

David Milan

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Education

- 2008 Ph.D. **University of Nebraska-Lincoln**, Mathematics
Dissertation: C^* -algebras of Inverse Semigroups
Advisors: John Meakin and David Pitts
- 2001 B.S. **University of Nebraska-Lincoln**
Mathematics and Computer Science

Professional Experience

- **Professor and Acting Chair**, The University of Texas at Tyler, 2023–present.
- **Professor**, The University of Texas at Tyler, 2020–2023.
- **Associate Professor**, The University of Texas at Tyler, 2014–2020.
- **Assistant Professor**, The University of Texas at Tyler, 2008–2014.
- **Teaching Assistant**, University of Nebraska, 2001–2008

Publications – (*) indicates undergraduate coauthor

- Labelled graphs as a Morita equivalence invariant of inverse semigroups (with Zachary Duah*, Stian du Preez*, Shreyas Ramamurthy*, and Lucas Vega*), *Semigroup Forum* (2025).
- A note on Morita equivalence to graph inverse semigroups (with Martha du Preez*, Robert Grimley*, Evan Lira*, and Shreyas Ramamurthy*), submitted to *Semigroup Forum* in July 2023.
- On the inverse hull of a Markov shift (with Aria Beaupré*, Anthony Dickson*, and Christin Sum*), *International Journal of Algebra and Computation* **32** (2022), no. 5, 969-984.
- On a class of inverse semigroups related to Leavitt path algebras (with John Meakin and Zhengpan Wang), *Advances in Mathematics* **384** (2021).
- Zigzag maps and the path category of an inverse semigroup (with Allan Donsig, Jennifer Gensler*, Hannah King*, and Ronen Wdowinski*), *Semigroup Forum* (2019).
- Classes of uniformly most reliable graphs for all-terminal reliability (with Kassie Archer and Christina Graves), *Discrete Applied Mathematics* **267** (2019) 12-29.
- Condition (K) for inverse semigroups and the ideal structure of their C^* -algebras (with Scott LaLonde and Jamie Scott*), *Journal of Algebra*, **523** (2019), 119-153.
- Amenability and uniqueness for groupoids associated with inverse semigroups (with Scott LaLonde), *Semigroup Forum*, **95** (2017), no. 2, 321-344.
- Joins and cover in inverse semigroups and tight C^* -algebras (with Allan Donsig), *Bulletin of the Australian Mathematical Society*, **90** (2014), no. 1, 121-133.
- Reliability polynomials having arbitrarily many inflection points (with Christina Graves), *Networks*, **64** (2014), no. 1, 1-5.
- On inverse semigroup C^* -algebras and crossed products (with Benjamin Steinberg), *Groups, Geometry, and Dynamics*, **8** (2014), no. 2, 485-512.
- The stick number for the simple hexagonal lattice (with C. Mann and J McLoud-Mann), *Journal of Knot Theory and Its Ramifications*, **21** (2012), no. 14, 15pp.

- C^* -algebras of inverse semigroups: amenability and weak containment, *Journal of Operator Theory*, **63** (2010), no. 2, 317-332.

Student Publications

- On the long-repetition-free 2-colorability of trees (J. Antonides*, C. Kiers*, N. Yamzon*), *Rose Hulman Undergraduate Mathematics Journal*, **18** (2017), no. 1, 262-269.

Grants

- (Co-PI) **REU Site: Algebra, Analysis, and Combinatorics at UT Tyler** 2025-2027
Proposal for \$377,568 with PI Maddie Dawsey submitted.
- (PI) **2024 College Readiness and Success Models** 2024-2025
Funded for \$ 118,430 by the Texas Higher Education Coordinating Board (with Miriam Rowntree).
- (PI) **REU Site: Algebra, Graphs, and Number Theory at UT Tyler** 2022-2024
Funded for \$311,154 by the NSF (with Co-PI Christy Graves).
- (Co-PI) **Brazos Analysis Seminar** 2020-2022
Conference series funded for \$49,999 by the NSF (with multiple Co-PIs).
- (PI) **Texas Undergraduate Mathematics Conference Grant** 2018-2019
Conference series funded for \$14,553 by the NSF.
- (PI) **Renewal of REU Site at UT Tyler** 2017-2019
Funded for \$254,443 by the NSF (with Co-PI Christy Graves).
- (PI) **Renewal of REU Site at UT Tyler** 2014-2016
Funded for \$258,739 by the NSF (with Co-PI Christy Graves).
- (Senior Personnel) **REU Site at UT Tyler** 2011-2013
Funded for \$213,795 by the NSF.
- (PI) **UT Tyler Faculty Research Grant** 2009
Internal grant funded for \$7,184.

Awards and Honors

- **White Fellowship for Teaching Excellence** 2016
Awarded by UT Tyler to recognize outstanding teachers (\$2500).
- **Research Award** 2014
Awarded by UT Tyler to recognize research accomplishments.
- **IMMERSE Early Career Faculty Fellow** 2011
Designed and taught 6-week graduate algebra course focused on understanding a research paper for incoming graduate students. The project was supported by an NSF grant.
- **Project Next Fellow** 2008-2009
Project NExT (New Experiences in Teaching) is a professional development program for recent math PhDs supported by the Mathematical Association of America.
- **Fields Institute Invited Researcher** 2007

Research Talks

- *Morita equivalence of combinatorial inverse semigroups* 2024
Short talk for the Conference on Theoretical and Computational Algebra in Aveiro, Portugal.
- *Morita equivalence of inverse semigroups associated to cancellative categories* 2022
Invited talk for the AMS Special Session on Algebraic Structures in Topology, Logic, and Arithmetic in El Paso, TX.

- *On inverse hulls of Markov subshifts* 2020
Invited talk for the AMS Special Session on Recent Trends in Semigroup Theory in Denver, CO
- *C*-algebras associated with inverse semigroups and étale groupoids* 2019
Invited talk at Brazos Analysis Seminar in Waco, TX.
- *On non-Hausdorff étale groupoids* 2019
Invited talk at International Workshop on Operator Theory and its Applications in Lisbon, Portugal.
- *Condition (K) for inverse semigroups and the ideal structure of their C*-algebras* 2018
Contributed talk at the Great Plains Operator Theory Symposium in Oxford, OH.
- *Partial Symmetries, inverse semigroups, and inverse semigroup algebras* 2017
Invited talk at 2017 Research Symposium for University of Washington Bothell and Seattle University REU groups in Bothell, WA.
- *Amenability and uniqueness for groupoids associated with inverse semigroups* 2016
Invited talk at Spring Central Sectional Meeting in Fargo, ND.
- *Amenability and uniqueness for groupoids associated with inverse semigroups* 2016
Contributed talk at the Joint Mathematics Meetings in Seattle, WA.
- *Finitely aligned semigroupoids and tight C*-algebras* 2014
Contributed talk at the Joint Mathematics Meetings in Baltimore, MD.
- *Tight representations of inverse semigroups* 2012
Contributed talk at the Great Plains Operator Theory Symposium in Houston, Texas.
- *Crossed product results for inverse semigroup algebras* 2012
Invited talk at INFAS in Des Moines.
- *A tour of C*-algebras generated by partial isometries* 2010
Invited talk at SFA department colloquium in Nacogdoches, TX.
- *On the C*-algebras of E-unitary inverse semigroups* 2008
Invited talk at the West Coast Operator Algebra seminar in Flagstaff, AZ.

Mentoring

Research Experience for Undergraduates

- M. Chabaud, S. du Preez, N. Goluboff 2024
Characterizing the inverse semigroups of labelled graph spaces
- Z. Duah, S. du Preez, S. Ramamurthy, L. Vega 2023
Labelled graphs as a Morita equivalence invariant of inverse semigroups
- M. du Preez, R. Grimley, E. Lira, S. Ramamurthy 2022
Morita equivalence to graph inverse semigroups
- A. Beaupre, A. Dickson, and C. Sum 2019
Inverse semigroups associated with Markov shifts
- J. Gensler, H. King, and R. Wdowinski 2018
Zigzag maps and the path category of an inverse semigroup
- T. Arrigoni, A. Black, J. Harter and Y. Perez 2017
Inverse semigroups associated with self-similar graph actions
- C. Bang, J. Scott, and V. Villalobos 2016
Uniqueness theorems for inverse semigroups
- D. Blackwell, C. Hunt, and K. Johnson 2015
Reliability polynomials of simple graphs having arbitrarily many inflection points
- P. Egging, R. Laudone, and A. Owens 2014
Coloring Techniques for Pattern Avoidance over an Infinite Sequence

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- J. Antonides, C. Spychalla, and N. Yamzon 2013
On the long-repetition-free 2-colorability of trees
 - A. Berger, C. Simmons, J. Troyka, and L. White, 2012
Long-square-free words and graph colorings

Service to Students

- Numerous math club talks 2008-2024
- Judge for Lyceum Student Research Showcase 2017-2023
- Putnam Exam advisor 2013-2019
- Organized student conference trips
 - TUMC in Nacogdoches, TX 2018
 - NCUWM in Lincoln, NE 2018
 - JMM in San Diego, CA 2018
 - TUMC in San Antonio, TX 2017
 - TUMC in Beaumont, TX 2016
 - Texas MAA in Abilene, TX 2010
 - TUMC in Huntsville, TX 2009
 - Texas MAA in Denton, TX 2009
- Academic advisor 2008-present
I have advised over 25 students.

Service to Profession

- Invited grant reviewer for the NSF 2019
- Invited Journal Referee
 - Journal of Algebra*
 - Journal of the Australian Mathematical Society*
 - Journal of Operator Theory*
 - Semigroup Forum*
- Judge for Undergraduate Research Poster Session at the Joint Mathematics Meetings 2011-2024
- Conference organizer
 - Executive committee for the TUMC 2013-2020
 - Co-PI for Brazos Analysis seminar 2020-2024
 - Volunteer organizer for Texas Section of the MAA 2011