CONTACT INFORMATION Embry-Riddle Aeronautical University College of Arts & Sciences Prescott, AZ 86301 USA

### **Research Interests**

 $C^*$ - and operator algebraic dynamical systems, representation theory for non-self-adjoint operator algebras,  $C^*$ -algebras from symbolic dynamics, and quantum information theory.

### ACADEMIC APPOINTMENTS

Assistant Professor of Mathem	natics
Department of Mathematics,	Embry-Riddle Aeronautical University

# Graduate Teaching Assistant

Department of Mathematics, University of Nebraska-Lincoln

Education

### University of Nebraska-Lincoln, Lincoln, Nebraska USA

Ph.D. in Mathematics, May 2019

• Advisor: Professor Allan Donsig

M.S. in Mathematics, May 2015

### Youngstown State University, Youngstown, Ohio USA

B.S. in Mathematics, May 2013.

• Graduated Summa Cum Laude with a minor in Physics

PREPRINTS AND PEER-REVIEWED PUBLICATIONS

- [1] Hamidi, M., Admissibility of C\*-Covers for Operator Algebra Dynamical Systems. To be submitted Nov 2023.
- [2] Babcock, E., Brindle, D., Hamidi, M., and Ismert, L., *Matricial Frameworks for the Mandelbrot and Filled Julia Sets*, to appear in **Ball State Math. Exch.**
- [3] Brannan, M., Hamidi, M., Ismert, L., Nelson, B. and Wasilewski, M. (2023), Quantum edge correspondences and quantum Cuntz-Krieger algebras. J. London Math. Soc., 107: 886-913. https://doi.org/10.1112/jlms.12702
- [4] Hamidi, M., Admissibility of C\*-Covers and Crossed Products of Operator Algebras (2019), ETD collection for University of Nebraska - Lincoln. AAI13862046.
- N. Wakefield, K. Uhing, M. Hamidi, Building Long-Term Support for Faculty through Graduate Student Instructor Professional Development. W. M. Smith, B. R. Lawler, J.F.Strayer, L. Augustyn (Eds.). (2018).
   Proceedings of the Sixth Annual Mathematics Teacher Education Partnership conference. Washington, DC: Association of Public Land-grant Universities.

GRANTS, FELLOWSHIPS, AND AWARDS

- NSF Grant DMS-2154557: Conference Grant Young Mathematicians in C\*-Algebras 2022. co-PI (with PI L. Ismert). (2022-2023, \$49,985)
- (2) **FIRST Grant**: Faculty Innovative Research in Science Technology (FIRST) internal faculty research grant. PI (with co-PI L. Ismert). (2022-2023, \$12,308)
- (3) **FRDP** Award: Faculty Research Development Program (FRDP) internal faculty award. (2021-2022, \$1,000)

August 2019 – Present

August 2013 - May 2019

- (4) Arizona Space Grant: Competitive, NASA-sponsored award to support undergraduate intern research. Coadvised with L. Ismert. (2020-2021, \$4,000)
- (5) MAA Project NExT Fellowship: Brown '20 Cohort. (2020-2021)
- (6) NSF Travel Award to Young Mathematicians in C\*-Algebras International Conference. (2018, 2019)
- (7) Don Miller Outstanding GTA Award: Annual department award given to one experienced GTA. (2018-2019, \$750)
- (8) Lloyd Jackson Emeritus Faculty Fellowship: Department fellowship given each academic year to support graduate student research. (2015–2019, \$750)
- (9) Certificate of Recognition for Contributions to Students, UNL Parents Association: Annual university-wide award recognizing faculty and staff who have made a significant difference in students' lives based on nominations by parents. (2014, 2017, 2019)
- (10) **Othmer Fellowship**: A highly competitive university-wide fellowship that provides additional support of \$8000 per year for three years. (2013-2016, \$24,000)
- (11) Outstanding Student in Mathematics and Statistics Award: Annual department award given to one mathematics major that demonstrates an outstanding academic record. (2012-2013, \$100)

#### INVITED RESEARCH TALKS AND COLLOQUIA

- (1) University of Nebraska–Lincoln: Nebraska-Iowa Functional Analysis Seminar, Distinguishing between quantum Cuntz-Krieger and local quantum Cuntz-Krieger algebras, March 25, 2023.
- (2) **Purdue University**: Operator Algebras Seminar (virtual), Quantum edge spaces and C\*-algebras associated to quantum graphs, February 21, 2023.
- (3) University of Waterloo: Analysis Seminar, Dynamical Extensions and Crossed Products, May 12, 2022.
- (4) Joint Mathematics Meetings: Special Session on Advances in Operator Algebras (virtual), The Quantum Cuntz-Krieger Algebra and Edge Correspondence of a Quantum Graph, April 9, 2022.
- (5) Brazos Analysis Seminar: Semi-annual seminar series supported by Baylor, Texas A&M, TCU, Houston, and UT-Tyler (virtual), Non-Self-Adjoint Crossed Products as Subalgebras of C\*-Crossed Products, November 13, 2021.
- (6) Northern Arizona University: Mathematics and Statistics Department Colloquium, Topological Dynamics: An Operator Algebraic Approach, September 7, 2021.
- (7) Arizona State University: ASU C\*-Seminar (virtual), An Introduction to Non-Self-Adjoint Crossed Products, April 7, 2021.
- (8) Michigan State University: Mathematical Physics and Operator Algebras Seminar (virtual), Crossed Products of Operator Algebras: A Tool for Noncommutative (Topological) Dynamics, November 16, 2020.
- (9) University of Nevada, Reno: Department of Mathematics & Statistics Colloquium (virtual), Crossed Products of Operator Algebras: A Tool for Noncommutative Dynamics, October 8, 2020.

#### INVITED MINICOURSES & WORKSHOPS

 Purdue University: Groundwork for Operator Algebras Lecture Series (GOALS) minicourse led on Completely positive maps on C\*-algebras and an introduction to non-self-adjoint operator algebras and operator systems, June 2023.

- (1) Joint Mathematics Meetings, Denver, CO: Rigidity of Crossed Products Arising from Z Acting on the Disc Algebra, January 15, 2021.
- (2) Joint Mathematics Meetings, Baltimore, MD: Admissibility of C\*-Covers and Crossed Products of Operator Algebras, January 18, 2019.
- (3) Nebraska-Wesleyan University: The Earth is Not Flat, or: Studying Continuous Functions on Manifolds, October 26, 2017.

LOCAL SEMINAR PRESENTATIONS

# ASUERAU C\*-Seminar

A View to a Cuntz-Pimsner Algebra, September 7, 2022.

# **UNL Operator Algebras Seminar**

Structure of C\*-Covers, 2 talks, Fall 2018
Extending Dynamics from the Disc Algebra to the Toeplitz Algebra, 2 talks, Spring 2018
Admissibility of Dynamical Systems, Fall 2017
Crossed Products of Non-Self-Adjoint Operator Algebras, 2 talks, Fall 2016
Semi-Crossed Products, 2 talks, Spring 2016
Crossed Products of C\*-Correspondences by Amenable Group Actions, Fall 2015
An Introduction to C\*-Correspondences and Cuntz-Pimsner Algebras, 2 talks, Fall 2015
The Russo-Dye Theorem for C\*-Algebras, January 21, 2015.

# UNL Operator Theory Reading Seminar

An Introduction to Operator Algebras & Operator Theory, Fall 2018 Construction of Group C\*-Algebras & Examples, 2 talks, Spring 2017 The Gelfand-Naimark Theorem & Its Applications, Fall 2016 C\*-Algebras Generated by Isometries Part II: Cuntz Algebras, 2 talks, Fall 2016 Graph C\*-Algebras & Their Uniqueness Theorems, 2 talks, Spring 2016 Spectral Theorem for Compact Normal Operators & Its Applications, Fall 2015 Introduction to von Neumann Algebras & the Bi-commutant Theorem, Spring 2014 Isometries & the Wold-von Neumann Decomposition, Spring 2014

### **UNL Graduate Student Seminar**

Representation Theory by Way of C\*-Algebras, January 7, 2019. The Basics of Building a (Personal) Website, March 30, 2015.

# Conferences & Seminars Co-Organized

- (1) ASUERAU C\*-Seminar: Weekly research seminar hosted virtually and in-person at Arizona State University. (Co-organized with L. Ismert, S. Kaliszewski, J. Quigg, and J. Spielberg.) Fall 2021-Present.
- (2) Arizona Women's Symposium in Mathematics (AWSiM), November 5-6, 2022.
- (3) Young Mathematicians in C\*-Algebras 2022: Annual international conference supporting junior researchers in operator algebras held at University of Oslo. August 8-12, 2022.
- (4) ERAU Math Department Colloquium, Spring 2021.
- (5) Nebraska Conference for Undergraduate Women in Mathematics (NCUWM), January 25-27, 2019.
- (6) UNL Operator Theory Reading Seminar, Fall 2018.
- (7) UNL Department of Mathematics Graduate Student Seminar, 2014-2015.

<b>AMS Sectional Meetings</b> Fall Western Sectional at UC-Riverside in Riverside. C	CA November 9–10. 2	2019
Spring Central Sectional at North Dakota State University	sity in Fargo, ND April 16–17, 2	April 16–17, 2016
Canadian Operator Symposium (COSy)		
Hosted online by University of Guelph in Guelph, Onta	rio May 31–June 4, 2	2021
Hosted online by the Fields Institute in Toronto, Ontar	<i>io</i> May 25–29, 2	2020
IEEE Workshop on Combinatorial Enumeration & A Hosted at Embry-Riddle Aeronautical University in Pre	pplications escott, AZ August 19-20, 2	2022
Iowa-Nebraska Functional Analysis Seminar (INFAS) At University of Nebraska-Lincoln in Lincoln, NE	) November 3, 2	2018
Des Moines, IA	November 11, 2017, November 5, 2016, April 19, 2	2014
At Creighton University in Omaha, NE	March 28, 2	2015
Joint Mathematics Meetings (JMM)	I	0001
Hosted online	January 6–10, 2	2021
San Diego, CA	January 10–13, 2	2018
Great Plains Operator Theory Symposium (GPOTS) Hosted online by Wasington Unversity in St. Louis, MC	) O May 10-14, 2	2021
At Miami University in Oxford, OH	May 29–June 2, 2	2018
At Texas Christian University in Fort Worth. TX	May 22–26. 2	2017
At University of Illinois Urbana-Champaign in Champa	<i>iign, IL</i> May 23–27, 2	2016
NAA Mothfoot		
Hosted online	August 4–7, 2	2021
MAA Minicourse		
Interdisciplinary and Inclusive Modeling Across the Cu	rriculum – hosted online at Mathfest August 5-6, 2	2021
Mastery Grading Conference		
Hosted online at masterygrading.com	June 5–6, 2	2020
<b>Operator Algebras Mentor Network: Mentorship Tra</b> Mentorship training workshop focused on diversity, equ Hosted online by the Operator Algebras Mentor Network	Aining Workshopuity, and inclusionAugust 27, 2 $k$ - led by Dr. Chandra Erdman and Erin Brown	2021
PIMS EDI Panel: Effective Allyship in STEM Hosted online by Pacific Institute for the Mathematical	Sciences (PIMS) June 16, 2	2021
<b>Project NExT Workshop</b> Hosted online during MAA MathFest	August 3–6. 2	2021
Hosted online during JMM	January 6, 2	2021
Hosted online	July $27–31, 2$	2020
Rocky Mountain Mathematics Consortium (RMMC) At University of Wyoming in Laramie, WY	June 1–5, $2$	2015
Workshop at Institute for Pure and Applied Mathem Actions of Tensor Categories on C*-Algebras – hosted of	natics (IPAM) – An NSF Math Institute online by UCLA January 21–28, 2	2021

Young Mathematicians in C*-Algebras (YMC*A) At University of Copenhagen in Copenhagen DK	August 5–10–2019
At KU Leuven in Leuven. BE	August 13–17, 2018
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Young Women in C*-Algebras (YWC*A) At KU Leuven in Leuven BE	August 11-12 2018
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Zagreb Workshop on Operator Theory	Iuma 20, 20, 2020
nosieu onime	June 29–30, 2020
Teaching Experience at Embry-Riddle Aeronautical University	
MA 412 - Probability and Statistics	Fall 2022 & 2023
MA 399 - Special Topics: Intro to Linear Algebra for Quantum Inform	nation, 2 students Fall 2023
MA 399 - Special Topics: Intro to Quantum Information Theory, $10\ s$	Fall 2023
MA 345 - Differential Equations and Matrix Methods	Fall 2021 & 2022, Spring 2023
MA 335 - Introduction to Linear and Abstract Algebra	Spring 2021 & 2022
MA 314 - Applied Linear Algebra and Statistics	Spring 2021, 2022, 2023
MA 242 - Calculus and Analytical Geometry II	Fall 2019, 2020, & 2023, Spring 2020
MA 241 - Calculus and Analytical Geometry I	Fall 2019, 2020, & 2021
Teaching Experience at University of Nebraska-Lincoln	
As Instructor of Record	
MATH 806T - Number Theory and Cryptology for Middle Level Teac	thers* Summer 2015
MATH 800T - Mathematics as a Second Language for Middle Level T	Ceachers* Summer 2016
806T and 800T are masters-level proof-writing courses for in-ser offered as part of a larger masters degree and professional developm and math teachers' ability to offer their students challenging course	vice K-12 teachers. These courses are ent program designed to enhance science and curricula.
MATH 314 - Linear Algebra	Summer 2017, Spring 2017
MATH 301 - Geometry Matters	Spring 2016
MATH 300 - Mathematics Matters	Fall 2015
300 and 301 are courses designed for pre-service elementary school derstanding of the core mathematical concepts they will introduce in taught in tandem with a pedagogy course to enhance the development and pedagogical concepts needed to be an effective teacher.	t teachers to deepen their conceptual un- their own classrooms. Both courses are of connections between the mathematical
MATH 221 - Differential Equations	Spring 2019
MATH 208 - Calculus III (Multivariate & Vector Calculus)	Fall 2017
MATH 106 - Calculus I [large lecture of $\sim 100 \text{ students}$ ]	Fall 2018, Fall 2016
MATH 104 - Business Calculus	Summer 2018
MATH 102 - Trigonometry	Spring 2015, Summer 2014
MATH 101 - College Algebra	Spring 2018
MATH 100A - Intermediate Algebra	Fall 2014

MATH 100A - Intermediate Algebra

st Indicates courses taught as co-instructor

# **Special Appointments**

**Recitation Mentor** 

Selected to serve as mentor for first year graduate TAs with duties including observing and documenting the teaching of all graduate students leading calculus recitations.

Fall 2017

WeBWorK and Workbook Programmer

Appointed to lead the ongoing initiative to develop code for student assessments in the open-source online homework system, WeBWorK. Reprogrammed and designed the department-wide mastery exams for all calculus and pre-calculus courses. Developed workbook randomization for active learning pre-calculus courses.

# As a Teaching Assistant

MATH 447/847 - Numerical Linear Algebra	Spring 2019
MATH 325 - Elementary Analysis	Spring 2017
MATH 106 - Calculus I	Fall 2018, Fall 2016, Spring 2014, Fall 2013
MATH 104 - Business Calculus	Spring 2016

### Advising and Mentoring

### **Undergraduate Research Projects**

- Aiden Askew, Eric Babcock, Isaiah Joy, and Hailey Murray (Fall 2022–Spring 2023): Project: Classification of quantum edge correspondences for quantum graphs over M2(C). Funded by FIRST Grant. Co-advised with L. Ismert. Article in preparation.
- (2) Eric Babcock and Dawson Brindle (Fall 2020–Spring 2021): Project: New Methods for Iterations and Visualizations of Julia Sets. Funded by the Arizona Space Grant. Co-advised with L. Ismert. Publication to appear in Ball State Math. Exch.

# **ERAU "Someone" Faculty Advisor** 2020 – Present Nominated by an academic advisor as "Someone" willing to listen objectively and provide direction, guidance, and referral to student resources.

ERAU SERVICE & OUTREACH

University Committees/Appointments	
COAS Member, Search Committee for Dean of College of Engineering	2022-2023
Coordinator for CBSI, Prescott Campus Diversity and Inclusion Committee	2020–Present
Faculty Senate Committees	
Member, Academic Computing Faculty Advisory Committee (ACFAC)	2020-Present
Member, Academic and Admissions Standards Committee	2020 - 2021
Departmental Committees/Appointments	
Math Ambassador	2020–Present
Serving as the lead for communicating and tracking external departmental needs from mathe The data collected improves courses by optimizing course schedules to support student learni courses.	ematics courses. ing in non-math
Member, Calculus Committee	2019–Present
Student Community	2020 D
Faculty Club Advisor, Dungeons and Dragons Club	2020–Present
Other Service & Outreach	

**Operator Algebras Mentor Network (OAMN)** 2019–Present Junior Mentor, Nominated to serve as a mentor in an international network that supports underrepresented or in minority within mathematics due to gender graduate students and young postdocs in operator algebras.

Journals Refereed: Analysis Mathematica.

Graduate Student Representative, Nominated to serve as the graduate student representative for the universi on the search committee for a new Dean of the College of Arts & Sciences at University of Nebraska-Lincolr	
Spring Research Fair for Undergraduate Research at UNL	2018
Judge, Judged undergraduate research poster session for undergraduate math majors	
American Mathematical Society (AMS) Graduate Student Chapter at UNL President, Created chapter budget, wrote activity reports, distributed travel funding t nized invited speaker colloquium.	2016–2017 o graduate students, orga-
All Girls/All Math Summer Camp at UNL Guest Lecturer, Volunteered to give a lecture on aerodynamics for a week-long summ school girls from across the country.	July 2015 ner program for thirty high
Nebraska Conference for Undergraduate Women in Mathematics Volunteer, Provided on-site technical support for undergraduate women's talks.	2014, 2017-2018
Nebraska Math Day Volunteer, Proctored state-wide math competition for 1500+ high school students	2013-2018 to earn a scholarship to

Volunteer, Proctored state-wide math competition for 1500+ high school students to earn a scholarship to University of Nebraska-Lincoln.

# UNL Math Department GTA Orientation

Microteaching Advisor, Led teaching activity and discussion for incoming first year graduate students.

INVITED PANELS

- (1) OAMN Career Panel, May 9, 2023.
- (2) Faculty Panel, New Faculty Orientation, ERAU, August 18, 2021.

Search Committee for Dean of College of Arts & Sciences at UNL

- (3) Mentorship for Mathematics, Diversity Committee Department of Mathematics Graduate Students, Texas A&M University, March 31, 2021.
- (4) Teaching Mathematics & Statistics, UNL Campuswide Workshops for Graduate TAs, August 15, 2017.
- (5) Lesson Learned Experienced Exam Writers Panel, UNL Math Exam Writing Workshop, March 4, 2017.
- (6) Experienced GTA Panel, UNL Math Department GTA Orientation, August 18, 2016.

Skills

- Markup/Programming Languages: C/C++, Java, MATLAB, Python, Unix shell scripts,  ${\rm IAT}_{\rm E}{\rm X},$  HTML, CSS, Javascript, PHP
- Applications: Mathematica, Maple, FTP clients, common Mac and Windows spreadsheet and database software

Fall 2016, Fall 2017

2018 - 2019