SHAMUEL AUYEUNG

Trinity College
Department of Mathematics

CONTACT INFORMATION

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EDUCATION

Ph.D., Mathematics, Stony Brook University — **August 2017 - August 2023**
Advisor: Mark McLean
Thesis: Local and Fixed-Point Floer (Co)homologies

B.S., Mathematics with honors, Calvin College — **September 2012-May 2017**
Thesis advisor: Christopher Moseley

B.A., Philosophy with honors, Greek, Calvin College — **September 2012-May 2017**
Thesis advisor: Lee Hardy

TEACHING

Trinity College:

- **Math 231 - Multivariable and Vector Calculus, lead instructor** — **Fall 2023**

Stony Brook University:

- **MAT 132 - Calculus II, TA** — **Spring 2023**
- **MAT 122 - Overview of Calculus with Applications, TA** — **Fall 2022**
- **MAT 131 - Calculus I, TA** — **Fall 2021**
- **MAT 203 - Calculus III with Applications, TA** — **Fall 2020**
- **MAT 126 - Calculus II, lead instructor** — **Summer 2020**
- **MAT 122 - Overview of Calculus with Applications, TA** — **Fall 2019**
- **MAT 123 - Precalculus, TA** — **Fall 2019**
- **MAT 312 - Applied and Abstract Algebra, lead instructor** — **Summer 2019**
- **MAT 123 - Precalculus, TA** — **Spring 2019**
- **MAT 131 - Calculus I, TA** — **Fall 2018**
- **MAT 118 - Mathematical Thinking, lead instructor** — **Summer 2018**
- **MAT 123 - Precalculus, TA** — **Spring 2018**
- **MAT 310 - Linear Algebra with Proofs, TA** — **Fall 2017**

Educational Talks (I-STEM High School Program)

- ***Complex Numbers, a Counting Problem, and Messy Data*** — **Summer 2022**
- ***Graph Theory and Error-Correcting Codes*** — **Spring, Summer 2022**
- ***What is Hamiltonian Mechanics?*** — **Spring 2022**
- ***Introduction to Group Theory and its Uses*** — **Summer 2021**
- ***The Pigeonhole Principle*** — **Summer 2019**
- ***Complex Numbers and Vizualizing Complex Functions*** — **Summers 2018, 2019, 2021**

RESEARCH

Current interests: symplectic geometry: Lagrangian and fixed-point Floer (co)homology; algebraic singularities, Lie algebras from almost complex geometry, string topology

Publications and Preprints:

- **Shamuel Auyeung,** ***Adjacent Singularities, TQFTs, and Zariski's Multiplicity Conjecture.*** **submitted (2023).** https://arxiv.org/abs/2308.13925
- **Shamuel Auyeung, Jin-Cheng Guu, and Jiahao Hu,** ***On the Algebra Generated by*** $\bar{\mu}, \bar{\partial}, \partial, \mu$***.*** ***Complex Manifolds*** **Vol. 10, Iss. 1, (2023).** https://www.degruyter.com/document/doi/10.1515/coma-2022-0149/html**.**
- **Shamuel Auyeung,** ***Local Lagrangian Floer Homology of Quasi-Minimally Degenerate Intersections.*** **To appear in** ***Journal of Topology and Analysis*****, (2023).** https://arxiv.org/abs/2109.03679**.**
- **Shamuel Auyeung, Joshua Ruiter, and Daiwei Zhang.** ***An Algebraic Characterization of Highly Connected 2n-Manifolds. Rose-Hulman Undergraduate Mathematics Journal*****: Vol. 17, Iss. 2 , Art. 5.** https://scholar.rose-hulman.edu/rhumj/vol17/iss2/5**.**
- **Shamel Auyeung and Eric Yu.** ***The Krein Matrix and an Interlacing Theorem. SIAM Undergraduate Research Online Journal*** **Vol. 7.** https://www.siam.org/publications/siuro/volume-7**.**

Academic Talks:

- ***Invitation to Topology via Quantum Computing and the Square-Peg Problem***
  Trinity College **Spring 2023**
- ***Models for Eilenberg-MacLane Spaces using Symmetric Products***
  SBU Graduate Student Seminar **Spring 2023**
- ***Survey of Sheaf Theoretic Approaches to Symplectic/Contact Geometry***
  SBU Student Symplectic Seminar **Fall 2022**
- ***Oriented Cobordism, Genera, and the Hirzebruch Signature Theorem***
  SBU Student Topology Seminar **Fall 2022**
- ***Adjacencies, Multiplicity, and Fixed-Point Floer Cohomology***
  University of Iowa Geometry and Topology Seminar **Fall 2022**
- ***Symplectic Cohomology II: Product Structures, Loop Spaces, and Hochschild Homology***
  SBU Student Symplectic Seminar **Fall 2022**
- ***Symplectic Cohomology I: Reeb Dynamics and Viterbo Functoriality***
  SBU Student Symplectic Seminar **Fall 2022**
- ***Adjacencies, Multiplicity, and Fixed-Point Floer Cohomology***
  Rutgers University: Woodward Research Group **Fall 2022**
- ***Milnor Fibrations, Singularities, and Floer Cohomology***
  SBU Research Spotlight **Fall 2022**
- $\langle k \rangle$***-Manifolds and Framed Cobordism of Cornered Manifolds***
  SBU Floer Homotopy Theory Seminar **Spring 2022**
- ***Framed Cobordism and Thom Spectra***
  SBU Floer Homotopy Theory Seminar **Spring 2022**
- ***Incarnations of McKay Correspondences: Representations and du Val Singularities***
  SBU Graduate Student Seminar **Spring 2022**

- ***Local Lagrangian Floer Homology of Quasi-Minimally Degenerate Intersections***
  Western Hemisphere Virtual Symplectic Seminar **Fall 2021**
- ***Twisted Complexes and Split-Generation for Fukaya Categories***
  SBU RTG Seminar on Homological Mirror Symmetry **Fall 2019**
- ***Morse Homology, Hamiltonian Floer Theory, and Arnold's Conjecture***
  SBU Graduate Student Seminar **Fall 2019**
- ***The de Rham Groupoid***
  SBU RTG Seminar on Higgs Bundles **Fall 2018**
- ***An Introduction to Lie Groups***
  Calvin College Math Colloquium **Spring 2017**
- ***Classification of n-Connected $2n$-Manifolds Via Homotopy Theory***
  Calvin College Math Colloquium **Spring 2015**
- ***An Overview of Zorn's Lemma and its Guises***
  Calvin College Math Colloquium **Spring 2015**
- ***The Krein Matrix and an Interlacing Theorem***
  Calvin College Math Colloquium **Fall 2013**

FURTHER EXPERIENCE

- **Teacher for I-STEM High School Mathematics Program** **Summers 2018-2022**
- **Math Learning Center Tutor** **August 2017 - May 2023**
- **Mathematics Directed Reading Program Mentor** **Spring 2021**
- **Math, Computer Science, and Philosophy Grader at Calvin College** **August 2013 – May 2015**
- **CSU Microwaves Magnetics Lab Intern** **Summer 2012**
- **CSU Extreme Ultraviolet Laser Lab Intern** **Summer 2011**

SERVICE AND OUTREACH

- **SBU Math Day - Session on Hexaflexagons** **October 2022**
- **Tutor for the Calvin Prison Initiative** **June 2015- May 2017**
- **Tutor for WEB Program for Under-privileged Students** **August 2016- May 2017**

HONORS AND AWARDS

- **Barry M. Goldwater Scholarship** **August 2015 - May 2016**
- **NSF REU Fellowship** **Summers 2013, 2014, 2016**
- **NSF Scientific Computing Scholarship** **August 2012 - May 2017**