

Education

- Aug. 2014– **B.S. Computer Engineering and B.S. Mathematics**,
May 2018 *University of Illinois at Urbana-Champaign*
Aug. 2018– **PhD Mathematics**, *Texas A&M University*,
Present Doctoral advisors: Wencai Liu and Frank Sottile

Preprints

- *Irreducibility of the Dispersion Relation for Periodic Graphs*. Matthew Faust, Jordy Lopez Garcia, Feb 2023, DOI: 10.48550/ARXIV.2302.11534
- *Critical Points of Discrete Periodic Operators*. Matthew Faust, Frank Sottile, Preprint, June 2022, DOI: 10.48550/ARXIV.2206.13649.

Publications

- *The Surprising Accuracy of Benford's Law in Mathematics*. Zhaodong Cai, Matthew Faust, A.J. Hildebrand, Junxian Li, Yuan Zhang, *The American Mathematical Monthly*, (2020), DOI: 10.1080/00029890.2020.1690387.
 - *Subject of a 2021 Paul R. Halmos - Lester R. Ford Award*
- *Leading Digits of Mersenne Numbers*, Zhaodong Cai, Matthew Faust, A.J. Hildebrand, Junxian Li, Yuan Zhang, *Experimental Mathematics*, (2019), DOI: 10.1080/10586458.2018.1D551162.

Recent Presentations

- Algebraic Statistics and Our Changing World: Long Program, IMSI Chicago, Illinois, Dec 4, 2023
- SIAM TX-LA: (Complex) analysis in differential equations, Lafayette, Louisiana, November 4, 2023
- SIAM TX-LA: Applications of combinatorial and computational algebraic geometry, Lafayette, Louisiana, November 4, 2023
- Algebraic Statistics and Our Changing World: Long Program, IMSI Chicago, Illinois, October 18, 2023
- Algebraic Statistics and Our Changing World: Apprenticeship week, IMSI Chicago, Illinois, October 4, 2023
- Great Lakes Mathematical Physics (GLaMP), Oberlin Ohio, June 10, 2023
- Copenhagen-Jerusalem Combinatorics Seminar, Zoom, March 30, 2023
- AMS Spring Southeastern Section Meeting, Special Session on Quasi-periodic Schrödinger operators and quantum graphs, Atlanta, GA, March 19, 2023
- JMM AMS Special Session on Applied Enumerative Geometry, Boston, MA, January 4, 2023
- SIAM-TXLA 2022, Houston, Texas, November 5, 2022
- Louisiana State University Applied Analysis Seminar, Baton Rouge, Louisiana, October 11, 2022
- Texas A&M Algebra and Combinatorics Seminar, College Station, Texas, October 7, 2022
- QMath15, Davis, California, September 14, 2022
- Effective Methods in Algebraic Geometry (MEGA), Krakow, Poland, June 23, 2022
- GLaMP, Michigan State University, East Lansing, Michigan, June 11, 2022
- JMM AMS Special Session on Structured Polynomial Systems In Mathematics and Its Applications, Zoom, April 6, 2022
- AMS Spring Sectional, Zoom, March 26, 2022
- Conference on spectral theory of ergodic quantum systems, Zoom, March 12, 2022
- Texas A&M MPHA seminar, College Station, Texas, March 11, 2022
- SIAM TX-LA, South Padre Island, Texas, Nov. 7, 2021
- Texas A&M MPHA seminar, College Station, Texas, April 30, 2021

Conference Organization

- Mini-symposium Organizer: Discrete and Continuous Schrödinger Operators SIAM TX-LA (Nov 3-5 2023).
- Local Organizer: Spectral Theory and Applications at Texas A&M (Oct 13-15 2023).

Recent journal referees

- *The American Mathematical Monthly* (2022).

Teaching Experience

- 2021 Summer **Instructor for Math 142 (Business Calc)**, *Texas A&M University*, College Station, TX
○ Five week course, virtually lectured daily through zoom.
- 2018-present **Teaching Assistant**, *Texas A&M University*, College Station, TX
○ Fall 2023 Math 613 (Graph Theory)
○ Summer 2023: Math 601 (Methods of Applied Mathematics)
○ Summer 2022: Math 308 (Differential Equations)
○ Spring 2022: Math 416 (Modern Algebra II)
○ Fall 2021: Math 147 (Calculus I for Biological Sciences)
○ Spring 2021: Math 415 (Modern Algebra I)
○ Fall 2020: Math 300 (Foundations of Mathematics)
○ Summer 2020: Math 151 (Engineering Mathematics I)
○ Spring 2020: Math 151 (Engineering Mathematics I)
○ Fall 2019: Math 152 (Engineering Mathematics II)
○ Spring 2019: Math 220 (Foundations of Mathematics)
○ Fall 2018: Math 220 (Foundations of Mathematics)
- 2016-2017 **Course Assistant**, *University of Illinois*, Champaign, IL
○ Fall 2017: Math 231 (Calculus II) grader
○ Fall 2016: CS 374 (Introduction to Algorithms) course assistant
○ Spring 2016: CS 374 (Introduction to Algorithms) course assistant

Honors

- 2021 **2021 Paul R. Halmos - Lester R. Ford Award**
- 2018 **Math Algebraic-Combinatorics Scholarship ICLUE**
- 2014–2018 **Edmund J. James Scholar**
- 2014 – 2015 **ECE Grainger Freshman Scholarship**
- 2014 – 2015 **IL Engineering Achievement Scholarship**

Outreach

- Fall 2022 **Directed reading program**, *Texas A&M University*, College Station, TX
○ Led a student through selected readings in the philosophy of mathematics.
- Aug. 2022 – **Liu TAMU REU 2022**, *Texas A&M University*, College Station, TX
May 2023 ○ Ongoing Fall REU project studying Floquet isospectrality on the rectangular lattice.
○ Assisted Professor Wencai Liu and Dr. Rodrigo Matos in leading five students.
- Jun. 2022 – **Sottile TAMU REU 2022**, *Texas A&M University*, College Station, TX
Present ○ Ongoing REU project, with a previous DRP student, studying discrete periodic operators.
○ In the spring, I led the student through *Ideals, Varieties, and Algorithms* by Cox, Little, O’Shea.
○ Currently, we are employing a computational cluster to gather data and build conjectures.
- Spring 2022 **Directed reading program**, *Texas A&M University*, College Station, TX
○ Leading a student reading *Thinking About Mathematics* by Shapiro.
- Fall 2021 **Directed reading program**, *Texas A&M University*, College Station, TX
○ Led a student reading *Topological Crystallography* by Sunada.
○ This reading evolved into an ongoing REU project with the student.
- May 2021 – **Sottile TAMU REU 2021**, *Texas A&M University*, College Station, TX
August 2021 ○ Worked with two students in an REU focused on the application of algebraic geometry to problems in mathematical physics.
- 2020 Spring **Directed reading program**, *Texas A&M University*, College Station, TX
○ Led a student reading *Introduction to Quantum Graphs* by Berkolaiko and Kuchment.
- 2020 **Mentor for Peer Mentoring Program**
- Summer 2019 **Panelist for TAMU REU graduate school discussion panel**

Software Contributions

- NormalToricVarieties package for Macaulay2 (contributor).
- MatrixFactorization package for Macaulay2 (contributor, package in development).