

MARCUS HOSKINS

mh7567@nyu.edu ◊ New York City, NY, 02453 ◊ <https://marcushoskins.github.io>

EDUCATION

Brandeis University

August 2020 - May 2024

B.S. in Physics, B.S. in Mathematics
Minor in Computer Science
Overall GPA: 3.86

New York University

August 2024 - Present

Ph.D. in Theoretical Physics
Advisor:

GENERAL RESEARCH INTERESTS

Quantum Gravity, Holography

RESEARCH EXPERIENCE

Quantum/Gravity Group

May 2021 - Present

PI: Brian Swingle, Mentors: Cris Zanoci, Brianna Grado-White

Brandeis University

- Simulated data for boundary-driven quantum-chaotic spin chains. Computed the lowest possible temperature allowed in the bulk of such chains.
- Explored the AdS/CFT correspondence in the context of constant time slices of $\text{AdS}_3/\text{CFT}_2$. Learned to differentiate between wormholes of different genera using measurements of mutual information on the boundary.
- Numerically explored the amount of negative energy a bosonic field can carry in a local region of spacetime without boundary conditions. **[Results pending]**

TEACHING EXPERIENCE

PHYS 20A: Waves and Oscillations

August 2021-December 2021

Teaching Assistant

Brandeis University

- Held office hours, graded assignments, and held recitation sections to reinforce learned material.

PHYS 31A: Quantum Theory I

January 2022-May 2022

Teaching Assistant

Brandeis University

- Held office hours and graded assignments.

PHYS 31B: Quantum Theory II

August 2022-December 2022

Teaching Assistant

Brandeis University

- Held office hours, graded assignments, and held recitation sections to reinforce learned material and cover supplementary material.

PHYS 102A: General Relativity

January 2023-May 2023

Teaching Assistant

Brandeis University

- Held office hours, graded assignments, and held recitation sections to reinforce learned material and cover supplementary material.

PHYS 31B: Quantum Theory II

August 2023-December 2023

Teaching Assistant

Brandeis University

- Held office hours, graded assignments, and held recitation sections to reinforce learned material and cover supplementary material.

PHYS 19B: Physics Laboratory II

Teaching Assistant

January 2024-May 2024

Brandeis University

- Held office hours, graded assignments, and held lab sections for students to collect data and learn how to perform scientific experiments and write reports of their data.

WORK AND SERVICE EXPERIENCE

Community Advisor

Department of Community Living

August 2021-Present

Brandeis University

- A community advisor (CA) is similar to a residential advisor (RA) at other institutions. My job is to foster community among residents living in a particular building on campus. I do this through monthly social events and in my interactions with them. I also am tasked with conflict mediation and performing rounds throughout our quad, to ensure the safety of our students.

Undergraduate Departmental Representative

Physics Department

January 2021-October 2023

Brandeis University

- As an Undergraduate Departmental Representative (UDR), I advocated for students to the physics faculty and staff. I would host monthly social events to foster community among the physics undergraduates and hold instructional events to help get undergraduates involved in research on campus. I would also hold events to help undergraduates prepare for graduate school.

PROFESSIONAL ACTIVITIES AND AWARDS

Seminars

Swingle Mingle, April 2023
 New England Strings, April 2023
 It from Qubit, Summer 2023
 Harvard UQM Meeting, September 2023
 Minicourse on Gravitational Algebras and Generalized Entropy, October 2023
 Celestial Holography Workshop, October 2023
 Arithmetic Quantum Field Theory Program, Feb-March 2024

Awards

Elihu A. Silver Prize for showing "excellence in scientific research", 2023
 Shining Star Award, 2023
 CA of the Year, 2024
 Faculty Prize for Outstanding Teaching by an Undergraduate, 2024
 Physics Faculty Prize for "excellence in Physics", 2024

Talks and Presentations

Brandeis SciFest, 2022 [Poster]
 Brandeis SciFest, 2023 [Poster]
 URCC Undergraduate Research Symposium, 2024 [Presentation]
 Undergraduate Thesis Defense [Poster][Thesis]

INDEPENDENT STUDIES

Reading Group

Summer 2023

- *Geometry, Topology, and Physics*, Nakahara

Directed Reading

August 2023-December 2023

- QFT 2 (following MIT OpenCourseWare) with Brian Swingle

Directed Reading

January 2024-May 2024

- Twistor Theory (following Huggett and Tod) with Matt Headrick