Lara M. Ismert, Ph.D.

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Research Interests: Operator Algebras, Functional Analysis, Noncommutative Geometry, and applications to Quantum Information, and Quantum Materials.

Academic Appointments

Research Assistant Professor of Mathematics, University of New Mexico — June 2026–Present
Albuquerque, New Mexico USA

Postdoctoral Fellow, University of New Mexico — June 2025–June 2026
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

Quantum Computing Boot Camp, Erdős Institute [Certificate] [Projects] July 2025

University of Nebraska, Lincoln, Nebraska USA

Ph.D. in Mathematics — May 2019
Dissertation: *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, *Magna Cum Laude* — May 2013

Grants & Fellowships

1. NSF DMS-2603107: PI. *KMS States of Quantum Cuntz–Krieger Algebras* ($159,926) 2023-27
2. NSF DMS-2514264: Co-PI. *Groundwork for Operator Algebras Lecture Series '27* ($49,992) 2026-27
3. NSF DMS-2514263: Co-PI. *Groundwork for Operator Algebras Lecture Series '26* ($50,000) 2026-27
4. NSF DMS-2247796: Co-PI. *Groundwork for Operator Algebras Lecture Series '23* ($50,000) 2023-24
5. Postdoctoral Research Fellowship, Association of American University Women ($30,000) 2022-23
6. Faculty Innovative Research in Science & Technology Internal Grant: Co-PI. ($12,500) 2022-23
7. NSF DMS-2154557: PI. *Young Mathematicians in C*-algebras* ($49,895) 2022-23
8. Arizona Space Grant Consortium Grant: PI. *Matricial Frameworks for Julia Sets* ($4,000) 2020-21

Research Articles

1. L. Huang & L. Ismert. *The Infinitesimal Covariant Stone-von Neumann Theorem.*
   Pre-print: arXiv:2611.23086 [math.ph], Submitted.
2. A. Cerjan, L. Ismert, T. Loring. *Additive uncertainty relations via pseudospectral methods.*
   Pre-print: arXiv:2610.32014 [quant-ph], Submitted.

3. L. Ismert. *Local quantum Cuntz–Krieger algebras for dephasing quantum graphs.* Pre-print: arXiv:2608.23520 [math.OA], Submitted.
4. M. Hamidi, L. Ismert, and B.A. Nelson. *Simplicity of Cuntz–Pimsner algebras for quantum graphs.* Bulletin of the London Mathematical Society 58 Issue 5 (2026), e70354.
5. 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 15 Issue 1 (2025), 334-354.
6. 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).
7. 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 107 Issue 3 (2022), 886-913.
8. 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 378 (2020), 117-147.
9. L. Ismert. *Analyticity and kernel stabilization of unbounded derivations on C*-algebras.* New York Journal of Mathematics 25 (2019), 914-933.
10. L. Ismert. *Unbounded Derivations of C*-Algebras and the Heisenberg Commutation Relation.* ETD collection for University of Nebraska – Lincoln, (2019).
11. L. Huang & L. Ismert. *The Infinitesimal Covariant Stone-von Neumann Theorem.* (In preparation)
12. S. Gong, L. Ismert, & G. Yu. *Simplicity of random graph C^*-algebras.* (In preparation)
13. K. Eifler, L. Ismert, V. Meschitti, and S. Plosker. *An Empirical Analysis of Experiences across Genders of Academics in Operator Algebras.* (In preparation)

Travel & Collaboration Awards

1. AIM SQuaRE: Non-local games with memory. Caltech, Pasadena, CA — 2025-2027
2. Collaborate @ ICERM: QECCs from quasi-cyclic codes, Brown U., Providence, RI — Jun 16-20, 2025
3. NSF-AMS Mentoring Travel Grant ($4,000) — 2021-22
4. Faculty Research Development Program, ERAU-Prescott ($950) — 2022
5. Faculty Research Development Program, ERAU-Prescott ($1338) — 2020

Talks & Lectures

Plenary

1. Great Plains Operator Theory Symposium 2027, U. Hawai'i at Manoa, HI — May 17-21, 2027
2. West Coast Operator Algebras Symposium, Pomona College, Pomona, CA — Dec 6-7, 2025
3. Brazos Analysis Seminar, Baylor University, Waco, TX — Apr 12-13, 2025
4. Fields Institute - Mini-course lecturer on Nuclearity of C^*-algebras (declined) — Nov 2023
5. Nebraska-Iowa Functional Analysis Seminar, U. Nebraska, Lincoln, NE — Mar 25, 2023
6. East Coast Operator Algebras Symposium, Michigan State U., Lansing, MI — Oct 23, 2022
7. Brazos Analysis Seminar, Virtual — Sep 2021
8. Brazos Analysis Seminar, Texas A&M University, College Station, TX — Sep 29, 2018
9. Young Mathematicians in C^*-algebras, Katholieke Universiteit te Leuven — Aug 14, 2018
10. Nebraska-Iowa Functional Analysis Seminar, University of Iowa, Des Moines, IA — Nov 11, 2017

Colloquia

1. California State University, Long Beach Math Department Colloquium, Virtual — Sep 25, 2026
2. New Mexico State University Math Department Colloquium, Las Cruces, NM — Oct 24, 2025
3. University of Texas at Tyler Math Department Colloquium, Tyler, TX — Mar 3, 2019

Invited Workshop and Special Session Talks

1. AMS Special Session on Advances in Operator Algebras - JMM 2027, Chicago, IL — Jan 13, 2027
2. BIRS Workshop on Operator Systems and their Applications, Virtual — Feb 5, 2025
3. LundSeaG - Workshop on Noncommutative Geometry, U. of Lund, Sweden — June 7-11, 2027
4. Noncommutative Geometry Fest, University of Hawai'i at Manoa, HI — Nov 28-30, 2026
5. Semester on Operator Algebras and Quantum Information, Institut Mittag-Leffler — May 2026
6. COSy / NSeaG 2025 - Operator Algebras Mentor Network Talk & Panel — May 28, 2025
7. AWM Special Session on Operator Algebras - JMM 2025, Seattle, WA — Jan 11, 2025
8. AMS Special Session on Advances in Operator Algebras - JMM 2023, Boston, MA — Jan 7, 2023
9. MSRI Special Session on Dynamics & Operator Algebras - JMM 2023, Boston, MA — Jan 6, 2023
10. Groundwork for Operator Algebras Lecture Series, Michigan State U., Lansing, MI — Jul 24, 2021
11. IPAM Workshop on Actions of Tensor Categories on C*-algebras, Virtual — Jan 27, 2021
12. AMS Special Session on C*-algebras & Dynamical Systems - JMM 2020, Denver, CO — Jan 17, 2020
13. AMS Special Session on Advances in Operator Algebras - JMM 2020, Denver, CO — Jan 16, 2020
14. AMS Special Session Advances in Operator Algebras - Fall Sectional, UC Riverside, CA — Nov 10, 2019
15. MAA Special Session on EDGE for Women - JMM 2019, Baltimore, MD — Jan 17, 2019
16. AMS Special Session on Noncommutative Geometry - Sectional, San Fran State U, CA — Oct 27, 2018
17. AMS Special Session on Advances in Operator Algebras - JMM 2018, San Diego, CA — Jan 12, 2018

Invited Seminar Talks

1. Arizona State University C*-Seminar, Arizona State University, Tempe, AZ — October 21, 2026
2. Los Alamos National Lab Quantum Lunch Seminar, Los Alamos, NM — May 7, 2026
3. Arizona State University C*-Seminar, Arizona State University, Tempe, AZ — April 16, 2026
4. New Mexico State University Analysis Seminar, Las Cruces, NM — Oct 24, 2025
5. Arizona State University C*-Seminar, Arizona State University, Tempe, AZ — Oct 3, 2025
6. University of New Mexico Analysis Seminar, Virtual — Sep 19, 2025
7. University of New Mexico Analysis Seminar, Virtual — Aug 29, 2025
8. Noncommutative Geometry Seminar, Texas A&M University, College Station, TX — Apr 16, 2025
9. Purdue University Operator Algebras Seminar, Virtual — Jan 31, 2023
10. Michigan State U. Math Physics and Operator Algebra Seminar, Lansing, MI — Sep 13, 2022
11. Arizona State University C^*-Seminar, Prescott, AZ — Nov 2, 2022
12. Arizona State University C^*-Seminar, Tempe, AZ — Aug 31, 2022
13. University of Wollongong NCGOA Seminar, Virtual — Mar 2, 2022
14. University of Waterloo Analysis Seminar, Ontario, Canada — Dec 8, 2021 — Nov 14, 2021
15. Michigan State Math Physics and Operator Algebras Seminar (Virtual) — Nov 30, 2020
16. Prague Noncommutative Geometry & Topology Seminar, Virtual — Nov 10, 2020
17. Arizona State University C^*-Seminar, Virtual — Sep 16, 2020
18. Vanderbilt University Subfactor Seminar, Nashville, TN — Apr 12, 2019

Teaching Experience

(N) indicates the total number of sections taught during specified term (F - Fall / S - Spring / Su - Summer).

Instructor of Record at Embry-Riddle Aeronautical University (2019 - 2024)

PS 490: *Senior Capstone in Physics* on Shor's Algorithm	(1) F24
MA 399: *Introduction to Quantum Information Theory* ($\star$)	(1) S22
MA 399: *Reading Course on Introduction to Complex Variables*	(1) S20
MA 345: *Differential Equations & Matrix Methods*	(1) S22, (2) S24
MA 335: *Linear Algebra I*	(1) S24
MA 243: *Calculus & Analytic Geometry III* ($\ddagger$)	(1) F20
MA 242: *Calculus & Analytic Geometry II* ($\dagger$)	(2) S20, (2) S21
MA 241: *Calculus & Analytic Geometry I*	(3) F19
MA 225: *Introduction to Discrete Structures*	(2) F20, (1) S21, (3) F21, (2) S22, (1) S23
MA 111: *Pre-calculus for Aviation*	(3) F24

*Co-created and co-taught ‡Hybrid in-person/virtual format †(2) S20 sections convened virtually March-May

Instructor of Record at University of Nebraska (2014 - 2019)

MATH 808T: *Concepts of Calculus for Middle-Level Teachers* ($\star, \dagger$)	(1) Su19
MATH 800T: *Mathematics as a Second Language for Middle Level Teachers* ($\star$)	(1) Su14
MATH 314: *Linear Algebra*	(1) S18
MATH 310: *Introduction to Modern Algebra* (proof writing & ring theory)	(1) Su18
MATH 208: *Calculus III*	(2) F17
MATH 203: *Contemporary Mathematics*	(1) Su14, (1) S16
MATH 106: *Calculus I*	(1) Su16
MATH 103: *College Algebra and Trigonometry*	(1) S15
MATH 101: *College Algebra*	(2) F15
MATH 100A: *Intermediate Algebra*	(1) S16

*Co-instructed †Online

Teaching Assistant at University of Nebraska (2013 - 2019)

MATH 208: *Calculus III*	(3) F18
MATH 107: *Calculus II*	(2) F13
MATH 106: *Calculus I*	(2) S14
MATH 104: *Applied Calculus*	(4) F18

Grader at University of Nebraska

MATH 922: *Real Analysis II*	(graduate measure theory)	(1) S15
MATH 872: *General Topology II*	(graduate algebraic topology)	(1) S18

Lecturer, Groundwork for Operator Algebras Lecture Series

I am one of three rotating lecturers on C^*-algebras content. My lectures cover various topics, including:

– tensor products of C^*-algebras, completely positive maps, and related theorems	Jun 29-Jul 3, 2026
– tensor products of Hilbert spaces and product representations (via Zoom)	June 23-27, 2025
– GNS, tensor products of C^*-algebras, C^*-correspondences, and graph algebras	Jul 15-26, 2024
– foundations, Gelfand-Naimark, tensor products of C^*-algebras, amenability	Jun 5-17, 2023

Curriculum Development & Materials Authorship

Co-Author, *C^*-algebras Notes* for the Groundwork for Operator Algebras Lecture Series	2023-Present
Co-Author, Discrete Structures & Applied Linear Algebra - OER Textbook for Embry-Riddle	2023-24
Section-wide Course Redesign, Introduction to Discrete Structures at Embry-Riddle	2021-22
Co-Creator, Introduction to Quantum Information Theory at Embry-Riddle	Spring 2021
Author, Course-wide College Algebra Lesson Plans	Summer 2016
Programmer, Course-wide College Algebra WeBWorK Problems & Hints	Summer 2015

Research Supervision & Student Advisement

Graduate Student Advisement (at University of New Mexico)

Co-advisor: Ph.D. Thesis for José Jairo García, Department of Mathematics & Statistics 2025-Present
Anticipated date of Ph.D. is May 2027.

Undergraduate Research Advisement (at Embry-Riddle Aeronautical University)

Co-advisor: Senior Capstone in Physics for Isaiah Joy on Shor's Algorithm 2024-25
Currently in second year of Ph.D. program in mathematics at Arizona State University

Advisor of Project: Visualizations of Qubits, Quantum Gates, and Entanglement 2023-24
Supported five physics and engineering students under NSF DMS-2247587 to learn fundamentals of quantum information and computing through illustration and discussion

Co-advisor of Project: Edge correspondences for quantum graphs over $M_2(\mathbb{C})$ 2022-23
Supported four physics and engineering students under NSF DMS-2247587 to learn about quantum graphs and calculate associated edge bimodules. Article in preparation.

Co-advisor of Project: Enumeration of Euler Paths in Complete Graphs 2021-22
Oversaw extension of coursework to develop and verify algorithm for enumerating Euler paths.

Co-advisor of Project: A Matricial Framework for Filled Julia and Mandelbrot Sets 2020-21
Supported two engineering students with first-ever funding given to a math proposal by the Arizona Space Grant Consortium to encode iterative definitions of the Mandelbrot and Filled Julia Sets into matrices. Culminated in publication.

Selected Support for Students Underrepresented due to Gender in Mathematics

Research Co-advisor for an NSF Graduate Research Fellowship Program Awardee 2022-25
Student is earning a Ph.D. in physics at Cornell University.

Application Research Mentor for Campus Goldwater Nominee 2024-25
Student is completing a Bachelor's degree at ERAU.

Advisor for local high school student's Senior Thesis on "A History of Cryptography" 2022-24
Student is earning a Bachelor's degree at Brown University.

Service to Scholarly Community

Article Peer-Review and Grant Proposal Panel Review

NSF Panel Reviewer 2026, 2022

Expert Opinion, Journal of the London Mathematical Society 2026, 2025

Referee, Journal of Operator Theory

AMS Reviewer

Leadership & Advocacy

Co-founder, Operator Algebras Mentor Network 2019-20

Mentor, Operator Algebras Mentor Network 2020-Present

Co-Treasurer, Operator Algebras Mentor Network: *Obtained U.S. non-profit status* 2022-23

Organizer, Operator Algebras Mentor Network
– DEI Training, led virtually by Dr. Chandra Erdman (Google) Aug 10, 2021
– Abstract Writing Workshop, Virtual Jun 16, 2021
– CV Critique Workshop, Virtual Jun 2, 2021

Board Member, Operator Algebras Mentor Network 2019-21

Conferences & Special Sessions Co-organized

AMS Special Session on Advances in Operator Algebras - Fall Western	Nov 7-8, 2026
AMS Special Session on Quantum Theory and Operator Algebras - Spring Central	Mar 28-30, 2024
Young Mathematicians in C^*-algebras, University of Oslo, Norway	Aug 8-12, 2022
AMS Special Session on Advances in Operator Algebras - JMM 2022, Virtual	Jan 7-8, 2022
AMS Special Session on Advances in Operator Algebras - JMM 2021, Virtual	Jan 7, 2021
Young Mathematicians in C^*-algebras, University of Copenhagen, Denmark	Aug 5-10, 2019

Summer Schools & Workshops Co-organized

BIRS 27w5821: Applications of OA & NCG to Quantum Materials, Banff, Alberta	Apr 11-16, 2027
MASAs, Nest Algebras, and Free Semigroup Algebras, University of Nebraska	Jul 15-16, 2026
Groundwork for Operator Algebras Lecture Series, Michigan State University	Jun 21-Jul 3, 2026
Noncommutative Topology and Quantum Materials, Albuquerque, NM	Mar 11-13, 2026
Groundwork for Operator Algebras Lecture Series, Virtual	Jun 23-Jul 18, 2025
Groundwork for Operator Algebras Lecture Series, IPAM - UCLA, CA	Jul 15-26, 2024
Groundwork for Operator Algebras Lecture Series, Purdue U, Lafayette, IN	Jun 5-17, 2023

Seminars Co-Organized

University of New Mexico Analysis Seminar	Fall 2025, Fall 2026
C^*-Seminar, Arizona State University / Embry-Riddle Aeronautical University	Fall 2021-Spring 2024
Operator Theory Reading Seminar, University of Nebraska	Spring 2018

Service to the University

Creator, Supervisor & Orientation Leader: Math Tutor Center, ERAU-Prescott 2021-2023

Creator, Supervisor, & Orientation Leader: Embedded Tutor Program, ERAU-Prescott 2021-2023

Diversity & Inclusion Coordinator, College of Arts & Sciences, ERAU-Prescott 2020-21

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

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

Member, Chancellor's Retention Committee, ERAU-Prescott 2020

Member, Promotion & Tenure Faculty Handbook Review Committee, ERAU-Prescott 2020

Selected Graduate Honors & Awards (2013 - 2019)

AMS Graduate Student Travel Grant ($500) 2019
Travel support to attend and speak at JMM 2019.

Linda Bors Fellowship, University of Nebraska ($1,000) 2018
($1000) *Selection based on scholarship of graduate students in the Department of Mathematics.*

AMS Graduate Student Chapter Secretary & Treasurer, University of Nebraska 2017-18
Elected position, distributed departmental funds to support graduate student travel.

Special Projects Grant Program, University of Nebraska 2017
($1,000) *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.*

Other Skills

Languages & Libraries: Python, Qiskit, Basic French, Basic Spanish