

# Josh Ott

Ph.D. Student, MIT Center for Theoretical Physics  
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## Education

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|--|-------------|
| <b>Massachusetts Institute of Technology</b><br>Ph.D. in Physics                                   | 2025 –      |
| <b>North Carolina State University</b><br>B.S. Physics, B.S. Mathematics<br><i>Summa cum laude</i> | 2021 – 2025 |

## Research Experience

|  |                   |
|--|-------------------|
| <b>North Carolina State University</b> , Undergraduate Researcher<br><i>Advisors:</i> Prof. Vladimir Skokov, Prof. Thomas Schäfer<br>Determined the dynamical critical exponent of the Model H universality class non-perturbatively.<br>Applied fluid simulation methods to solve stochastic partial differential equations on GPU. | 01/2022 –         |
| <b>CERN</b> , Summent Student<br><i>Advisors:</i> Dr. Mateusz Fila, Dr. Benedikt Hegner<br>Contributed to the development of a task-scheduling framework in Julia aimed at high-energy physics applications.   | 06/2024 – 08/2024 |
| <b>Brookhaven National Laboratory</b> , DOE SULI Intern<br><i>Advisor:</i> Dr. Swagato Mukherjee<br>Analyzed lattice QCD data to extract proton energies from hadron correlators at various momenta.   | 06/2023 – 08/2023 |

## Publications

- C. Chattopadhyay, **J. Ott**, T. Schäfer, and V. V. Skokov. “Critical fluid dynamics in two and three dimensions”. *Phys. Rev. D* 111.3 (2025), p. 034026. [arXiv:2411.15994]
- C. Chattopadhyay, **J. Ott**, T. Schäfer, and V. V. Skokov. “Simulations of Stochastic Fluid Dynamics near a Critical Point in the Phase Diagram”. *Phys. Rev. Lett.* 133.3 (2024), p. 032301. [arXiv:2403.10608]
- C. Chattopadhyay, **J. Ott**, T. Schäfer, and V. Skokov. “Dynamic scaling of order parameter fluctuations in model B”. *Phys. Rev. D* 108.7 (2023), p. 074004. [arXiv:2304.07279]

## Awards

|  |             |
|--|-------------|
| <b>Dean of Science Fellowship</b><br>Massachusetts Institute of Technology           | 2025 – 2028 |
| <b>Graduate Research Fellowship Honorable Mention</b><br>National Science Foundation | 2025        |
| <b>Senior Award for Outstanding Research</b><br>NCSU College of Sciences             | 2025        |
| <b>Astronaut Scholarship</b><br>Astronaut Scholarship Foundation                     | 2024        |
| <b>McCormick Symposium Poster Award, first place</b><br>NCSU Department of Physics   | 2024        |

## Funding

|   |      |
|---|------|
| <b>PKP Graduate Fellowship</b> (\$8,500), Phi Kappa Phi                                     | 2025 |
| <b>Provost's Professional Experience Program</b> (\$2,000), North Carolina State University | 2024 |
| <b>NSF CERN REU</b> (\$5,000), University of Michigan                                       | 2024 |
| <b>Research Assistantship</b> (\$1,600), NCSU Office of Undergraduate Research              | 2023 |

## Presentations \_\_\_\_\_

### Talks

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|---|---------|
| NCSU Physics Department McCormick Symposium, Raleigh, NC .....                    | 04/2025 |
| “How to simulate a boiling plasma of quarks and gluons”                           |         |
| Mathematics Honors Presentations, Raleigh, NC .....                               | 04/2025 |
| “Simulating stochastic diffusion in critical fluids”                              |         |
| APS Division of Nuclear Physics Fall Meeting, Boston, MA .....                    | 10/2024 |
| “Simulating stochastic fluid dynamics near a critical point in the phase diagram” |         |
| Astronaut Scholar Technical Conference, Houston, TX .....                         | 08/2024 |
| “Simulating the Critical Dynamics of Quark-Gluon Plasma”                          |         |
| University of Michigan CERN REU Final Presentations, Geneva, CH .....             | 08/2024 |
| “Graph-based Task Scheduling on Heterogeneous Resources”                          |         |
| CERN Software Frameworks & Tools Group Meeting, Geneva, CH .....                  | 08/2024 |
| “Graph-based Task Scheduling on Heterogeneous Resources”                          |         |
| HPC Research Symposium, Raleigh, NC .....   | 04/2024 |
| “Simulating stochastic fluid dynamics with GPUs on Hazel”                         |         |

### Posters

|   |         |
|---|---------|
| U.S. Astronaut Hall of Fame Induction Weekend, Cape Canaveral, FL ..... | 05/2025 |
| “Nonequilibrium Dynamics in Model H”                                    |         |
| NCSU Spring Undergraduate Research Symposium, Raleigh, NC .....         | 04/2024 |
| “Nonequilibrium Dynamics in Model H”                                    |         |
| NCSU Physics Department McCormick Symposium, Raleigh, NC .....          | 04/2024 |
| “Nonequilibrium Dynamics in Model H”                                    |         |
| BNL Summer Symposium, Upton, NY .....                                   | 08/2023 |
| “Determination of proton mass from lattice QCD”                         |         |

## Relevant Courses \_\_\_\_\_

**Physics:** Classical Mechanics I & II | Electromagnetism I & II | Quantum Mechanics I & II | Thermal Physics

**Math:** Complex Variables\* | Introduction to Topology\* | Introduction to Manifold Theory\* | Lie Groups & Lie Algebras\* | Probability & Stochastic Processes\*

**Computer Science:** C and Software Tools | Data Structures and Algorithms | Theory of Computation | Quantum Computing\*

\*: Graduate course

## Service \_\_\_\_\_

### **Undergraduate DEI Committee**

Collaborated with other students to form a committee now proposing and implementing departmental changes related to diversity, equity, and inclusion to improve the physics community.

### **President – Society of Physics Students**

08/2022 – 05/2023

I worked with my fellow officers to organize club meetings and create a welcoming environment for other physics students.

- Awarded 2022–23 Notable Chapter by SPS National