Liza Rozenberg
Cambridge, MA — erozenberg@g.harvard.edu — (929) 319-8011

EDUCATION

Harvard University, Cambridge, MA — Sept. 2022 — Present
PhD in Physics
Advisor: Daniel Jafferis

Princeton University, Princeton, NJ — Sept. 2018 — May 2022
AB in Physics
Senior Thesis title: "Probing microstates of near-extremal black holes using n-point correlators in Jackiw-Teitelboim gravity and supersymmetric theories."

RESEARCH EXPERIENCE

Graduate research assistant — Cambridge, MA
Physics Department, Harvard University — Sept. 2022 - Present
Advisor: Prof. Daniel Jafferis

- Analyzed a tensor model based on CFT 3-point function coefficients with potential constructed from a minimum number of CFT constraints.
- Showed this model is dual to 3d gravity by showing a correspondence between Feynman rules in the tensor model and geometric rules for 3-manifolds.
- Studied the Feynman diagrams for this model and showed that all closed connected 3-manifolds with anti-de Sitter (AdS) boundaries contribute to the gravitational path integral.

Undergraduate research assistant — Princeton, NJ
Physics Department, Princeton University — June 2021 - July 2022
Advisor: Prof. Juan Maldacena

- Obtained an exact expression for the quantum gravity 4-point function in JT gravity, analyzed its large time behavior and other limiting behaviors to understand what quantum features remain and why
- Working to understanding boundary propagators for supersymmetric actions, in particular for theories with $\mathcal{N} = 2$ supersymmetry.

Undergraduate research assistant — Princeton, NJ
Physics Department, Princeton University — Feb. - May 2021
Advisor: Prof. Igor Klebanov

- Obtained exact expressions for free energy and 2-point functions in the large N limit for real, complex and Grassmann tensor models under quartic interaction.
- Learned how to use perturbative expansion and Feynman graphs for analysis of these objects.

Undergraduate research assistant — Princeton, NJ
Physics Department, Princeton University — Sept. - Dec. 2020
Advisor: Prof. Herman Verlinde

- Studied the Unruh effect in Rindler space and explored its extension to the Hawking effect in curved space.
- Developed a mathematical analogy between Rindler space and optical cavity to show how the equivalent of Unruh temperature can be detected in a laboratory setting.

PUBLICATIONS

Daniel L. Jafferis, **Liza Rozenberg**, Gabriel Wong *3d Gravity as a random ensemble*, arXiv:2407.02649 [hep-th]
Henry W. Lin, Juan Maldacena, **Liza Rozenberg**, Jieru Shan *Holography for people with no time*, SciPost Phys. 14 (2023) 6, 150, SciPost Phys. 14 (2023) 150
Henry W. Lin, Juan Maldacena, **Liza Rozenberg**, Jieru Shan *Looking at supersymmetric black holes for a very long time*, SciPost Phys. 14 (2023) 5, 128, SciPost Phys. 14 (2023) 128

TEACHING EXPERIENCE

Teaching assistant — Cambridge, MA
Physics Department, Harvard University — Sept. - Dec. 2022
Course: PHYSICS 287A Introduction to String Theory

- Prepared and taught weekly sections, held weekly office hours to help with homework and understanding the material.
- Graded problem sets and final presentations.

Physics Tutor — Princeton, NJ
Physics Department, Princeton University — Sept. 2020 - May 2022

- Helped undergraduate students with understanding the material in advanced physics courses such as Classical Mechanics, Advanced Electromagentism, and Quantum Mechanics.

CONFERENCES AND WORKSHOPS

Speaker, Informal talk about *3d Gravity as a random ensemble* at Center for Theoretical Physics (CTP) at MIT, Cambridge, MA — July 2024
Attendee, Workshop on Spacetime and Quantum Information, IAS, Princeton, NJ — Dec. 2023
Attendee, Towards the beginning of time: Cosmology at high energies, Princeton Center for Theoretical Science (PCTS), Princeton, NJ — Nov. 2023
Attendee, Workshop on von Neumann algebras in Quantum Field Theory & Gravity, NYU Abu Dhabi Institute in New York, New York, NY — Aug. 2023
Attendee, online, It From Qubit 2023, Perimeter Institute, Waterloo, Canada — July 2023
Attendee, online, Strings 2023, Perimiter Institute, Waterloo, Canada — July 2023
Attendee, It From Qubit: Workshop on Spacetime and Quantum Information, IAS, Princeton, NJ — Dec. 2022

AWARDS AND FELLOWSHIPS

William R. Hearst III Research Fellowship in Physics for graduate students in theoretical physics. *Harvard Kenneth C. Griffin Graduate School of Arts and Sciences, Harvard University, Cambridge, MA* — Sept. 2023 - June 2024

The Manfred Pyka Memorial Physics Prize for excellence in course work and promise in independent research. *Physics Department, Princeton University* — July 2020, July 2021

The Bell-Burnell Physics Award to inspire future generations of women scientists. *Physics Department, Princeton University* — July 2019, July 2020

SKILLS

- **Relevant Coursework:**
  Physics: Advanced Electromagnetism, Advanced General Relativity, Classical Mechanics, Differential Geometry, Holography and the Infrared Structure of Gravity, Quantum Mechanics I & II, Quantum Field Theory I & II, String Theory, Statistical Mechanics
  Mathematics: Abstract Algebra, Complex Analysis, Differential Geometry, Partial Differential Equations, Probability and Stochastic Systems, Quantum Topology, Real Analysis, Riemann Surfaces, Topology
- **Programming:** LaTeX, Mathematica, Python.