

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

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.

Presentations

- *Irreducibility of Bloch Varieties* (50 minute talk, 50 m.t) Copenhagen-Jerusalem Combinatorics Seminar, Zoom, March 30, 2023
- *Irreducibility of Bloch Varieties* (25 minute talk, 25 m.t) AMS Spring Southeastern Section Meeting, Special Session on Quasi-periodic Schrödinger operators and quantum graphs, Atlanta, GA, March 19, 2023
- *Irreducibility of Bloch and Fermi Varieties* (25 m.t) JMM AMS Special Session on Applied Enumerative Geometry, Boston, MA, January 4, 2023
- *Irreducibility of Bloch and Fermi Varieties* (25 m.t) SIAM-TXLA 2022, Houston, Texas, November 5, 2022
- *Irreducibility of Bloch and Fermi Varieties* (50 m.t) Louisiana State University Applied Analysis Seminar, Baton Rouge, Louisiana, October 11, 2022
- *Irreducibility of Bloch and Fermi Varieties* (50 m.t) Texas A&M Algebra and Combinatorics Seminar, College Station, Texas, October 7, 2022
- *Critical Points of Discrete Periodic Operators (CPoDPO)* (25 m.t) QMath15, Davis, California, September 14, 2022
- *CPoDPO* (25 m.t) Effective Methods in Algebraic Geometry (MEGA), Krakow, Poland, June 23, 2022
- *CPoDPO* (25 m.t) Great Lakes Mathematical Physics (GLaMP), Michigan State University, East Lansing, Michigan, June 11, 2022
- *CPoDPO* (25 m.t) JMM AMS Special Session on Structured Polynomial Systems In Mathematics and Its Applications, Zoom, April 6, 2022
- *CPoDPO* (25 m.t) AMS Spring Sectional, Zoom, March 26, 2022
- *CPoDPO* (25 m.t) Conference on spectral theory of ergodic quantum systems, Zoom, March 12, 2022
- *CPoDPO* (50 m.t) Texas A&M MPHA seminar, College Station, Texas, March 11, 2022
- *CPoDPO* (25 m.t) SIAM TX-LA, South Padre Island, Texas, Nov. 7, 2021
- *CPoDPO* (50 m.t) Texas A&M MPHA seminar, College Station, Texas, April 30, 2021
- *Leading Digit Distribution, Continued Fractions, and Probabilistic Diophantine Approximation* (Poster) UIUC Undergraduate Research Symposium, Champaign, Illinois, April 27, 2017
- *Leading Digit Distribution, Continued Fractions, and Probabilistic Diophantine Approximation* (Poster) Joint Mathematics Meetings, Atlanta, GA, January 6, 2017.
- *A local Benford Law for a class of arithmetic sequences* (20 m.t) Young Mathematicians Conference, Ohio State University, Columbus, OH, August 19-21, 2016.
- *A local Benford Law for a class of arithmetic sequences* (15 m.t) MAA MathFest, Columbus, OH, August 4 - 7, 2016
- *Randomness and regularities in the leading digits of number-theoretic sequences* (20 m.t) Rose-Hulman Undergraduate Mathematics Conference, Terre Haute, IN, April 22-23, 2016.
- *Local and global randomness in the leading digits of arithmetic sequences* (Poster), UIUC Undergraduate Research Symposium, Champaign, Illinois, April 21, 2016.

Mentoring Experience

- Fall 2022 **Directed reading program**, *Texas A&M University*, College Station, TX.
◦ Leading a student through selected readings in the philosophy of mathematics.
- Aug. 2022 – **Liu TAMU REU 2022**, *Texas A&M University*, College Station, TX.
Present ◦ Ongoing Fall REU project studying Floquet isospectrality on the rectangular lattice.
◦ Assisting Professor Wencai Liu in leading five students along with a postdoc.
- 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.

Positions

- 2022 Fall – **Research Assistant**, *Texas A&M University*, College Station, TX.
Present ◦ Conducting research under Wencai Liu and Frank Sottile.
- 2022 Summer **Grader for Math 308**, *Texas A&M University*, College Station, TX.
- 2022 Spring **Grader for Math 416**, *Texas A&M University*, College Station, TX.
- 2021 Fall **TA for Math 147 (Biology Calc)**, *Texas A&M University*, College Station, TX.
- 2021 Summer **Instructor for Math 142 (Business Calc)**, *Texas A&M University*, College Station, TX.
◦ Five week course, virtually lectured daily through zoom.
- 2021 Spring **Grader for Math 415**, *Texas A&M University*, College Station, TX.
- 2020 Fall **Grader for Math 300**, *Texas A&M University*, College Station, TX.
- 2020 Summer **TA for Math 151**, *Texas A&M University*, College Station, TX.
- 2020 Spring **TA for Math 151**, *Texas A&M University*, College Station, TX.
- 2019 Fall **TA for Math 152**, *Texas A&M University*, College Station, TX.
- 2019 Spring **Grader for Math 220**, *Texas A&M University*, College Station, TX.
- 2018 Fall **Grader for Math 220**, *Texas A&M University*, College Station, TX.
- Fall 2017 **Grader for Math 231**, *University of Illinois*, Champaign, IL.
- 2016 **Course Assistant for CS 374**, *University of Illinois*, Champaign, IL.

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**.