

Connor Hainje

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Education

PhD (2022–present), New York University, Physics.

Advisors David W. Hogg, Glennys R. Farrar.

AB 2021, Princeton University, Physics (*cum laude*).

Minors Applied & Computational Mathematics, Applications of Computing.

Thesis *Effects of dark matter self-interaction on the evolution of the Sagittarius stream.*

Advisor Mariangela Lisanti.

Honors

Outstanding Student Instructor Award, New York University, 2024.

Shenstone Prize for Excellence in Physics Research, Princeton University, 2021.

Princeton University Dept. of Computer Science Student Teacher Award, 2021.

Shenstone Prize for Excellence in Physics Research, Princeton University, 2020.

Grants & fellowships

NSF Graduate Research Fellowship (GRFP), 2024–2027.

Refereed publications

1. Hainje, C., Nizinski, C., Jackson, S., Clark, R., Heller, F., Schwerdt, I., Buck, E., Meier, D., & Hagen, A., 2023, *Investigation of process history and underlying phenomena associated with the synthesis of plutonium oxides using Vector Quantizing Variational Autoencoder*, J. Chemom. Intell. Lab. Syst. **240** 104909 (arXiv:2212.00887).
2. Hainje, C., Slone, O., Lisanti, M., & Erkal, D., 2025, *Effects of Dark Matter Self-Interactions on Sagittarius and its Stream*, Astrophys. J. **993** 1 (arXiv:2503.15589).

Submitted publications

Hainje, C. & Farrar, G. R., 2026, *A New Method to Simulate Dark Matter-Baryon Interactions and Application to an Isolated Disk Galaxy*, submitted to Astrophys. J. (arXiv:2603.24688).

Unrefereed publications

Hagen, A., Jackson, S., Kahn, J., Strube, J., Haide, I., Pazdernik, K., & Hainje, C., 2021, *Accelerated Computation of a High Dimensional Kolmogorov-Smirnov Distance* (arXiv:2106.13706).

Hainje, C. & Hogg, D. W., 2025, *A formula for the area of a triangle: Useless, but explicitly in Deep Sets form* (arXiv:2503.22786).

Other research experience

Flatiron Institute, Center for Computational Astrophysics

Guest Researcher, Collaborators: Kishalay De, David W. Hogg, Viraj Karambelkar, Mariangela Lisanti, Andrew Saydjari, Oren Slone, 2022–present.

Pacific Northwest National Laboratory

Post-Bachelors Research Associate, Advisors: Jan Strube, Alexander Hagen, 2021–2022.

Technical Intern, Advisor: Jan Strube, 2020.

Student Undergraduate Laboratory Internship, Advisor: Jan Strube, 2019.

Princeton University

Applied & Computational Mathematics Independent Project, *Developing a Solver for Inelastic Neutrino-Nucleon Scattering in Core-Collapse Supernovae*, Advisor: Adam Burrows, 2020–2021.

Junior Paper, *Toward quantification of the presence of the polarized dust foreground in cleaned SPIDER CMB maps*, Advisor: William Jones, 2020.

Junior Paper, *Black hole ringdown and gravitational waves: a review*, Advisor: Herman Verlinde, 2019.

Open-source software

`talltable`, pipeline for refactoring the SPHEREx data into a SQL-queryable table.

`gizmo-public`, GIZMO fork with dark matter–baryon interactions, for Hainje & Farrar 2026.

Teaching experience

New York University

Teaching Assistant, Astrophysics, Prof. Y. Ali-Haïmoud, Fall 2025.

Teaching Assistant, Graduate Classical & Quantum Mechanics I, Prof. M. Kleban, Fall 2023.

Princeton University

Student Teacher, Algorithms & Data Structures, Prof. K. Wayne, Spring 2019–Spring 2021.