

# Evan Coleman

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## OVERVIEW

Evan Coleman is a research scientist at MIT, where he works on applying machine learning to problems in the physical sciences. His research has spanned a wide range of application areas including using reinforcement learning to optimize NMR spectroscopy, training large-scale masked auto-encoders on geospatial data, and building AI agents for scientific research. Prior to MIT he was a theoretical physicist at Stanford and Brown. His work has been recognized at venues such as ICML, AAAI, and the Journal of High Energy Physics.

## EDUCATION

### Stanford University, Stanford, CA

*Ph.D.* in Theoretical Physics

2018 – 2022

- Thesis: Finite-Volume Holography and the Cosmological Constant
- Advisor: Eva Silverstein

### Brown University, Providence, RI

*Sc.B. (Honors)* in Mathematical Physics

2014 – 2018

- Magna Cum Laude, Sigma Xi, Top of Class (Physics)
- Cumulative GPA: 4.00 / 4.00
- Physics GRE: 970 / 990

## EXPERIENCE

### Massachusetts Institute of Technology (MIT), Research Scientist

2022 – Present

Postdoctoral Fellow then Research Scientist within the MIT Climate Project. Research in building physics-aware AI systems. Focus on reinforcement learning and machine learning methods applied to problems in material identification, mapping, and characterization.

### Stanford Institute for Theoretical Physics, NSF Graduate Research Fellow

2018 – 2022

Conducted doctoral research on quantum gravity and string theory, focusing on theoretical frameworks consistent with the universe's accelerated expansion and the construction of inflating cosmologies.

### CERN, Undergraduate Researcher

2015 – 2018

## PUBLICATIONS

### MACHINE LEARNING

- [1] S. Nair\*, E. Coleman\*, S. Wang, and E. Olivetti, “Masked Mineral Modeling: Continent-scale mineral prospecting via geospatial infilling,” accepted to AAAI2026.
- [2] R. Shenoy\*, E. Coleman\*, H. Gaensbauer, and E. Olivetti, “Counting atoms faster: policy-based nuclear magnetic resonance pulse sequencing for atomic abundance measurement,” accepted to ICML2025.
- [3] R. Shenoy, H. Gaensbauer, E. Olivetti, and E. Coleman, “Optimizing NMR Spectroscopy Pulse Sequencing for Soil Atomic Abundance,” in *Proceedings of “Tackling Climate Change with Machine Learning” at NeurIPS2024*.
- [4] E. Coleman, S. Nair, X. Zeng, and E. Olivetti, “Structured spectral reconstruction for scalable soil organic carbon inference,” in *Proceedings of “Tackling Climate Change with Machine Learning” at ICLR2024*.

### THEORETICAL PHYSICS

- [5] E. Coleman, R.M. Soni, and S. Yang. “On the spread of entanglement at finite cutoff.” *Journal of High Energy Physics*, 2023(5), 1-28.
- [6] E. Coleman, E. Mazenc, V. Shyam, E. Silverstein, R.M. Soni, G. Torroba, and S. Yang. “De Sitter microstates from  $T\bar{T} + \Lambda_2$  and the Hawking-Page transition.” *Journal of High Energy Physics*, 2022(7), 1-32.
- [7] J. Aguilera-Damia, L.M. Anderson, and E. Coleman. “A substrate for brane shells from  $T\bar{T}$ .” *Journal of High Energy Physics*, 2021(5), 1-36.
- [8] E. Coleman and V. Shyam. “Conformal boundary conditions from cutoff  $\text{AdS}_3$ .” *Journal of High Energy Physics*, 2021(9), 1-19.
- [9] E. Coleman, J. Aguilera-Damia, D.Z. Freedman, and R.M. Soni. “ $T\bar{T}$ -deformed actions and  $(1,1)$  supersymmetry.” *Journal of High Energy Physics*, 2019(10), 1-16.

[10] E. Coleman, M. Freytsis, A. Hinzmann, M. Narain, J. Thaler, N. Tran, N., and C. Vernieri. “The importance of calorimetry for highly-boosted jet substructure.” *Journal of Instrumentation*, 13(01), T01003.

#### PATENTS

[11] E. Coleman. “High-Throughput Thermoacoustic Device for Separation of Fluid Dynamical Mixtures.” *U.S. Patent Application 18/211,479*. Allowed Jan. 2026, issuance pending.

#### WHITEPAPERS

[12] K. Daehn, E. Coleman, and F. Allroggen, “Global Bioenergy Availability,” published on *MIT DSpace*. In collaboration with Maersk. January 2025.

[13] M. MacFarlane, R. Jia, ..., E. Coleman, E. Olivetti, and C. Terrer, “Nature-Based Climate Solutions: Current Uncertainties and Data Gaps in the Assessment of Soil Carbon Sequestration Potentials,” published on *MIT DSpace*. In collaboration with Apple, Cargill, and PepsiCo. April 2024.

[14] E. Coleman, A. Tripathy, S. Sroka, et al., “Carbon Credits and Credibility: A Collaborative Endeavour,” published on *MIT DSpace*. In collaboration with IBM and BBVA. September 2023.

#### IN PREPARATION

[15] E. Coleman, E. Olivetti, et al. “Braintrust: social knowledgebases as scientific fiduciaries.”

#### AWARDS & SCHOLARSHIPS

- Cohere for AI Research Grant 2025  
Awarded 1M Chat API calls for LLM research developing agentic workflows for scientific databases
- Impact Fellowship, MIT 2022  
2-year grant to pursue independent postdoctoral research in industrial decarbonization
- Paul H. Kirkpatrick Award for Teaching, Stanford Physics Department 2022  
Top 5 Stanford Physics TA of 2021
- Youth Philanthropist of the Year, National Philanthropy Day Committee 2018  
Cycled 600 mi across Tibet for charity, from Lhasa to Everest base camp to Kathmandu in 10 days
- NSF Graduate Research Fellowship, National Science Foundation 2018  
\$138K grant to pursue Ph.D.
- R. Bruce Lindsay Prize for Excellence in Physics 2018  
Top student in Class of '18, Brown U. Physics Department
- Astronaut Scholar 2017  
Merit-based scholarship
- Goldwater Scholar 2017  
Merit-based scholarship

#### PROFESSIONAL ACTIVITIES

##### REVIEWING

- Reviewer, AAAI2026 2025
- Reviewer, Climate Change AI @ NeurIPS2024 2024
- Reviewer, NSF SBIR Phase I 2023

##### CONFERENCE ORGANIZATION

- Lead Organizer, Data for Circularity Workshop, MCSC Annual Symposium Oct 2023
- Lead Organizer, ML for Climate Workshop, MCSC Annual Symposium Oct 2022

##### COMMUNITY SERVICE

- Volunteer farmhand, Stanford Educational Farm 2020 – 2022
- Exam proctor for blind students, Stanford Physics Department 2022

#### TEACHING

Head Teaching Assistant, Stanford University

2020

PHYSICS121: Advanced Electricity and Magnetism

2019

Head Teaching Assistant, Stanford University

2019

PHYSICS70: Introduction to Special Relativity and Quantum Mechanics

2019

Teaching Assistant, Stanford University

2019

PHYSICS40: Introduction to Classical Mechanics

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|----------------------------------|--|------------------------------|
| <b>ADVISING &amp; MENTORSHIP</b> | Margaret Wang<br>Thesis supervisor.                            | M.Eng. (MIT EECS) '25        |
|                                  | Rohan Shenoy   | B.S. (UC Berkeley EECS) '26  |
|                                  | Sujay Nair   | B.S. (Georgia Tech EECS) '26 |
|                                  | Hans Gaensbauer  | Ph.D (MIT EECS) '26          |
|                                  | Jenny Moralejo<br>Thesis supervisor. Now at Palantir.          | M.Eng. (MIT EECS) '24        |
|                                  | Xinyi Zeng<br>Thesis supervisor. Now at Coho Climate Advisors. | M.Eng. (MIT CEE) '23         |

**LANGUAGES**

- English: Fluent (speaking, reading, writing).
- Spanish: Fluent (speaking, reading, writing).
- Portuguese: Intermediate (reading); basic (speaking, writing).

*[CV compiled on 2026-02-03]*