

Josh Ott

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

Massachusetts Institute of Technology

2025 –

Ph.D. in Physics

North Carolina State University

2021 – 2025

B.S. Physics, B.S. Mathematics

Summa cum laude

Awards

Dean of Science Fellowship

2025 – 2028

Massachusetts Institute of Technology

Graduate Research Fellowship Honorable Mention

2025

National Science Foundation

Senior Award for Outstanding Research

2025

NCSU College of Sciences

Astronaut Scholarship

2024

Astronaut Scholarship Foundation

McCormick Symposium Poster Award (*first place*)

2024

NCSU Department of Physics

Publications

— Articles

- C. Chattopadhyay, R. Maguire, **J. Ott**, T. Schaefer, and V. V. Skokov. “Critical dynamics of the superfluid phase transition in Model F” (Mar. 2026). [arXiv:2603.21479]
- C. Chattopadhyay, **J. Ott**, T. Schaefer, and V. V. Skokov. “Transport properties of stochastic fluids”. *Phys. Rev. D* 112.11 (2025), p. 114026. [arXiv:2510.12557]
- 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]

— Proceedings

- M. Fila, B. Hegner, O. Shchur, and **J. Ott**. “R&D towards heterogeneous frameworks for future experiments”. *EPJ Web Conf.* 337 (2025), p. 01069.
- C. Chattopadhyay, **J. Ott**, T. Schaefer, and V. Skokov. “Simulating stochastic fluid dynamics” (Aug. 2025). *31st International Conference on Ultra-relativistic Nucleus-Nucleus Collisions*. [arXiv:2509.00545]

Research Experience

North Carolina State University, Undergraduate Researcher

01/2022 – 08/2025

Advisors: Vladimir Skokov, Thomas Schäfer

Determined the dynamical critical exponent of the Model H universality class non-perturbatively.

Applied fluid simulation methods to solve stochastic partial differential equations on GPU.

CERN, Summer Student

06/2024 – 08/2024

Advisors: Mateusz Fila, Benedikt Hegner

Contributed to the development of a task-scheduling framework in Julia aimed at high-energy physics applications.

Brookhaven National Laboratory, DOE SULI Intern

06/2023 – 08/2023

Advisor: Swagato Mukherjee

Analyzed lattice QCD data to extract proton energies from hadron correlators at various momenta.

Funding

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

Presentations

— Talks

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”	

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.