#### TRAVEL & COLLABORATION AWARDS

**Collaborate@ICERM:** *QECCs from constituent codes of quasi-cyclic codes*, Brown U., RI Jun 16-20, 2025  
(Travel & accommodations) Joint w/ A. Álvarez, M. Hamidi, G. Terra Bastos, and C. Williams

**AIM SQuaRE:** to work on *Non-local games with memory*. Pasadena, CA 2025-2027  
(Travel & accommodations for three week-long visits) Joint w/ I. Todorov, J. Crann, L. Gao, and L. Turowska.

**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)*

**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.*

#### CONFERENCES, WORKSHOPS, & SEMINARS ORGANIZED

**BIRS Workshop: Applications of Operator Algebras and Noncommutative Geometry to Quantum Materials** @ Banff International Research Station, Banff, Alberta Apr 11-16, 2027

**Workshop on MASAs, Nest Algebras, and Free Semigroup Algebras** @ U Nebraska Jul 15-16, 2026  
In honor of David Pitts’s career and contributions to the field.

**Groundwork for Operator Algebras Lecture Series 2026** @ Michigan State U June 21-Jul 3, 2026  
Co-PI, NSF DMS-2514263 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.*

**Noncommutative Topology and Quantum Materials**, Albuquerque, NM Mar 11-13, 2026  
*This small workshop brought together operator algebraists and physicists to discuss the spectral localizer.*

**University of New Mexico Analysis Seminar** Aug 2025–Dec 2025

**Groundwork for Operator Algebras Lecture Series 2025**, Virtual Jun 23-Jul 18, 2025

**AMS Special Session: Quantum Theory and Operator Algebras**, Spring Midwest Sectional Mar 28-30, 2024

**Groundwork for Operator Algebras Lecture Series 2024** @ IPAM-UCLA Jul 15-26, 2024  
Co-PI and daily lecturer for C\*-algebras curriculum.

**ASUERAU C\*-Seminar** Aug 2021 - May 2024

**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 Aug 8-12, 2022  
PI, NSF DMS 2154557

**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

#### 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.*

## INVITED LECTURES &amp; TALKS

Arizona State University $C^*$ -Seminar, Arizona State University, Tempe, AZ	April 16, 2026
West Coast Operator Algebras Symposium, Pomona College, Pomona, CA	Dec 6-7, 2025
New Mexico State University Colloquium, Las Cruces, NM	Oct 24, 2025
New Mexico State University Analysis Seminar, Las Cruces, NM	Oct 24, 2025
Arizona State University $C^*$ -Seminar, Arizona State University, Tempe, AZ	Oct 3, 2025
COSy / NSeaG 2025 - Operator Algebras Mentor Network Talk & Panel	May 28, 2025
Noncommutative Geometry Seminar, Texas A&M University, College Station, TX	Apr 16, 2025
Brazos Analysis Seminar, Baylor University, Waco, TX	Apr 12-13, 2025
BIRS Workshop on Operator Systems and their Applications, Banff, Alberta	Feb 5, 2025
Joint Math Meetings 2025 AWM Special Session on Operator Algebras	Jan 11, 2025
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
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 <math>B(H)</math></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
<i>A Reflexive Representation for <math>n</math>-times Weakly <math>D</math>-Differentiable Operators</i> , 2 talks	Spring 2017
<i>On Weakly <math>D</math>-Differentiable Operators</i> , 2 talks	Fall 2016
<i>Characterization of the Extreme Points in the Closed Unit Ball of a <math>C^*</math>-algebra</i>	Spring 2015

**UNL Graduate Student Seminar**

*The Mathematics Behind Quantum Mechanics* Fall 2015  
*The Frobenius-Pierce Theorem: Finite-Dimensional Real Division Algebras* Spring 2014

**UNL Operator Theory Reading Seminar**

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

OTHER CONFERENCES ATTENDED (THOSE NOT LISTED UNDER INVITED TALKS)

**Semester on Operator Algebras & Quantum Information**, Institut Mittag-Leffler May 15-23, 2026  
**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: *Complex Variables* (Sp '20)  
MA 399: *Introduction to Quantum Information Theory* (Sp '22)  
MA 345: *Differential Equations & Matrix Methods* (1 section Sp '22, 2 sections Sp '24)  
MA 335: *Linear Algebra I* (1 section Sp '24)  
MA 243: *Calculus & Analytic Geometry III* (1 section F '20)  
MA 242: *Calculus & Analytic Geometry II* (2 sections Sp '20, 2 sections Sp '21)  
MA 241: *Calculus & Analytic Geometry I* (3 sections Fa '19)  
MA 225: *Introduction to Discrete Structures* (3 sections F '21, 2 sections Sp '22, 1 section Sp '23)

**Instructor of Record at University of Nebraska**

MATH 800T: *Mathematics as a Second Language for Middle Level Teachers\** Summer 2016  
MATH 314: *Linear Algebra* Spring 2019  
MATH 310: *Introduction to Modern Algebra* (intro to proof writing & ring theory) Summer 2018  
MATH 208: *Calculus III* (multivariable/vector calculus) Spring 2018, Fall 2017  
MATH 203: *Contemporary Mathematics* Spring 2016, Summer 2014  
MATH 106: *Calculus I* Summer 2017  
MATH 103: *College Algebra and Trigonometry* Fall 2016  
MATH 101: *College Algebra* 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: <i>Calculus III</i>	Fall 2018
MATH 107: <i>Calculus II</i>	Fall 2013
MATH 106: <i>Calculus I</i>	Spring 2014
MATH 104: <i>Applied Calculus</i>	Fall 2018

### Grader at University of Nebraska

MATH 922: <i>Real Analysis II</i>	(graduate measure theory)	Spring 2015
MATH 872: <i>General Topology II</i>	(graduate algebraic topology)	Spring 2018

### CURRICULUM DEVELOPMENT

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

### SERVICE & OUTREACH

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

<b>Creator &amp; Supervisor, Math Tutor Center, ERAU-Prescott</b>	2021-Present
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<b>Chair, Nominating &amp; Elections Committee, Faculty Senate ERAU-Prescott</b>	2021-22
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<b>Member, Institutional Effectiveness Committee, Faculty Senate ERAU-Prescott</b>	2020-21
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<b>Diversity &amp; Inclusion Coordinator, College of Arts &amp; Sciences, ERAU-Prescott</b>	2020 - present
<i>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.</i>	

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

<b>Mentor, Operator Algebras Mentor Network</b>	2020-Present
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<b>Co-founder &amp; Board Member, Operator Algebra Mentor Network</b>	2019-21
<i>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, &amp; Inclusion in Aug 2021.</i>	

<b>Secretary/Treasurer, American Mathematical Society Graduate Chapter</b>	2017-18
<i>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.</i>	

<b>Invited Panelist, Nebraska Conference for Undergraduate Women in Math</b>	2017
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<b>Technology Volunteer, Nebraska Conference for Undergraduate Women in Math</b>	2014-18
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<b>Campuswide Workshop for Graduate Teaching Assistants, University of Nebraska</b>	
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.*