

# Rory S. Fitzpatrick PhD

## Education

- M.S. Law**, Northwestern Pritzker School of Law, Chicago, IL 2022  
Studies focused on regulation, intellectual property, and business strategy. Elected by peers to speak on behalf of the MSL program at Northwestern Law's 2022 convocation.
- Ph.D. Physics**, University of Michigan, Ann Arbor, MI 2021  
*Dissertation*: Towards an improved neutrino cross section landscape: First measurements of  $\nu_e$ -argon and monoenergetic  $\nu_\mu$  interactions. Awarded most outstanding Ph.D. thesis in physics at UM.
- A.B. Physics**, Princeton University, Princeton, NJ 2016  
High Honors, Certificate in Applications of Computing.

## Experience

- Senior Advisor**, U.S Department of State, Washington, DC 2022–present  
Managing a technology-focused portfolio in the Bureau of Economic and Business Affairs. Funded by the competitive IEEE-USA Engineering and Diplomacy Fellowship.
- Data Analytics Intern**, Alston & Bird, Washington, DC 2022  
Collaborated with practice groups and departments to understand their needs and identify opportunities where analytics tools can address challenges and improve workflow.
- Research Assistant**, Northwestern Pritzker School of Law, Chicago, IL 2022  
Project management on interdisciplinary research team studying the impact of conversational AI tools for legal services using virtual field experiments. Planning and administrative work for NU's Law and Technology Initiative.
- Graduate Researcher**, University of Michigan, Ann Arbor, MI 2016–2021  
Based full time at Fermilab in Batavia, IL for research 2018-2021. Contributed substantially to five experiments.
- ArgoNeuT*: Designed new technique to perform the world's first measurement of the electron neutrino cross section on argon. Managed software releases updated on a weekly basis with collaboration-wide contributions.
- DUNE*: Implemented a data readout and acquisition system to test prototype photon detector components. Coordinated and negotiated with senior physicists to efficiently achieve R&D goals while working effectively with other subgroups. Conducted hardware tests directly responsible for choice in photon detector readout electronics. Trained and led an undergraduate student team assisting in summer research.
- SBND*: Senior expert in data acquisition tools used during quality control and installation of photon detectors.
- MicroBooNE*: Collaborated to develop and validate analysis software for low-statistics signal searches.
- MiniBooNE*: Designed and implemented novel statistical analysis framework to extract time-dependent signal.
- DarkSide-50, Undergraduate Research**, Princeton University, Princeton, NJ 2014–2016  
Coauthor of collaboration's capstone dark matter search result, based on undergraduate thesis research.
- Research Intern, SuperCDMS**, Fermilab, Batavia, IL 2014  
Competitive Scientific Undergraduate Laboratory Internship sponsored by the DOE.
- Undergraduate Researcher, Lab for Bioinformatics and Functional Genomics**, Princeton University, Princeton, NJ 2013

## Awards and Fellowships

- Engineering and Diplomacy Fellowship**, IEEE-USA 2022
- Kent M. Terwilliger Thesis Prize**, Department of Physics, University of Michigan 2022
- Master of Science in Law Scholarship**, Northwestern Pritzker School of Law 2021
- Helmut W. Baer Fellowship**, Department of Physics, University of Michigan 2016
- Allen G. Shenstone Prize in Physics**, Department of Physics, Princeton University 2016
- Bell-Burnell Summer Undergraduate Award**, Department of Physics, Princeton University 2015
- Kusaka Memorial Prize in Physics**, Department of Physics, Princeton University 2015
- Adler Book Collecting Prize**, Princeton University Library 2013

## Selected Publications

Corresponding author articles are indicated in **bold**; see [INSPIRE](#) for complete list of publications.

- [1] Search for an anomalous excess of inclusive charged-current  $\nu_e$  interactions in the MicroBooNE experiment using Wire-Cell reconstruction  
P. Abratenko *et al.* [MicroBooNE Collaboration]. arXiv:2110.13978 (2021). Submitted to Phys. Rev. D.
- [2] **First measurement of electron neutrino scattering cross section on argon**  
R. Acciarri *et al.* [ArgoNeuT Collaboration]. Phys. Rev. D RC 102 011101 (2020).
- [3] ArgoNeuT Sheds Light on Electron Neutrinos  
R. Fitzpatrick, J. Spitz, and T. Yang, Fermilab News, 2020
- [4] Volume IV. The DUNE far detector single-phase technology  
B. Abi *et al.* [DUNE Collaboration]. JINST 15 T08010 (2020).
- [5] DarkSide-50 532-day dark matter search with low-radioactivity argon  
P. Agnes *et al.* [DarkSide-50 Collaboration]. Phys. Rev. D 98 102006 (2018).
- [6] **First measurement of monoenergetic muon neutrino charged current interactions**  
A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration]. Phys. Rev. Lett. 120 141802 (2018).  
Selected as an Editors' Suggestion and featured in *Physics*.

## Selected Talks and Panels

- [1] Toward Ethical AI: The Role of Soft Law  
MSL Symposium, Northwestern Pritzker School of Law, Chicago, 11 May 2022
- [2] [Omnibuster]: A Platform for Digesting Omnibus Legislation  
MSL Symposium, Northwestern Pritzker School of Law, Chicago, 11 May 2022
- [3] Mobilizing STEM Leadership Panel Series: Women in STEM  
Northwestern MSL and Chicago Public Schools, Chicago, 31 March 2022
- [4] First Measurement of Electron Neutrino Scattering Cross Section on Argon  
International Conference on High Energy Physics, virtual, 29 July 2020
- [5] The DUNE Single Phase Photon Detection System  
20th International Workshop on Next Generation Nucleon Decay and Neutrino Detectors, University of Medellin, Colombia, 7 November 2019
- [6] The Elusive Neutrino  
Saturday Morning Physics Public Lecture, University of Michigan, Ann Arbor, MI, 23 March 2019
- [7] Electron Shower Reconstruction and Selection in LArTPCs  
Workshop on Calibration and Reconstruction for LArTPC Detectors, Fermilab, Batavia, IL, 11 December 2018
- [8] Recent MiniBooNE Results: First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions and a Search for Vector Portal Dark Matter  
Conference on the Intersections of Particle and Nuclear Physics, Palm Springs, CA, 31 May 2018
- [9] First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions  
High Energy Physics Seminar, Princeton University, Princeton, NJ, 9 May 2018

## Teaching

**Physics 236: Life Sciences Lab II**, University of Michigan  
**Paper Creations - The Art of Modular Origami**, Princeton Splash

Winter 2021  
Spring 2013

## Volunteer and Outreach

Northwestern MSL Symposium Working Group  
University of Michigan Society for Women in Physics  
SWIP Organizing Committee, FEMMES Demo Day  
Command Center, Princeton Outdoor Action, Princeton University  
Vice President, Princeton Charter Club, Princeton University

Spring 2022  
2016–2021  
Winter 2016  
2013–2016  
2015–2016