

Lauren E. Yates

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PROFESSIONAL APPOINTMENTS

University of Notre Dame, Notre Dame, Indiana

Assistant Professor of Physics and Astronomy, August 2025–Present

Fermi National Accelerator Laboratory (Fermilab), Batavia, Illinois

Postdoctoral Research Associate — Neutrino Division, January 2022–July 2025

EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts

Doctorate of Philosophy in Experimental Particle Physics, 2016–2022

Advisor: Professor Janet Conrad

Rice University, Houston, Texas

Bachelors of Science in Physics, *Summa Cum Laude*, Phi Beta Kappa, 2012–2016

RESEARCH POSITIONS

Fermi National Accelerator Laboratory (Fermilab), Batavia, Illinois

Postdoctoral Research Associate — Neutrino Division, January 2022–July 2025

- Worked on Short-Baseline Near Detector (SBND) experiment, which will study neutrinos using liquid argon time projection chamber detector (LArTPC) technology with unprecedented high statistics.
- Co-convened the SBND oscillations working group, focused on leveraging SBND data for constraining systematic uncertainties in multi-detector short-baseline oscillation analyses.
- Co-coordinated the SBND detector commissioning effort. Developed the overall detector commissioning strategy and resource-loaded schedule. Facilitated transition from commissioning to steady-state operations and physics.
- Co-led the SBND TPC commissioning team. Supported and mentored students and postdocs working on TPC commissioning measurements, which verified the health and optimized operational parameters of the TPC for SBND's physics goals. Continuing to serve as co-lead for the SBND TPC system during operations.
- Led testing and installation of SBND high voltage feedthrough and warm components of the drift high voltage system, which is critical for providing the LArTPC's drift electric field that enables particle tracking and calorimetry.

Massachusetts Institute of Technology, Cambridge, Massachusetts

Doctoral Student — Experimental Particle Physics, June 2016–January 2022

- Worked on MicroBooNE experiment, which studies neutrinos and their detection using LArTPC technology.
- Led development of a novel, data-driven method for evaluating systematic uncertainties related to detector modeling in LArTPCs that is now used across MicroBooNE's physics analyses.
- One of the main analyzers on the deep-learning-based search for low-energy electron neutrinos, which was one of the first-generation results on MicroBooNE's flagship analyses. Led evaluation of systematic uncertainties, physics sensitivity, and associated statistical analysis.
- Served as an on-call expert for the detector's PMT system.
- Served as a member of the collaboration production group. Facilitated main results presented at Neutrino 2018. Supported development and validation efforts for MicroBooNE's current major software release.

Rice University, Houston, Texas

Undergraduate Research Assistant — Experimental Particle Physics, June 2015–May 2016

- Worked on Mu2e experiment, which will search for muon-to-electron conversion.
- Developed and tested parts and assembly processes for the detector's momentum tracker, a straw tube drift chamber.
- Work culminated in a bachelors thesis supervised by Professor Marjorie Corcoran.

Indiana University, Bloomington, Indiana

REU Student — Experimental Particle Physics, Summer 2014

- Worked on NOvA experiment, which is measuring long-baseline neutrino oscillations.
- Modeled interaction of cosmic neutrons with the far detector detector and possible shielding materials that could reduce cosmogenic backgrounds.
- Supervised by Professor Mark Messier.

LEADERSHIP ROLES

- Co-lead, SBND first analysis task force, 2025–Present
- Co-convener, SBND oscillations working group, 2024–Present
- Co-lead, SBND TPC operations expert group, 2024–Present
- Co-coordinator, SBND detector commissioning, 2022–Present
- Co-convener, SBND TPC commissioning, 2022–Present
- President, SBN Young organization, 2022–2023
- Co-organizer, Neutrino University summer lecture series, Summer 2022
- Head Academic Fellow, Duncan College Academic Fellows at Rice University, Fall 2014–Spring 2016

AWARDS & HONORS

- Universities Research Association (URA) Tollestrup Award for Postdoctoral Research, 2025
- Leadership Academy for Women in Science and Engineering (LAWISE) Participant, 2022–2023
- MIT Physics Department Graduate Fellowship Recipient, 2016–2021
- Rice University Distinction in Research in Physics Award Recipient, 2015–16
- Rice University Physics Department Bonner Award Recipient, 2013–14 and 2015–16
- Rice University G. C. Phillips Memorial Scholarship Recipient, Summer 2015

TALKS & POSTERS

- Parallel talk, “SBND Detector Commissioning and Early Detector Performance”, 30th International Workshop on Weak interactions and Neutrinos (WIN 2025), June 2025 ([link](#))
- Physics Colloquium at the Georgia Institute of Technology, “Elucidating the Mysteries of Neutrinos with Liquid Argon Detectors at Fermilab”, February 2025
- Physics and Astronomy Colloquium at the University of Notre Dame, “Elucidating the Mysteries of Neutrinos with Liquid Argon Detectors at Fermilab”, January 2025
- Invited Talk, “Building for the Next Generation of Neutrino Discoveries”, Rising Stars in Physics Workshop, September 2024
- Parallel talk, “SBND Cross Section Measurements”, Neutrino Oscillation Workshop (NOW 2024), September 2024 ([link](#))
- Parallel talk, “Status of the Short-Baseline Near Detector at Fermilab”, XVIII International Conference on Topics in Astroparticle and Underground Physics (TAUP 2023), August 2023 ([link](#))
- Plenary talk, “Neutrino Interaction Measurement Capabilities of the SBND Experiment”, 13th International Workshop on Neutrino-Nucleus Interactions in the Few GeV Regions (NuInt 2022), October 2022 ([link](#))
- Plenary talk, “MicroBooNE: Recent Results and a Focus on the Future”, 55th Annual Fermilab Users Meeting, June 2022 ([link](#))
- Nuclear and Particle Physics Seminar at Rice University, “Recent Results from MicroBooNE Addressing the MiniBooNE Anomaly”, February 2022
- High Energy Experimental Physics Seminar at Rutgers University, “Recent Results from MicroBooNE Addressing the MiniBooNE Anomaly”, February 2022
- Nuclear, Particle, Astro, and Cosmology Forum Seminar at the University of Wisconsin at Madison, “Recent Results from MicroBooNE Addressing the MiniBooNE Anomaly”, January 2022
- Experimental Nuclear and Particle Physics Seminar at Massachusetts Institute

- of Technology, “Search for an Anomalous Excess of Charged-Current Quasielastic Electron Neutrino Interactions with the MicroBooNE Experiment Using Deep- Learning-Based Reconstruction”, November 2021
- Plenary talk, “Five Years of MicroBooNE and Beyond in Ten Minutes”, Fermilab New Perspectives Conference, July 2020 ([link](#))
 - Poster, “Novel Approach for Evaluating Detector Systematics in the MicroBooNE LArTPC”, XXIX International Conference on Neutrino Physics and Astrophysics (Neutrino 2020), June 2020 ([link](#))
 - High Energy Physics Seminar at Northwestern University, “Status of the MicroBooNE Experiment”, October 2019
 - Plenary talk, “Status of MicroBooNE and the SBN Program”, Rencontres du Vietnam: Three Neutrinos and Beyond, August 2019 ([link](#))
 - Plenary talk, “Status of MiniBooNE Anomalous Electron-Neutrino-Like Excess and Non-Sterile Explanations”, Rencontres du Vietnam: Three Neutrinos and Beyond, August 2019 ([link](#))
 - Parallel talk, “Constraining Electron Neutrino Systematic Uncertainties with Muon Neutrino Events in MicroBooNE”, American Physical Society (APS) April Meeting, April 2019
 - Parallel talk, “MicroBooNE Search for Low-Energy Excess Using Deep Learning Algorithms”, International Workshop on Neutrinos from Accelerators (NuFACT), August 2018 ([link](#))
 - Poster, “Progress Toward a Deep-Learning-Based Search for Low-Energy Electron Neutrinos in MicroBooNE”, Fermilab Users Meeting, June 2018 ([link](#))
 - Parallel talk, “MicroBooNE Investigation of Low-Energy Excess Using Deep Learning Algorithms”, American Physical Society Division of Particles and Fields (APS DPF) Meeting, August 2017 ([link](#))
 - Poster, “Systematics Studies for MicroBooNE’s Deep-Learning-Based Low-Energy Excess Analysis”, Fermilab Users Meeting, June 2017

SELECTED PUBLICATIONS

- MicroBooNE Collaboration, “Search for an anomalous excess of charged-current quasielastic νe interactions with the MicroBooNE experiment using Deep-Learning- based reconstruction”, *Phys. Rev. D* **105**, 112003 (2022), [arXiv:2110.14080](#).
- MicroBooNE Collaboration, “Search for an Excess of Electron Neutrino Interactions in MicroBooNE Using Multiple Final-State Topologies”, *Phys. Rev. Lett.* **128**, 241801 (2022), [arXiv:2110.14054](#).
- MicroBooNE Collaboration, “Novel approach for evaluating detector-related uncertainties in a LArTPC using MicroBooNE data”, *Eur. Phys. J. C* **82**, 454 (2022), [arXiv:2111.03556](#).
- MicroBooNE Collaboration, “Electromagnetic shower reconstruction and energy validation with Michel electrons and π^0 samples for the deep-learning-based analyses in MicroBooNE”, *JINST* **16** T12017 (2021), [arXiv:2110.11874](#).

- MicroBooNE Collaboration, “Convolutional neural network for multiple particle identification in the MicroBooNE liquid argon time projection chamber”, Phys. Rev. D 103, 092003 (2021), arXiv:2010.08653.
- MicroBooNE Collaboration, “Semantic segmentation with a sparse convolutional neural network for event reconstruction in MicroBooNE”, Phys. Rev. D 103, 052012 (2021), arXiv:2012.08513.

For a complete list of my publications, please see my [INSPIRE HEP](#) page.