

Education

- 2021–2023 **Doctor of Philosophy (Mathematics)**, *The Pennsylvania State University*
Dissertation: *Two studies in complexity*. Advisors: Jan Reimann and Linda Westrick.
- 2017–2021 **Master of Arts (Mathematics)**, *The Pennsylvania State University*
Paper: *Hyperbolic dynamical systems*. Advisor: Boris Kalinin.
- 2013–2017 **Bachelor of Science (Pure mathematics)**, *West Chester University of PA*
Other
- 2016 Graduate of Mathematics Advanced Study Semesters (MASS) program at Penn State. Received awards for most difficult projects in geometry (Teichmüller theory) and in algebra (octonions and the E_8 lattice).
- 2011–2012 Coursework in the Department of Music and general education, Princeton University

Research interests

Logic: computable combinatorics, more specifically computability-theoretic aspects of Ramsey theory for countable structures, Weihrauch complexity in reverse mathematics, probabilistic automata and string complexity measures, computable analysis.

Positions held

- 2024–2025 Adjunct Lecturer at La Salle University
- 2018–2022 Instructor (Graduate Teaching Assistant) at Penn State University

Publications

- Indivisibility and uniform computational strength, *Logical Methods in Computer Science* 21(2) (2025). doi:10.46298/lmcs-21(2:22)2025.
- Probabilistic automatic complexity of finite strings, submitted (2024). arXiv:2402.13376. (Latest version available at <https://nowheredense.github.io/PFACcomplexity.pdf>.)
- A note on the indivisibility of the Henson graphs, submitted (2024). arXiv:2310.20097.
- *Two studies in complexity*, Ph.D. dissertation (2023), Penn State University.
- (with D. Costa, V. Davis, G. Hinkle, and L. Reid) Eulerian properties of non-commuting and non-cyclic graphs of finite groups, *Comm. Alg.* 46 (2018), 2659–2665. doi:10.1080/00927872.2017.1392534.
- (with V. Nițică) Signed tilings by ribbon L n -ominoes, n even, via Gröbner bases, *Open Journal of Discrete Mathematics* 6 (2016), 185–206. doi:10.4236/ojdm.2016.63017.

Talks, etc.

- Aug. 2025 National University of Singapore (invited)
- May 2025 AMS Spring Western Sectional Meeting (invited) *On some topological aspects of probabilistic complexity*
- Apr. 2025 AMS Spring Eastern Sectional Meeting (invited) *Weihrauch degrees associated with indivisible structures*
- Mar. 2025 Dagstuhl Seminar 25131 *Pigeonhole principles for countable structures*
- Sep. 2024 Connecticut Logic Seminar (invited) *Indivisibility and Weihrauch complexity*

May 2024	ASL 2024 North American Annual Meeting	<i>Probabilistic automatic complexity</i>
Apr. 2024	AMS Spring Central Sectional Meeting	<i>Indivisibility problems in the Weihrauch framework</i>
Nov. 2023	MAA EPaDel-NJ Section Meeting	<i>Probabilistic automatic complexity</i>
Sep. 2023	Penn State Logic Seminar	<i>Kleene's \mathcal{O}</i>
Apr. 2023	Penn State Logic Seminar	<i>Indivisibility and uniform computational strength</i>
Jan. 2023	Penn State Logic Seminar	<i>Complexity measures for finite strings using probabilistic automata</i>
Oct. 2022	Penn State Logic Seminar	<i>Computable structure theory: existentially atomic models</i>
Mar. 2022	Penn State Logic Seminar	<i>Topological games</i>
Oct. 2021	Penn State Logic Seminar	<i>Point-to-set principle for Hausdorff dimension in Euclidean space</i>

Other

- Invited to and Collector for Dagstuhl Seminar 25131, *Weihrauch Complexity: Structuring the Realm of Non-Computability* (Mar. 2025)
- Invited participant, CBMS Conference on Algorithmic Fractal Dimensions, Drake University (May 2024)
- Referee service for Journal of Symbolic Logic

Teaching

La Salle University, Philadelphia, PA, USA (2024-25)

- MTH 114: Applied Business Calculus (Spring 2025)
Students used a free, open textbook through MyOpenMath. Part of my work involved editing and occasionally creating my own problems for students (which required some light programming).
- MTH 121: Calculus II (Spring 2025)
- MTH 335: Graph Theory (Fall 2024)
This course aimed to give a broad overview of the field, specialized somewhat towards computer science majors, as well as develop students' mathematical creativity and proof-writing skills.
- MTH 101: College Algebra (Fall 2024)

The Pennsylvania State University, University Park, PA, USA (2018-22)

Taught as the instructor of record for 3-8 lecture hours per week (depending on semester) for the courses listed below.

- MATH 251: Ordinary and Partial Differential Equations (Fall 2021 & Fall 2022)
- MATH 220: Matrices (Fall 2020 & Spring 2021, online)
- MATH 41: Trigonometry and Analytic Geometry (Fall 2019)
- MATH 26: Plane Trigonometry (Fall 2018 & Spring 2019)
- MATH 21: College Algebra I (Spring 2018)
- Grader for MATH 403: Classical Analysis I (Fall 2017)
Graded weekly homework for about 45 students in three sections, two regular and one honors.