

# SHAMUEL AUYEUNG

Trinity College  
Department of Mathematics

## CONTACT INFORMATION

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## EDUCATION

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**Ph.D.**, Mathematics, Stony Brook University Auyeung 2017 - May 2023  
Advisor: Mark McLean

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

**B.A.**, Philosophy with honors, Classical Greek, Calvin College September 2012-May 2017

## RESEARCH

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

### Publications and Preprints:

- On the Algebra Generated by  $\bar{\mu}, \bar{\partial}, \partial, \mu$ . With coauthors Jin-Cheng Guu, Jiahao Hu. Submitted. <https://arxiv.org/abs/2208.04890>\*
- Local Lagrangian Floer Homology of Quasi-Minimally Degenerate Intersections. Submitted. <https://arxiv.org/abs/2109.03679>\*
- An Algebraic Characterization of Highly Connected  $2n$ -Manifolds. With coauthors Joshua Ruiter, Daiwei Zhang. *Rose-Hulman Undergraduate Mathematics Journal*: Vol. 17 : Iss. 2 , Article 5. <https://scholar.rose-hulman.edu/rhumj/vol17/iss2/5>\*
- The Krein Matrix and an Interlacing Theorem. With coauthor Eric Yu, *SIAM Undergraduate Research Online Journal* Vol. 7. <https://www.siam.org/publications/siuro/volume-7>

### Seminars Participated In:

- Symplectic Geometry, Gauge Theory, and Low-Dimensional Topology Seminar Fall 2021-2022  
(Co-organizer, 2022)
- Student Symplectic Seminar Fall 2022  
(Co-organizer)
- Stable Homotopy Theory and Complex-Oriented Cohomologies Summer 2022
- Floer Homotopy Theory Seminar Spring 2022
- Western Hemisphere Virtual Symplectic Seminar Spring 2020-Spring 2022  
(online)
- RTG Student Seminar on Modular Forms Spring 2020  
(Co-organizer)
- RTG Student Seminar on Homological Mirror Symmetry Fall 2019  
(Co-organizer)

- Graduate Student Seminar Fall 2017-current

### Academic Talks:

- *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

### Educational Talks (I-STEM):

- *Complex Numbers and an Application to a Counting Problem* 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

## TEACHING (SBU)

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

## FURTHER EXPERIENCE

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- 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

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- 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

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