

Evan Coleman

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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

MIT Climate Project, Research Scientist

2024 – Present

MIT Climate & Sustainability Consortium, Postdoctoral Fellow

2022 – 2024

Stanford Institute for Theoretical Physics, NSF Graduate Research Fellow

2018 – 2022

CERN, Undergraduate Researcher

2015 – 2018

- Research on Applied ML for industrial decarbonization and *in situ* material characterization.
- 2 ML conference publications applying VAEs, physics-informed models, and RL to structured prediction and measurement of soil organic carbon content. 1 patent filed for RL-based device to optimize physical separations of mixed-stream material flows (e.g. “fines” in mining). Forthcoming publications applying RL to NMR pulse sequence optimization for low-field atomic abundance measurement, and generative models to geospatial infilling of mineral resource maps.
- Experience handling high-dimensional data (hyperspectral remote sensing), training policies and models, developing OpenAI gymnasium environments, writing parallelized physical simulations, and incorporating LLM evaluation into training pipelines.
- Current projects developing ML-driven quality assessment for 2D materials (NATMs), soil carbon inference via EMIT hyperspectral satellite data, and agentic interfaces for materials databases. Recipient of Cohere for AI Research Grant.
- Managed students (1 Ph.D., 2 M.S., 2 B.S.) to execute \$600K industry-backed research program.
- Consulted with Apple, Cargill, and PepsiCo to scale environmental data collection using modern ML approaches, for analysis of local conditions driving soil carbon sequestration.

PUBLICATIONS

UNDER REVIEW

- [1] S. Nair*, E. Coleman*, S. Wang, and E. Olivetti, “Masked Mineral Modeling: Continent-scale mineral prospecting via geospatial infilling,” submitted to ICML2025.
- [2] R. Shenoy*, E. Coleman*, H. Gaensbauer, and E. Olivetti, “Counting atoms faster: policy-based nuclear magnetic resonance pulse sequencing for atomic abundance measurement,” submitted to ICML2025.

PUBLISHED

- [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*.
- [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 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.

WHITEPAPERS

- [11] K. Daehn, E. Coleman, and F. Allroggen, “Global Bioenergy Availability,” published on *MIT DSpace*. In collaboration with Maersk. January 2025.
- [12] 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.
- [13] 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.

AWARDS & SCHOLARSHIPS

- Cohere for AI Research Grant 2025
Awarded 1M Chat API calls for LLM research developing agentic workflows for materials databases
- Impact Fellowship, MIT 2022
2-year grant to pursue independent 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

CONFERENCE ORGANIZATION

- Lead Organizer, Data for Circularity Workshop, MIT Climate & Sustainability Symposium Oct 2023
- Lead Organizer, ML for Climate Workshop, MIT Climate & Sustainability Symposium Oct 2022

PAPER REVIEWING

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

COMMUNITY SERVICE

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

TEACHING

- Head Teaching Assistant, Stanford University 2020
PHYSICS121: Advanced Electricity and Magnetism
- Head Teaching Assistant, Stanford University 2019
PHYSICS70: Introduction to Special Relativity and Quantum Mechanics
- Teaching Assistant, Stanford University 2019
PHYSICS40: Introduction to Classical Mechanics

[CV compiled on 2025-04-26]