

Jonah Robinson

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EDUCATION

Texas A&M University, College Station, Texas

Graduation: December 2022

- B.S. in Applied Mathematics (Honors), Concentration: Biological Science
- GPA: 3.824, Major GPA: 3.97

- M.S. in Mathematics
- GPA: 4.0

Graduation (expected): December 2024

RESEARCH EXPERIENCE

Research Assistant

Summer 2022 – Present

Advisors: Frank Sottile, Matthew Faust

- Large-scale experimental study of Bloch varieties of discrete periodic operators using tools from computational and combinatorial algebraic geometry. Computations carried out on the math department's Whistler Computing Cluster.
- Led to a paper [2] currently in preparation as well as ongoing development of a Macaulay2 package.

Spectral Theory of Differential Operators REU

Fall 2022 – Spring 2023

Advisors: Wencai Liu, Rodrigo Matos, Matthew Faust

- Studied Floquet isospectrality of discrete periodic Schrödinger operators with separable potentials. Established existence of separable complex potentials isospectral to the zero potential, resulting in [1].
- Led student group in regular meetings to make observations from computational data and work towards proofs of these observations.

Directed Reading Program

Fall 2021

- Engaged in directed study of *Topological Crystallography with a View Towards Discrete Geometric Analysis* by Toshikazu Sunada
- Gave a twenty-minute presentation on topological crystallography to undergraduates in the mathematics department

PUBLICATIONS & PREPRINTS

1. M. Faust, W. Liu, R. Matos, J. Plute, J. Robinson, Y. Tao, E. Tran, C. Zhuang; Floquet isospectrality of the zero potential for discrete periodic Schrödinger operators. *J. Math. Phys.* 1 July 2024; 65 (7): 073501.
2. M. Faust, J. Robinson, F. Sottile, The critical point degree of a periodic graph, in preparation

CONFERENCES & WORKSHOPS

SIAM TX-LA 7-th Annual Meeting

October 2024

Minisymposium on Periodic Operators

- Presented “The Critical Point Degree of a Periodic Graph”, slides

TEXAS ALGEBRAIC GEOMETRY SYMPOSIUM

April 2024

Joint between Texas A&M, Rice University, and University of Texas at Austin

- Presented “Discrete Invariants of the Dispersion Relation”, poster

TX-LA Undergraduate Mathematics Conference

March 2024

Joint conference by Texas A&M, University of Houston, and Louisiana State

- Presented “Floquet Isospectrality of the Zero Potential for Discrete Periodic Schrödinger Operators”, slides (joint)

SIAM TX-LA 6-th Annual Meeting October 2023
Minisymposium on Applications of Combinatorial and Computational Algebraic Geometry
 • Presented “Invariants of the Dispersion Relation for Discrete Periodic Operators”, slides

Joint Mathematics Meetings Poster Presentation January 2023
Pi Mu Epsilon Student Poster Session
 • Presented “Discrete Invariants of the Dispersion Relation”, poster

Texas State Math Physics Summer School July 2023, June 2024
 • Participated in week-long mini courses on various special topics in mathematical physics

WORK & VOLUNTEER EXPERIENCE

Graduate Teaching Assistant Fall 2024
Texas A&M Department of Mathematics
 • Led recitations and python coding labs, graded quizzes, and proctored exams for Engineering Calculus I (MATH 151)

Grader Fall 2022 – Spring 2024
Texas A&M Department of Mathematics
 • Undergraduate Courses: Differential Equations (MATH 308), Business Calculus (MATH 142), Foundations of Mathematics (MATH 300), Complex Variables (MATH 407), Modern Algebra I (MATH 415)

Help Session Tutor Spring 2022 – Summer 2022
Math Learning Center, Texas A&M Department of Mathematics
 • Led weekly help sessions for Calculus II for Biological Sciences (MATH 148) and Linear Algebra (MATH 304)

Texas A&M Math & Stats Fair Spring 2022, Spring 2023
Texas A&M Department of Mathematics
 • Assisted with various activities involving geometric models with students K-12 from College Station and surrounding areas.

Emergency Medical Technician Training Summer 2020 – Spring 2021
Texas A&M Engineering Extension Service
 • Completed didactic course and laboratory on emergency medical response and care
 • Rotated through St. Joseph’s emergency department and emergency medical response posts throughout Brazos county and surrounding rural counties, responding to 911 calls and assisting with patient care and transport

Peer Recruiter Summer 2021 – Fall 2021
Texas A&M Office of Admissions
 • Helped coordinate recruitment events for Texas A&M Office of Admissions, including student panels
 • Interacted directly with prospective students and parents during these events to answer questions and teach about the many opportunities present at Texas A&M.

HONORS & AWARDS

Department of Mathematics Classroom Excellence Award Spring 2022, Fall 2022
Mathematics Departmental Honors Spring 2021 – Fall 2022
Maroon and White Leadership Fellow Spring 2021
Aggie Research Scholar Fall 2020 – Spring 2021
Texas A&M Regents Scholar Fall 2018 – Spring 2022

LEADERSHIP

Beta Tau Omega Fraternity, Inc.

President

Multicultural Fraternity

Spring 2021 – Fall 2021

- Served as the official liaison between the organization and University faculty, Multicultural Greek Council, and Asian Presidents Council
- Oversaw organization projects and events such as our Gastric Cancer Philanthropy Week and our Memorial Scholarship, awarded each year to a student with outstanding contributions to the advancement of the Texas A&M APIDA community
- Led the organization of the Beta Tau Omega 25th Year Banquet with a budget of \$9000.

PROGRAMMING

Proficient in Python, Macaulay2, SageMath, MATLAB; competent in C++ and R
Experience with parallel computing and computational clusters