Joshua Spitz
Department of Physics
450 Church Street
Ann Arbor, MI 48109-1040
https://orcid.org/0000-0002-6288-7028
https://inspirehep.net/authors/1054783

Updated: March 1, 2024

734-763-2329
spitzj@umich.edu

Education and Work

- **University of Michigan at Ann Arbor** — Ann Arbor, MI
  Associate Professor of Physics (with tenure) — 2021-present
  Norman M. Leff Assistant Professor of Physics — 2015-2021
- **Massachusetts Institute of Technology** — Cambridge, MA
  Research Scientist — 2014-2015
  Pappalardo Fellow in Physics — 2011-2014
- **Yale University** — New Haven, CT
  PhD, M.Phil., M.S., Physics — 2006-2011
- **University of Colorado at Boulder** — Boulder, CO
  B.A. Physics and Astronomy (double major; *summa cum laude*) — 2002-2006

External Funding

- **DUNE Technical Design, Far Detector (PI)**
  Source: Fermi National Accelerator Laboratory
  Period of award: 7/1/2023-7/31/2024
  Award amount: $37,672
- **Toward a Measurement of the Atmospheric Neutrino Rate over Gigayear Timescales (PI)**
  Source: Gordon E. and Betty I. Moore Foundation
  Period of award: 9/1/2023-8/31/2028
  Award amount: $1,250,000
- **Known-Energy Neutrinos for Studying the Nature of Matter (PI)**
  Source: Heising-Simons Foundation
  Period of award: 1/1/2019-12/31/2024
  Award amount: $988,369 (ammended in 2021 and 2023)
- **DUNE Technical Design, Far Detector (PI)**
  Source: Fermi National Accelerator Laboratory
  Period of award: 1/1/2022-3/31/2023
  Award amount: $73,885
- **Engineering Development for Establishing IsoDAR (PI)**
  Source: National Science Foundation
  Period of award: 5/1/2021-4/30/2023
  Award amount: $400,000
- **Proposal to Study the Properties and Interactions of Elementary Particles (Co-PI)**
  Source: Department of Energy
  Period of award: 4/1/2021-3/31/2024
  Award amount: $6,668,000 [Task N (PI): $478,000]

- **DUNE Technical Design, Far Detector (PI)**
  Source: Fermi National Accelerator Laboratory
  Period of award: 1/1/2020-6/30/2021
  Award amount: $29,200
- **Reconstructing Neutrino Data with the MicroBooNE Liquid Argon Detector (Co-PI)**
  Source: Department of Energy, Argonne Leadership Computing Facility ("Theta" Supercomputer)
  Award given in 2020
  Award amount: 200,000 node hours (computing)
- **DUNE Technical Design, Far Detector (PI)**
  Source: Fermi National Accelerator Laboratory
  Period of award: 10/1/2018-12/31/2019
  Award amount: $57,253
- **Proposal to Study the Properties and Interactions of Elementary Particles (Co-PI)**
  Source: Department of Energy
  Period of award: 4/1/2018-3/31/2021
  Award amount: $7,301,000 [Task N (PI): $315,000]

Selected External Awards and Service

- Gordon and Betty Moore Foundation Experimental Physics Investigator, 2023-present.
- MicroBooNE Physics Advisory Board, 2022-present.
- JSNS^2 Physics Analysis Co-coordinator, 2021-present.
- IsoDAR Co-spokesperson, 2021-present.
- IsoDAR Physics Analysis Coordinator, 2017-2021.
- Institutional Board of JSNS^2, SBN, MicroBooNE, and DUNE.
- Snowmass HEP Community Planning Process Co-convener for the Neutrino Frontier Topical Working Group "Artificial Neutrino Sources: Beams, Reactors, and Novel Sources", 2020-2023.
- DOE Office of Science (High Energy Physics and Nuclear Physics) Panel and/or Mail-in Reviewer, 2017, 2018, 2019, 2021, 2022, 2023.
- DOE/SC CD-2/3C HL-LHC CMS Reviewer, 2023.
- Natural Sciences and Engineering Research Council of Canada (NSERC) Reviewer, 2023.
- Reviewer for Physical Review Letters, Physical Review D, Advances in High Energy Physics, Journal of Instrumentation, Nuclear Instruments and Methods in Physics Research A, and International Journal of Modern Physics A.
- ICARUS Experiment at Fermilab Operational Readiness Reviewer, 2020.
- Co-Host, Snowmass Neutrino Frontier Workshop on Artificial Neutrino Sources (∼100 virtual attendees), 2020.
- Student-nominated for the Golden Apple Teaching Award, University of Michigan, 2017, 2019, 2020.
- MicroBooNE Technical Board, 2016-2020.
- Host, SBND Collaboration Meeting (∼50 attendees) at University of Michigan, 2019.

- Co-Host, 7th LCTP Spring Symposium: Neutrino Physics (∼50 attendees) at University of Michigan, 2019.
- US-Israel Binational Science Foundation Reviewer, 2019.
- DUNE Far Detector Technical Design Report Internal Reviewer, 2019.
- MicroBooNE Talks Committee Chair, 2017-2019.
- Co-Host, Beyond Standard Model Physics with Neutrino Driven Sources Workshop (∼30 attendees) at MIT, 2018.
- Host, MicroBooNE Software Workshop (∼50 attendees) at University of Michigan, 2016.
- Host, JSNS^2 Collaboration Meeting at University of Michigan, 2016.
- Pappalardo Fellowship at MIT, 2011.
- ArgoNeuT Run Coordinator, 2009-2010.
- Organizing Committee (co-chair), New Perspectives Conference at Fermilab, 2009.
- American Association of Physics Teachers Outstanding Teaching Assistant of the Year, 2009.
- Graduate Student Association at Fermilab, Elected Representative, 2008-2009.
- User's Executive Committee at Fermilab, Graduate Representative, 2008-2009.

Selected Publications

†=Publications with J. Spitz as corresponding author (19 total)
Michigan students with primary (led/co-led) or major contributions to a publication are underlined

1. **First Simultaneous Measurement of Differential Muon-neutrino Charged-current Cross Sections on Argon for Final States With and Without Protons Using MicroBooNE Data**
P. Abratenko, ..., B. Bogart *et al.* [MicroBooNE Collaboration], arXiv:2402.19281. Submitted to Physical Review Letters.

2. **Inclusive Cross Section Measurements in Final States With and Without Protons for Charged-current ν_μ-Ar Scattering in MicroBooNE**
P. Abratenko, ..., B. Bogart, A. Pellot Jimenez, *et al.* [MicroBooNE Collaboration], arXiv:2402.19216. Submitted to Physical Review D.

3. **†Neutrino Secrets Could Be Revealed By Earth's Atmosphere**
J. Spitz, Nature **625** 243 (2024).

4. **New μ Forces From ν_μ Sources**
C. Cesarotti, Y. Kahn, G. Krnjaic, D. Rocha, and J. Spitz, arXiv:2311.10829. Submitted to Physical Review D.

5. **Width of a Beta-decay-induced Antineutrino Wavepacket**
B.J.P. Jones, E. Marzec, and J. Spitz, Physical Review D **107** 013008 (2023).

6. **Neutrino Decoherence and the Mass Hierarchy in the JUNO Experiment**
E. Marzec and J. Spitz, Physical Review D **106** 053007 (2022).

7. **†Neutrino Physics Opportunities with the IsoDAR Source at Yemilab**
J. Alonso, C.A. Argüelles, A. Bungau, J.M. Conrad, B. Dutta, Y.D. Kim, E. Marzec, D. Mishins, S.H. Seo, M. Shaevitz, J. Spitz, A. Thompson, L. Waites, and D. Winklehner, Physical Review D **105** 052009 (2022).

8. **Search for an Excess of Electron Neutrino Interactions in MicroBooNE Using Multiple Final State Topologies**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **128** 241801 (2022). *Selected as an "Editors' Suggestion" and "Featured in Physics" [Physics **15** 85 (2022)].*

9. **Search for an Anomalous Excess of Inclusive Charged-current ν_e Interactions in the MicroBooNE Experiment using Wire-Cell Reconstruction**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **105** 112005 (2022). *Selected to be "Featured in Physics" [Physics **15** 85 (2022)].*

10. **IsoDAR@Yemilab: A Report on the Technology, Capabilities, and Deployment**
J.R. Alonso, D. Winklehner, J. Spitz, J.M. Conrad, S.H. Seo, Y.D. Kim, M. Shaevitz, A. Bungau, R. Barlow, L. Calabretta, A. Adelmann, D. Mishins, L. Bartoszek, L.H. Waites, K.M. Bang, and K.S. Park, Journal of Instrumentation **17** P09042 (2022).

11. **The JSNS^2 Detector**
S. Ajimura *et al.*, Nuclear Instruments and Methods in Physics Research A **1014** 165742 (2021).

12. **Modeling Quasielastic Interactions of Monoenergetic Kaon Decay-at-rest Neutrinos**
A. Nikolakopoulos, V. Pandey, J. Spitz, and N. Jachowicz, Physical Review C **103** 064603 (2021).

13. **Measurement of Space Charge Effects in the MicroBooNE LArTPC Using Cosmic Muons**
P. Abratenko, ..., C. Barnes *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **15** P12037 (2020).

14. **†Measuring Changes in the Atmospheric Neutrino Rate Over Gigayear Timescales**
J.R. Jordan, S. Baum, P. Stengel, A. Ferrari, M.C. Morone, P. Sala, and J. Spitz, Physical Review Letters **125** 231802 (2020). *Selected to be "Featured in Physics" [Physics **13** 186 (2020)].*

15. **First Measurement of Electron Neutrino Scattering Cross Section on Argon**
R. Acciarri, ..., R. Fitzpatrick *et al.* [ArgoNeuT Collaboration], Physical Review D **102** 011101(R) (2020).

16. **Deep Underground Neutrino Experiment (DUNE), Far Detector Technical Design Report, Volume IV Far Detector Single-phase Technology**
B. Abi, ..., R. Fitzpatrick *et al.* [DUNE Collaboration], Journal of Instrumentation **15** T08010 (2020).

17. **Neutrino Flavor Transformations from New Short-Range Forces**
B.J.P. Jones and J. Spitz, arXiv:1911.06342.

18. **First Measurement of Inclusive Muon Neutrino Charged Current Differential Cross Sections on Argon at $E_\nu \sim 0.8$ GeV with the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **123** 131801 (2019).

19. **†Severe Constraints on New Physics Explanations of the MiniBooNE Excess**
J.R. Jordan, Y. Kahn, G. Krnjaic, M. Moschella, and J. Spitz, Physical Review Letters **122** 081801 (2019). *Selected as an "Editors' Suggestion".*

20. **Optimizing the ^{8}Li Yield for the IsoDAR Neutrino Experiment**
A. Bungau, J. Alonso, L. Bartoszek, J. Conrad, M. Shaevitz, and J. Spitz, Journal of Instrumentation **14** P03001 (2019).

21. **†Signatures of Pseudo-Dirac Dark Matter at High-Intensity Neutrino Experiments**
J.R. Jordan, Y. Kahn, G. Krnjaic, M. Moschella, and J. Spitz, Physical Review D **98** 075020 (2018).

22. **Ionization Electron Signal Processing in Single Phase LArTPCs II. Data/Simulation Comparison and Performance in MicroBooNE**
C. Adams, ..., C. Barnes *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **13** P07007 (2018).

23. **†First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions**
A.A. Aguilar-Arevalo, ..., R. Fitzpatrick, J.R. Jordan *et al.* [MiniBooNE Collaboration], Physical Review Letters **120** 141802 (2018). *Selected as an "Editors' Suggestion" and "Featured in Physics" [Physics **11** 35 (2018)].*

24. **Determination of Muon Momentum in the MicroBooNE LArTPC Using an Improved Model of Multiple Coulomb Scattering**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **12** P10010 (2017).

25. **Design and Construction of the MicroBooNE Detector**
R. Acciarri *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **12** P02017 (2017).

26. **†Viewpoint: Ghostly Neutrino Comes into Sharper Focus**
J. Spitz, Physics **9** 39 (2016).

27. **†Demonstrating a Directional Detector Based on Neon for Characterizing High Energy Neutrons**
A. Hexley, M.H. Moulai, J. Spitz, and J.M. Conrad, Journal of Instrumentation **10** P11010 (2015).

28. **Decisive Disappearance Search at High-Δm^2 with Monoenergetic Muon Neutrinos**
S. Axani, G. Collin, J.M. Conrad, M.H. Shaevitz, J. Spitz, and T. Wongjirad, Physical Review D **92** 092010 (2015).

29. **Annual Modulation of Cosmic Relic Neutrinos**
B.R. Safdi, M. Lisanti, J. Spitz, and J.A. Formaggio, Physical Review D **90** 043001 (2014).

30. **†Cross Section Measurements with Monoenergetic Muon Neutrinos**
J. Spitz, Physical Review D **89** 073007 (2014).

31. **Precision $\bar{\nu}_e-$electron Scattering Measurements with IsoDAR to Search for New Physics**
J.M. Conrad, M.H. Shaevitz, I. Shimizu, J. Spitz, M. Toups, and L. Winslow, Physical Review D **89** 072010 (2014).

32. **Sterile Neutrino Fits to Short Baseline Neutrino Oscillation Measurements**
J.M. Conrad, C.M. Ignarra, G. Karagiorgi, M. Shaevitz, and J. Spitz, Advances in High Energy Physics **2013** 163897 (2013).

33. **†Search for Neutrino-Antineutrino Oscillations with a Reactor Experiment**
J.S. Díaz, T. Katori, J. Spitz, and J.M. Conrad, Physics Letters B **727** 412 (2013).

34. **Analysis of a Large Sample of Neutrino-Induced Muons with the ArgoNeuT Detector**
C. Anderson *et al.* [ArgoNeuT Collaboration], Journal of Instrumentation **7** 10020 (2012).

35. **†First Test of Lorentz Violation with a Reactor-based Antineutrino Experiment**
Y. Abe *et al.* [Double Chooz Collaboration], Physical Review D **86** 112009 (2012).

36. **The ArgoNeuT Detector in the NuMI Low-Energy Beam Line at Fermilab**
C. Anderson *et al.* [ArgoNeuT Collaboration], Journal of Instrumentation **7** 10019 (2012).

37. **†Proposal for an Electron Antineutrino Disappearance Search Using High-Rate ^{8}Li Production and Decay**
A. Bungau *et al.*, Physical Review Letters **109** 141802 (2012). *Selected to be "Featured in Physics".*

38. **†Sterile Neutrino Search with Kaon Decay at Rest**
J. Spitz, Physical Review D **85** 093020 (2012).

39. **†Measuring Active-to-Sterile Neutrino Oscillations with Neutral Current Coherent Neutrino-Nucleus Scattering**
A.J. Anderson, J.M. Conrad, E. Figueroa-Feliciano, C. Ignarra, G. Karagiorgi, K. Scholberg, M.H. Shaevitz, and J. Spitz, Physical Review D **86** 013004 (2012).

40. **†First Measurements of Inclusive Muon Neutrino Charged Current Differential Cross Sections on Argon**
C. Anderson *et al.* [ArgoNeuT Collaboration], Physical Review Letters **108** 161802 (2012).

41. **†Coherent Neutrino Scattering in Dark Matter Detectors**
A.J. Anderson, J.M. Conrad, E. Figueroa-Feliciano, K. Scholberg, and J. Spitz, Physical Review D **84** 013008 (2011).

42. **†Atmospheric Tau Neutrinos in a Multi-kiloton Liquid Argon Detector**
J. Conrad, A. de Gouvêa, S. Shalgar, and J. Spitz, Physical Review D **82** 093012 (2010).

43. **†Renaissance of the ∼1-TeV Fixed-Target Program**
T. Adams *et al.*, International Journal of Modern Physics A **25** 777 (2010).

44. **†A Regenerable Filter for Liquid Argon Purification**
A. Curioni, B.T. Fleming, W. Jaskierny, C. Kendziora, J. Krider, S. Pordes, M. Soderberg, J. Spitz, T. Tope, and T. Wongjirad, Nuclear Instruments and Methods in Physics Research A **605** 306 (2009).

Other Publications

‡=Publications with J. Spitz as formal internal reviewer
Conference proceedings and unpublished whitepapers are not listed for brevity; See `inspirehep.net/authors/1054783`.

45. **Doping Liquid Argon with Xenon in ProtoDUNE Single-Phase: Effects on Scintillation Light**
A. Abed Abud *et al.* [DUNE Collaboration], arXiv:2402.01568 Submitted to Journal of Instrumentation.

46. **First Search for Dark-trident Processes Using the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2312.13945. Submitted to Physical Review Letters.

47. **Search for Heavy Neutral Leptons in Electron-positron and Neutral-pion Final States with the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2310.07660. Submitted to Physical Review Letters.

48. **Measurement of Nuclear Effects in Neutrino-argon Interactions using Generalized Kinematic Imbalance Variables with the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2310.06082. Accepted by Physical Review D.

49. **Physics Potential of a Few Kiloton Scale Neutrino Detector at a Deep Underground Lab in Korea**
S. Seo, J. Alonso, P. Bakhti, J. Conrad, S. Dye, D. Kim, J. Migenda, M. Pallavicini, J. Park, M. Rajaee, M. Shaevitz, S. Shin, J. Spitz, D. Winklehner, S. Wronka, M. Wurm, and M. Yeh, arXiv:2309.13435. Submitted to Journal of Instrumentation.

50. **The Acrylic Vessel for JSNS^2-II Neutrino Target**
D.H. Lee *et al.* [JSNS^2 Collaboration], Journal of Instrumentation **18** T12001 (2023).

51. **First Demonstration for a LArTPC-based Search for Intranuclear Neutron-antineutron Transitions and Annihilation in ^{40}Ar using the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2308.03924. Submitted to Physical Review D.

Study on the Accidental Background of the JSNS^2 Experiment

52. D.H. Lee *et al.* [JSNS^2 Collaboration], arXiv:2308.02722. Submitted to European Physical Journal C.

Measurement of Triple-differential Inclusive Muon-neutrino Charged-current Cross Section on Argon with the MicroBooNE Detector

53. P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2307.06413. Submitted to Physical Review D.

Measurement of Ambient Radon Daughter Decay Rates and Energy Spectra in Liquid Argon Using the MicroBooNE Detector

54. P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2307.03102. Submitted to Physical Review D.

First Measurement of η Production in Neutrino Interactions on Argon with MicroBooNE

55. P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2305.16249. Submitted to Physical Review Letters.

First Demonstration of $\mathcal{O}$(1ns) Timing Resolution in MicroBooNE Liquid Argon Time Projection Chamber

56. P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **108** 052010 (2023).

Impact of Cross-section Uncertainties on Supernova Neutrino Spectral Parameter Fitting in the Deep Underground Neutrino Experiment

57. A. Abed Abud *et al.* [DUNE Collaboration], Physical Review D **107** 112012 (2023).

Snowmass White Paper: Beyond the Standard Model Effects on Neutrino Flavor

58. C.A. Arguelles *et al.*, European Physical Journal C **83** 15 (2023).

Multi-differential Cross Section Measurements of ν_μ-Argon Quasielastic-like Reactions with the MicroBooNE Detector

59. P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **108** 053002 (2023).

First Double-differential Measurement of Kinematic Imbalance in Neutrino Interactions with the MicroBooNE Detector

60. P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **131** 101802 (2023).

First Constraints on Light Sterile Neutrino Oscillations From Combined Appearance and Disappearance Searches With the MicroBooNE Detector

61. P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **130** 011801 (2023).

Highly-parallelized Simulation of a Pixelated LArTPC on a GPU

62. A. Abed Abud *et al.* [DUNE Collaboration], Journal of Instrumentation **18** P04034 (2023).

First Measurement of Quasi-elastic Λ Baryon Production in Muon Anti-neutrino Interactions in the MicroBooNE Detector

63. P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **130** 231802 (2023).

First Measurement of Differential Cross Sections for Muon Neutrino Charged Current Interactions on Argon with a Two-proton Final State in the MicroBooNE Detector

64. P. Abratenko *et al.* [MicroBooNE Collaboration], arXiv:2211.03734. Submitted to Physical Review Letters.

Identification and Reconstruction of Low-energy Electrons in the ProtoDUNE-SP Detector

65. A. Abed Abud *et al.* [DUNE Collaboration], Physical Review D **107** 092012 (2023).

Axionlike Particle Production at Beam Dump Experiments with Distinct Nuclear Excitation Lines

66. L. Waites, A. Thompson, A. Bungau, J.M. Conrad, B. Dutta, W-C. Huang, D. Kim, M. Shaevitz, and J. Spitz, Physical Review D **107** 095010 (2023).

67. **‡First Constraints on Heavy QCD Axions with a Liquid Argon Time Projection Chamber using the ArgoNeuT Experiment**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review Letters **130** 221802 (2023). *Selected as an "Editors' Suggestion".*

68. **Reconstruction of Interactions in the ProtoDUNE-SP Detector with Pandora**
A. Abed Abud *et al.* [DUNE Collaboration], European Physical Journal C **83** 618 (2023).

69. **Measurement of Neutral Current Single π^0 Production on Argon with the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **107** 012004 (2023).

70. **Differential Cross Section Measurement of Charged Current ν_e Interactions Without Final-state Pions in MicroBooNE**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **106** L051102 (2022).

71. **Search for Long-lived Heavy Neutral Leptons and Higgs Portal Scalars Decaying in the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **106** 092006 (2022).

72. **Separation of Track- and Shower-like Energy Deposits in ProtoDUNE-SP Using a Convolutional Neural Network**
A. Abed Abud *et al.* [DUNE Collaboration], European Physical Journal C **82** 903 (2022).

73. **Scintillation Light Detection in the 6-m Drift-length ProtoDUNE Dual Phase Liquid Argon TPC**
A. Abed Abud *et al.* [DUNE Collaboration], European Physical Journal C **82** 618 (2022).

74. **Observation of Radon Mitigation in MicroBooNE by a Liquid Argon Filtration System**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **17** P11022 (2022).

75. **The Double Chooz Antineutrino Detectors**
H. de Kerret *et al.* [Double Chooz Collaboration], European Physical Journal C **82** 804 (2022).

76. **Cosmic Ray Muon Clustering for the MicroBooNE Liquid Argon Time Projection Chamber using sMask-RCNN**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **17** P09015 (2022).

77. **MiniBooNE and MicroBooNE Combined Fit to a 3+1 Sterile Neutrino Scenario**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **129** 201801 (2022).

78. **Characterization of the Correlated Background for a Sterile Neutrino Search Using the First Dataset of the JSNS^2 Experiment**
Y. Hino *et al.* [JSNS^2 Collaboration], European Physical Journal C **82** 331 (2022).

79. **Novel Approach for Evaluating Detector-Related Uncertainties in a LArTPC Using MicroBooNE Data**
P. Abratenko *et al.* [MicroBooNE Collaboration], European Physical Journal C **82** 454 (2022).

80. **‡First Measurement of Energy-dependent Inclusive Muon Neutrino Charged-Current Cross Sections on Argon with the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **128** 151801 (2022).

81. **‡Wire-Cell 3D Pattern Recognition Techniques for Neutrino Event Reconstruction in Large LArTPCs: Algorithm Description and Quantitative Evaluation with MicroBooNE Simulation**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **17** P01037 (2022).

82. **New CC0π GENIE Tune for MicroBooNE**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **105** 072001 (2022).

83. **Search for an Anomalous Excess of Charged-current ν_e Interactions without Pions in the Final State with the MicroBooNE Experiment**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **105** 112004 (2022). *Selected to be "Featured in Physics" [Physics **15** 85 (2022)].*

84. **Search for an Anomalous Excess of Charged-current Quasi-elastic ν_e Interactions with the MicroBooNE Experiment using Deep-Learning-based Reconstruction**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **105** 112003 (2022). *Selected to be "Featured in Physics" [Physics **15** 85 (2022)].*

85. **Design, Construction and Operation of the ProtoDUNE-SP Liquid Argon TPC**
A. Abed Abud *et al.* [DUNE Collaboration], Journal of Instrumentation **17** P01005 (2022).

86. **Search for Neutrino-Induced Neutral Current Δ Radiative Decay in MicroBooNE and a First Test of the MiniBooNE Low Energy Excess Under a Single-Photon Hypothesis**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **128** 111801 (2022). *Selected as an "Editors' Suggestion".*

87. **First Measurement of Inclusive Electron-Neutrino and Antineutrino Charged Current Differential Cross Sections in Charged Lepton Energy on Argon in MicroBooNE**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **105** L051102 (2022).

88. **A Deep-Learning Based Raw Waveform Region-of-interest Finder for the Liquid Argon Time Projection Chamber**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Journal of Instrumentation **17** P01018 (2022).

89. **Low Exposure Long-baseline Neutrino Oscillation Sensitivity of the DUNE Experiment**
A. Abed Abud *et al.* [DUNE Collaboration], Physical Review D **105** 072006 (2022).

90. **Electromagnetic Shower Reconstruction and Energy Validation with Michel Electrons and π^0 Samples for the Deep-Learning-Based Analyses in MicroBooNE**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **16** T12017 (2021).

91. **IsoDAR@Yemilab: A Conceptual Design Report for the Deployment of the Isotope Decay-At-Rest Experiment in Korea's New Underground Laboratory, Yemilab**
J.R. Alonso *et al.* [IsoDAR Collaboration], arXiv:2110.10635.

92. **Calorimetric Classification of Track-like Signatures in Liquid Argon TPCs using MicroBooNE Data**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of High Energy Physics **12** 153 (2021).

93. **‡Searching for Solar KDAR with DUNE**
A. Abed Abud *et al.* [DUNE Collaboration], Journal of Cosmology and Astroparticle Physics **10** 065 (2021).

94. **‡New Constraints on $\tau^{\pm}$-coupled Heavy Neutral Leptons with Masses $m_N = 280 - 970$ MeV**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review Letters **127** 121801 (2021).

95. **Search for a Higgs Portal Scalar Decaying to Electron-positron Pairs in the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **127** 151803 (2021).

96. **Measurement of the Longitudinal Diffusion of Ionization Electrons in the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **16** P09025 (2021).

97. **Deep Underground Neutrino Experiment (DUNE) Near Detector Conceptual Design Report**
A. Abed Abud *et al.* [DUNE Collaboration], Instruments **5** 31 (2021).

98. **Experiment Simulation Configurations Approximating DUNE TDR**
B. Abi *et al.* [DUNE Collaboration], arXiv:2103.04797.

99. **‡Cosmic Ray Background Rejection with Wire-Cell LArTPC Event Reconstruction in the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Applied **15** 064071 (2021).

100. **Measurement of the Flux-Averaged Inclusive Charged-Current Electron Neutrino and Antineutrino Cross Section on Argon using the NuMI Beam and the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **104** 052002 (2021).

101. **The Continuous Readout Stream of the MicroBooNE Liquid Argon Time Projection Chamber for Detection of Supernova Burst Neutrinos**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **16** P02008 (2021).

102. **Slow Control and Monitoring System at the JSNS^2**
J.S. Park *et al.* [JSNS^2 Collaboration], Progress of Theoretical and Experimental Physics **2015** 00000 (2021).

103. **Measurement of the Atmospheric Muon Rate with the MicroBooNE Liquid Argon TPC**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **16** P04004 (2021).

104. **Semantic Segmentation with a Sparse Convolutional Neural Network for Event Reconstruction in MicroBooNE**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **103** 052012 (2021).

105. **Cosmic Background Removal with Deep Neural Networks in SBND**
R. Acciarri *et al.* [SBND Collaboration], Frontiers in Artificial Intelligence **4** 649917 (2021).

106. **Supernova Neutrino Burst Detection with the Deep Underground Neutrino Experiment**
B. Abi *et al.* [DUNE Collaboration], European Physical Journal C **81** 423 (2021).

107. **‡Neutrino Event Selection in the MicroBooNE Liquid Argon Time Projection Chamber using Wire-Cell 3-D Imaging, Clustering, and Charge-Light Matching**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **16** P06043 (2021).

108. **A Convolutional Neural Network for Multiple Particle Identification in the MicroBooNE Liquid Argon Time Projection Chamber**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **103** 092003 (2021).

109. **‡Vertex-Finding and Reconstruction of Contained Two-track Neutrino Events in the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **15** P02017 (2021).

110. **Prospects for Beyond the Standard Model Physics Searches at the Deep Underground Neutrino Experiment**
B. Abi *et al.* [DUNE Collaboration], European Physical Journal C **81** 322 (2021).

111. **Updated MiniBooNE Neutrino Oscillation Results with Increased Data and New Background Studies**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **103** 052002 (2021).

112. **Proposal: JSNS^2-II**
S. Ajimura *et al.* [JSNS^2 Collaboration], arXiv:2012.10807.

113. **Measurement of Differential Cross Sections for ν_μ-Ar Charged-Current Interactions with Protons and No Pions in the Final State with the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **102** 112013 (2020).

114. **First Results on ProtoDUNE-SP Liquid Argon Time Projection Chamber Performance From a Beam Test at the CERN Neutrino Platform**
B. Abi *et al.* [DUNE Collaboration], Journal of Instrumentation **15** P12004 (2020).

115. **Long-baseline Neutrino Oscillation Physics Potential of the DUNE Experiment**
B. Abe *et al.* [DUNE Collaboration], European Journal of Physics C **80** 978 (2020).

116. **Neutrino Interaction Classification with a Convolutional Neural Network in the DUNE Far Detector**
B. Abe *et al.* [DUNE Collaboration], Physical Review D **102** 092003 (2020).

117. **First Measurement of Differential Charged Current Quasielastic-like ν_μ-argon Scattering Cross-sections Using the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review Letters **125** 201803 (2020).

118. **The JSNS^2 Data Acquisition System**
J.S. Park *et al.* [JSNS^2 Collaboration], Journal of Instrumentation **15** T09002 (2020).

119. **Performance of PMTs for the JSNS^2 Experiment**
J.S. Park *et al.* [JSNS^2 Collaboration], Journal of Instrumentation **15** T07003 (2020).

120. **‡Construction of Precision Wire Readout Planes for the Short-Baseline Near Detector (SBND)**
R. Acciarri *et al.* [SBND Collaboration], Journal of Instrumentation **15** P06033 (2020).

121. **‡Deep Underground Neutrino Experiment (DUNE), Far Detector Technical Design Report, Volume III DUNE Far Detector Technical Coordination**
B. Abi *et al.* [DUNE Collaboration], Journal of Instrumentation **15** T08009 (2020).

122. **Deep Underground Neutrino Experiment (DUNE), Far Detector Technical Design Report, Volume II DUNE Physics**
B. Abi *et al.* [DUNE Collaboration], arXiv:2002.03005.

123. **Deep Underground Neutrino Experiment (DUNE), Far Detector Technical Design Report, Volume 1 Introduction to DUNE**
B. Abi *et al.* [DUNE Collaboration], Journal of Instrumentation **15** T08008 (2020).

124. **Search for Heavy Neutral Leptons Decaying into Muon-pion Pairs in the MicroBooNE Detector**
P. Abratenko *et al.* [MicroBooNE Collaboration], Physical Review D **101** 052001 (2020).

125. **Improved Limits on Millicharged Particles using the ArgoNeuT Experiment at Fermilab**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review Letters **124** 131801 (2020).

126. **Reconstruction and Measurement of $\mathcal{O}$(100) MeV Energy Electromagnetic Activity from $\pi^0 \to \gamma\gamma$ Decays in the MicroBooNE LArTPC**
C. Adams *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **15** P02007 (2020).

127. **A Method to Determine the Electric Field of Liquid Argon Time Projection Chambers Using a UV Laser System and its Application in MicroBooNE**
C. Adams *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **15** P07010 (2020).

128. **Calibration of the Charge and Energy Response of the MicroBooNE Liquid Argon Time Projection Chamber Using Muons and Protons**
C. Adams *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **15** P03002 (2020).

129. **Design and Construction of the MicroBooNE Cosmic Ray Tagger System**
C. Adams *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **14** P04004 (2019).

130. **Rejecting Cosmic Background for Exclusive Neutrino Interaction Studies with Liquid Argon TPCs; A Case Study with the MicroBooNE Detector**
C. Adams *et al.* [MicroBooNE Collaboration], European Physical Journal C **79** 673 (2019).

131. **First Measurement of ν_μ Charged-Current π^0 Production on Argon with a LArTPC**
C. Adams *et al.* [MicroBooNE Collaboration], Physical Review D **99** 091102(R) (2019).

132. **Demonstration of MeV-Scale Physics in Liquid Argon Time Projection Chambers Using ArgoNeuT**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review D **99** 012002 (2019).

133. **Deep Neural Network for Pixel-Level Electromagnetic Particle Identification in the MicroBooNE Liquid Argon Time Projection Chamber**
C. Adams *et al.* [MicroBooNE Collaboration], Physical Review D **99** 092001 (2019).

134. **Comparison of ν_μ-Ar Multiplicity Distributions Observed by MicroBooNE to GENIE Model Predictions**
C. Adams *et al.* [MicroBooNE Collaboration], European Physical Journal C **79** 248 (2019).

135. **Significant Excess of Electron-Like Events in the MiniBooNE Short-Baseline Neutrino Experiment**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **121** 221801 (2018). *Selected as an "Editors' Suggestion" and "Featured in Physics".*

136. **‡First Measurement of the Cross Section for ν_μ and $\overline{\nu}_\mu$ Induced Single Charged Pion Production on Argon using ArgoNeuT**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review D **98** 0152002 (2018).

137. **Ionization Electron Signal Processing in Single Phase LArTPCs I. Algorithm Description and Quantitative Evaluation with MicroBooNE Simulation**
C. Adams *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **13** P07006 (2018).

138. **The Pandora Multi-algorithm Approach to Automated Pattern Recognition of Cosmic-ray Muon and Neutrino Events in the MicroBooNE Detector**
R. Acciarri *et al.* [MicroBooNE Collaboration], European Physical Journal C **78** 82 (2018).

139. **Measurement of Cosmic-ray Reconstruction Efficiencies in the MicroBooNE LArTPC Using a Small External Cosmic-ray Counter**
R. Acciarri *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **12** P12030 (2017).

140. **Noise Characterization and Filtering in the MicroBooNE Liquid Argon TPC**
R. Acciarri *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **12** P08003 (2017).

141. **Michel Electron Reconstruction Using Cosmic-Ray Data from the MicroBooNE LArTPC**
R. Acciarri *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **12** P09014 (2017).

142. **Convolutional Neural Networks Applied to Neutrino Events in a Liquid Argon Time Projection Chamber**
R. Acciarri *et al.* [MicroBooNE Collaboration], Journal of Instrumentation **12** P03011 (2017).

143. **Measurement of ν_μ and $\overline{\nu}_\mu$ Neutral Current $\pi^0 \to \gamma\gamma$ Production in the ArgoNeuT Detector**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review D **96** 012006 (2017).

144. **‡First Observation of Low Energy Electron Neutrinos in a Liquid Argon Time Projection Chamber**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review D **95** 072005 (2017).

145. **Characterization of the Spontaneous Light Emission of the PMTs used in the Double Chooz Experiment**
Y. Abe *et al.* [Double Chooz Collaboration], Journal of Instrumentation **11** P08001 (2016).

146. **Muon Capture on Light Isotopes in Double Chooz**
Y. Abe *et al.* [Double Chooz Collaboration], Physical Review C **93** 054608 (2016).

147. **Measurement of θ_{13} in Double Chooz using Neutron Captures on Hydrogen with Novel Background Rejection Techniques**
Y. Abe *et al.* [Double Chooz Collaboration], Journal of High Energy Physics **1601** 163 (2016).

148. **Development and Operational Experience of Magnetic Horn System for T2K Experiment**
T. Sekiguchi *et al.*, Nuclear Instruments and Methods in Physics Research A **789** 57 (2015).

149. **Measurement of the Antineutrino Neutral-Current Elastic Differential Cross Section**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **91** 012004 (2015).

150. **First Measurement of Neutrino and Antineutrino Coherent Charged Pion Production on Argon**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review Letters **113** 261801 (2014).

151. **Ortho-Positronium Observation in the Double Chooz Experiment**
Y. Abe *et al.* [Double Chooz Collaboration], Journal of High Energy Physics **10** 032 (2014).

152. **Using L/E Oscillation Probability Distributions**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], arXiv:1407.3304 [hep-ex] (2014).

153. **Improved Measurements of the Neutrino Mixing Angle θ_{13} with the Double Chooz Detector**
Y. Abe *et al.* [Double Chooz Collaboration], Journal of High Energy Physics **10** 086 (2014).

154. **Precision Muon Reconstruction in Double Chooz**
Y. Abe *et al.* [Double Chooz Collaboration], Nuclear Instruments and Methods in Physics Research A **764** 330 (2014)

155. **The Detection of Back-to-Back Proton Pairs in Charged-Current Neutrino Interactions with the ArgoNeuT Detector in the NuMI Low Energy Beam Line**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review D **90** 012008 (2014).

156. **‡Measurements of Inclusive Muon Neutrino and Antineutrino Charged Current Differential Cross Sections on Argon in the NuMI Antineutrino Beam**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Physical Review D **89** 112003 (2014).

157. **Background-Independent Measurement of θ_{13} in Double Chooz**
Y. Abe *et al.* [Double Chooz Collaboration], Physics Letters B **735** 51 (2014).

158. **Cyclotrons as Drivers for Precision Neutrino Measurements**
A. Adelmann, J. Alonso, W.A. Barletta, J.M. Conrad, M.H. Shaevitz, J. Spitz, M. Toups, and L.A. Winslow, Advances in High Energy Physics **2014** 347097 (2014).

159. **A Study of Electron Recombination Using Highly Ionizing Particles in the ArgoNeuT Liquid Argon TPC**
R. Acciarri *et al.* [ArgoNeuT Collaboration], Journal of Instrumentation **8** P08005 (2013).

160. **First Measurement of the Muon Anti-Neutrino Double-Differential Charged Current Quasi-Elastic Cross Section**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **88** 032001 (2013).

161. **First Measurement of θ_{13} from Delayed Neutron Capture on Hydrogen in the Double Chooz Experiment**
Y. Abe *et al.* [Double Chooz Collaboration], Physics Letters B **723** 66 (2013).

162. **Improved Search for $\overline{\nu}_\mu \to \overline{\nu}_e$ Oscillations in the MiniBooNE Experiment**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **110** 161801 (2013).

163. **Direct Measurement of Backgrounds Using Reactor-Off Data in Double Chooz**
Y. Abe *et al.* [Double Chooz Collaboration], Physical Review D **87** 011102 (2013).

164. **Test of Lorentz and CPT violation with Short Baseline Neutrino Oscillation Excesses**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physics Letters B **718** 1303 (2013).

165. **Dual baseline search for muon antineutrino disappearance at 0.1 eV^2 $< \Delta m^2 <$ 100 eV^2**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **86** 052009 (2012).

166. **Reactor Electron Antineutrino Disappearance in the Double Chooz Experiment**
Y. Abe *et al.* [Double Chooz Collaboration], Physical Review D **86** 052008 (2012).

167. **Indication for the Disappearance of Reactor Electron Antineutrinos in the Double Chooz Experiment**
Y. Abe *et al.* [Double Chooz Collaboration], Physical Review Letters **108** 131801 (2012).

168. **Dual Baseline Search for Muon Neutrino Disappearance at 0.5 eV^2 $< \Delta m^2 <$ 40 eV^2**
K.B.M. Mahn *et al.* [MiniBooNE and SciBooNE Collaborations], Physical Review D **85** 032007 (2012).

169. **Measurement of the Neutrino Component of an Anti-neutrino Beam Observed by a Non-magnetized Detector**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **84** 072005 (2011).

170. **Measurement of ν_μ-induced Charged-Current Neutral Pion Production Cross Sections on Mineral Oil at $E_\nu \in 0.5 - 2.0$ GeV**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **83** 052009 (2011).

171. **Measurement of Neutrino-Induced Charged-Current Charged Pion Production Cross Sections on Mineral Oil at E$_\nu \sim 1$ GeV**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **83** 052007 (2011).

172. **The T2K Experiment**
K. Abe *et al.* [T2K Collaboration], Nuclear Instruments and Methods in Physics Research A **659** 106 (2011).

173. **Measurement of the Neutrino Neutral-Current Elastic Differential Cross Section**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **82** 092005 (2010).

174. **Event Excess in the MiniBooNE Search for $\overline{\nu}_\mu \to \overline{\nu}_e$ Oscillations**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **105** 181801 (2010). *Selected as an "Editors' Suggestion".*

175. **First Measurement of the Muon Neutrino Charged Current Quasielastic Double Differential Cross Section**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **81** 092005 (2010).

176. **Measurement of ν_μ and $\overline{\nu}_\mu$ Induced Neutral Current Single π^0 Production Cross sections on Mineral Oil at $E_\nu \sim O$(1 GeV)**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **81** 013005 (2010).

177. **A Search for Core-Collapse Supernovae Using the MiniBooNE Neutrino Detector**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review D **81** 032001 (2010).

178. **Measurement of the ν_μ Charged Current π^+ to Quasi-Elastic Cross Section Ratio on Mineral Oil in a 0.8 GeV Neutrino Beam**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **103** 081801 (2009).

179. **A Search for Electron Antineutrino Appearance at the $\Delta m^2 \sim 1$ eV^2 Scale**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **103** 111801 (2009).

180. **A Search for Muon Neutrino and Antineutrino Disappearance in MiniBooNE**
A.A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], Physical Review Letters **103** 061802 (2009).

Selected Colloquium/Seminar/Conference/Workshop Presentations

1. **Imaging Atmospheric Neutrinos with Paleo-detectors**
   Mineral Detection of Neutrinos and Dark Matter Workshop, Virginia Tech, plenary, 1/10/2024.
2. **Neutrino Beams and Fluxes II**
   International Neutrino Summer School, lecture, Fermilab, 8/8/2023.
3. **Neutrino Beams and Fluxes I**
   International Neutrino Summer School, lecture, Fermilab, 8/7/2023.
4. **How Often Do Muon Neutrinos Turn Into Electron Neutrinos?**
   REU Seminar, University of Michigan, 8/1/2023.
5. **The KPIPE Concept: Searching for Muon Neutrino Disappearance with Kaon Decay-at-Rest**
   Fermilab Accelerator Complex Evolution Science Workshop (virtual), 5/15/2023.
6. **Fundamental Physics Applications of Cyclotrons**
   Application of High Current Cyclotrons Workshop (virtual), 4/25/2023.
7. **The IsoDAR Experiment**
   APS April Meeting (virtual), 4/24/2023.
8. **Artificial Neutrino Sources**
   Neutrino University Lecture, Fermilab, 7/28/2022.
9. **How Often Do Muon Neutrinos Turn Into Electron Neutrinos?**
   REU Seminar, University of Michigan, 7/5/2022.
10. **Prospects for New eV-scale Sterile Neutrino Searches**
    International Conference on Neutrino Physics and Astrophysics (NEUTRINO), plenary (joint with D. Winklehner), Seoul, Korea (virtual), 6/1/2022.
11. **How Often Do Muon Neutrinos Turn Into Electron Neutrinos?**
    Pappalardo Seminar Series, MIT, 3/9/2022.
12. **MicroBooNE's First Results: Addressing a 5σ Anomaly with a Precision Detector**
    High Energy Physics Seminar, University of Virginia, 3/2/2022.
13. **How Often Do Muon Neutrinos Turn Into Electron Neutrinos?**
    Society of Physics Students Lecture, University of Michigan, 12/1/2021.
14. **MicroBooNE's First Results: Addressing a 5σ Anomaly with a Precision Detector**
    High Energy Physics Seminar, University of Michigan, 11/15/2021.
15. **An Application of High Power Cyclotrons in Physics: IsoDAR**
    Snowmass Workshop on High Power Cyclotrons (virtual), 9/8/2021.
16. **IsoDAR Physics at Yemilab**
    Sterile Neutrino Search Underground Workshop, Institute for Basic Science in Korea (virtual), 7/1/2021.
17. **IsoDAR at Yemilab**
    Institute for Basic Science (Korea), Center for Underground Physics Seminar (virtual), 4/13/2021.
18. **The Neutrino, Still Crazy After All These Years**
    Physics Department Colloquium, State University of New York at Albany (virtual), 11/6/2020.
19. **How Often Do Muon Neutrinos Turn Into Electron Neutrinos?**
    Physics Department Colloquium, University of Michigan (virtual), 9/23/2020.
20. **The Neutrino, Still Crazy After All These Years**
    Nuclear and Particle Physics Colloquium, MIT (virtual), 9/14/2020.

21. **Completing Our Picture of the Neutrino**
Physics Department Colloquium, Illinois Institute of Technology, 3/5/2020.

22. **Taking a Picture of a Neutrino**
Society of Physics Students Lecture, University of Michigan, 2/20/2020.

23. **Review and Summary of Short Baseline Neutrino Experiments**
International Workshop on Neutrinos from Accelerators (NuFACT), plenary, Daegu, Korea, 8/26/2019.

24. **Accelerator-based Neutrino Experiments at Short Baselines**
International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY), parallel, Corpus Christi, TX, 5/20/2019.

25. **Completing Our Picture of the Neutrino**
Physics Department Colloquium, Columbia University, 5/6/2019.

26. **Short Baseline Neutrino Experiments: Overview and Outlook**
Aspen Winter Conference: In Pursuit of New Particles and Paradigms, plenary, Aspen, CO, 3/28/2019.

27. **Completing Our Picture of the Neutrino**
Physics Department Colloquium, University of Maryland, 12/4/2018.

28. **KDAR and IsoDAR**
Neutrino-Nucleus Interactions Conference (NuInt), plenary, L'Aquila, Italy, 10/17/2018.

29. **The JSNS^2 Experiment and the First Measurement of the KDAR Neutrino**
High Energy Physics Seminar, Colorado State University, 8/6/2018.

30. **Taking a Picture of a Neutrino**
REU Seminar, University of Michigan, 7/10/2018.

31. **First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions**
Physics Division Seminar ("Research Progress Meeting"), Lawrence Berkeley National Laboratory, 6/21/2018.

32. **First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions**
Subatomic Physics Seminar, Los Alamos National Laboratory, 6/6/2018.

33. **First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions**
Joint Experimental-Theoretical Physics Seminar ("Wine and Cheese"), Fermilab, 5/11/2018.

34. **First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions**
High Energy Physics Seminar, University of Michigan, 3/19/2018.

35. **First Measurement of Monoenergetic Muon Neutrino Charged Current Interactions**
Recontres de Moriond Conference, plenary, La Thuile, Italy, 3/15/2018.

36. **Taking a Picture of a Neutrino**
Society of Physics Students Zone 7 Lecture, University of Michigan, 1/27/2018.

37. **Global Experimental Program for Sterile Neutrino Searches**
Korean Physical Society Meeting: Pioneer Symposium, Gyeongju, South Korea, 10/27/2017.

38. **Opportunities with Monoenergetic Neutrinos**
Particle Physics Seminar, Virginia Tech, 10/11/2017.

39. **JSNS^2: A Sterile Neutrino Search in Japan**
APS Division of Particles and Fields (DPF) Meeting, parallel, Fermilab, 8/3/2017.

40. **A Sterile Neutrino Search in Japan Using 50 tons of Liquid Scintillator**
American Chemical Society Middle Atlantic Regional Meeting, parallel, Riverdale, NY, 6/10/2016.

41. **Kaon Decay-at-Rest and a Very Unique Neutrino**
Particle Physics Seminar, Wayne State University, 4/16/2016.

42. **Photographing the Ghostly Neutrino**
Saturday Morning Physics Public Lecture, University of Michigan, 4/9/2016.

43. **The Importance of Neutrinos From Kaon Decay-at-Rest**
High Energy Physics Seminar, Indiana University, 4/4/2016.

44. **The Importance of Neutrinos From Kaon Decay-at-Rest**
High Energy Physics Division Seminar, Argonne National Lab, 2/3/2016.

45. **A Known-Energy Neutrino and What It Can Teach Us**
Physics Department Colloquium, New Mexico State University, 1/21/2016.

46. **Opportunities with Kaon Decay-at-Rest Neutrinos**
Neutrino Seminar Series, Fermilab, 10/29/2015.

47. **IsoDAR and DAEδALUS**
APS Division of Particles and Fields (DPF) Meeting, parallel, Ann Arbor, MI, 8/4/2015.

48. **Using Kaons to Unlock the Secrets of the Neutrino**
High Energy Physics Seminar, Harvard University, 2/26/2015.

49. **Using Kaons to Unlock the Secrets of the Neutrino**
High Energy Physics Seminar, University of Michigan, 2/23/2015.

50. **Using Kaons to Unlock the Secrets of the Neutrino**
High Energy Physics Seminar, University of California at Irvine, 2/20/2015.

51. **Using Kaons to Unlock the Secrets of the Neutrino**
High Energy Physics Seminar, University of Wisconsin at Madison, 2/17/2015.

52. **Using Kaons to Unlock the Secrets of the Neutrino**
High Energy Physics Seminar, University of California at San Diego, 2/12/2015.

53. **Using Kaons to Unlock the Secrets of the Neutrino**
High Energy Physics Seminar, University of Pennsylvania, 2/10/2015.

54. **Pion/Muon and Kaon Decay-at-rest Experiments**
Workshop on the Intermediate Neutrino Program, Brookhaven National Lab, parallel, 2/5/2015.

55. **Using Kaons to Unlock the Secrets of the Neutrino**
Center for Particles and Fields Seminar, University of Texas at Austin, 1/26/2015.

56. **Using Kaons to Unlock the Secrets of the Neutrino**
Physics Department Colloquium, Iowa State University, 1/20/2015.

57. **The Future of the Sterile Neutrino**
Particle Physics Seminar, SUNY Stony Brook, 11/21/2014.

58. **IsoDAR and DAEδALUS**
International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN), parallel, Paris, France, 11/4/2014.

59. **Sterile Neutrinos**
Physics Department Colloquium, Brookhaven National Lab, 9/30/2014.

60. **IsoDAR and DAEδALUS**
International Workshop on Neutrino Factories (NuFACT), parallel, Glasgow, Scotland, 8/29/2014.

61. **Searches for Sterile Neutrino Mixing**
International Workshop on Neutrinos from Accelerators (NuFACT), plenary, Glasgow, Scotland, 8/27/2014.

Future Short-baseline Sterile Neutrino Searches with Accelerators

62. International Conference on Neutrino Physics and Astrophysics (NEUTRINO), plenary, Boston, MA, 6/7/2014.

63. **Testing Einstein with Neutrinos**
Pappalardo Symposium, MIT, 5/16/2014.

64. **Closing in on the Neutrino**
Physics Department Colloquium, Amherst College, 3/6/2014.

65. **Using Kaons to Unlock the Secrets of the Neutrino**
Laboratory for Nuclear Science Seminar, MIT, 2/21/2014.

66. **IsoDAR and DAEδALUS**
ICFA Neutrino European Meeting talk, Paris, France, 1/10/2014.

IsoDAR and the DAEδALUS Program

67. International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN), plenary, Tokyo, Japan, 11/12/2013.

68. **Closing in on the Neutrino**
Physics Department Colloquium, Williams College, 9/27/2013.

69. **Multiple Probes of Lorentz Violation with Reactor Antineutrinos**
APS Division of Particles and Fields (DPF) Meeting, parallel, Santa Cruz, CA, 8/16/2013.

70. **Closing in on the Neutrino**
Physics Department Colloquium, Syracuse University, 4/18/2013.

Kaon Decay-at-rest Sources for Sterile Neutrino Studies

71. Snowmass Workshop on the Intensity Frontier, parallel, Brookhaven National Laboratory, 4/17/2013.

72. **Using Kaons to Probe the Sterile Neutrino**
Particle/Nuclear Seminar, University of Colorado at Boulder, 4/15/2013.

73. **Kaon Decay at-rest as a Probe of the Sterile Neutrino**
APS April Meeting 2013, parallel, Denver, CO, 4/14/2013.

74. **Kaons and the Sterile Neutrino**
Graduate Student Seminar, MIT, 4/5/2013.

75. **Using Kaons to Probe the Sterile Neutrino**
High Energy Physics Seminar, Tufts University, 3/28/2013.

76. **A New Probe of the Sterile Neutrino**
High Energy Particle Seminar, Columbia University, 3/27/2013.

77. **A New Way to Probe the Sterile Neutrino: Kaon Decay-at-Rest**
Aspen Winter Conference: New Directions in Neutrino Physics, plenary, Aspen, CO, 2/5/2013.

78. **Searching for New Physics with Neutrinos**
Laboratory for Nuclear Science Seminar, MIT, 11/13/2012.

79. **Searching for Lorentz Violation with Reactor Antineutrinos**
APS Division of Nuclear Physics (DNP) Meeting, parallel, Newport Beach, CA, 10/27/2012.

80. **Coherent Neutrino Scattering and Sterile Neutrino Searches with a Decay-at-Rest Source**
Project X Physics Study WOrkshop talk, Fermilab, 6/20/2012.

Coherent Neutrino Scattering as a Probe of Oscillations

81. Conference on the Intersections of Particle and Nuclear Physics (CIPANP), parallel, St. Petersburg, FL, 5/31/2012.

82. **The Disappearing Neutrino**
Pappalardo Symposium, MIT, 5/18/2012.

83. **Searching for the Sterile Neutrino**
Faculty Lunch Seminar, MIT, 5/2/2012.

84. **Probing the Neutrino with Liquid Argon**
Laboratory for Nuclear Science Seminar, MIT, 3/20/2012.

85. **ArgoNeuT Physics Results**
Joint Experimental-Theoretical Physics Seminar ("Wine and Cheese"), Fermilab, 2/24/2012.

86. **Neutrino Detection with Liquid Argon**
Experimental Physics Seminar, Princeton University, 12/15/2011.

87. **Low Energy Neutrino Physics at the Intensity Frontier**
Fundamental Physics at the Intensity Frontier, plenary, Rockville, MD, 12/1/2011.

88. **Measuring Muon Neutrino Charged Current Differential Cross Sections on Argon**
International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN), plenary, Zurich, Switzerland, 11/8/2011.

89. **The ArgoNeuT Analysis**
Neutrino-Nucleus Interactions Conference (NuInt), plenary, Dehradun, India, 3/7/2011.

90. **LArTPCs and Neutrino Detection at Fermilab**
Neutrino University Summer School, Fermilab, 8/12/2010.

91. **The ArgoNeuT Experiment**
International Conference on High Energy Physics (ICHEP), parallel, Paris, France, 7/24/2010.

92. **ArgoNeuT, a Liquid Argon Time Projection Chamber in a Low Energy Neutrino Beam**
Topics in Astroparticle and Underground Physics (TAUP) Conference, parallel, Rome, Italy, 7/2/2009.

93. **ArgoNeuT and MicroBooNE: LArTPCs at Fermilab**
Fermilab User's Meeting 2009, Fermilab, 6/4/2009.

94. **ArgoNeuT: A Physics-Minded Liquid Argon Time Projection Chamber Test Stand**
APS April Meeting 2009, parallel, Denver, CO, 5/5/2009.

95. **Physics with ArgoNeuT**
Weak Interaction Seminar, Yale University, 3/26/2009.

96. **ArgoNeuT and MicroBooNE: Neutrino Detection with Liquid Argon**
Weak Interaction Seminar, Yale University, 5/8/2008.

97. **Neutrino Physics and R&D with ArgoNeuT**
APS April Meeting 2008, parallel, St. Louis, MO, 4/14/2008.

98. **Gas Electron Multipliers and Detector Development for Neutrinos and Dark Matter**
Weak Interaction Seminar, Yale University, 4/11/2007.

99. **T2K Beam Monte Carlo**
APS Four Corners Meeting 2005, parallel, Denver, CO, 10/13/2005.

Classes Taught

- Physics 391: Modern Physics Laboratory (Fall 2019, Winter 2024)
- Physics 150: Fundamental Physics for the Life Sciences I (Fall 2023)
- Physics 116: From Quarks to Cosmos (Fall 2018, Winter 2021)

- Physics 390: Introduction to Modern Physics (Winter 2017, Winter 2018, Winter 2020, Fall 2020)
- Physics 441/442: Advanced Physics Laboratory (Winter 2019, Winter 2022, Winter 2023)
- Physics 360: Honors Physics 3 (Fall 2016, Fall 2017)

Graduate Students and Postdocs Supervised

- Benjamin Bogart, PhD student (PhD expected 2026)
- Cassandra Little, PhD student (PhD expected 2025)
  - Bissell-Hazen-Kowalczyk Fellowship Awardee (2021)
- Dr. Johnathon Jordan, PhD student (PhD; 4/2022); present position: Senior Data Scientist for the State of Indiana
  - JSNS^2 Software Development Group Convener (2019-2022)
  - JSNS^2 KDAR Physics Convener (2019-2022)
  - Rackham Predoctoral Fellowship Awardee (2021)
  - Wirt and Mary Cornwell Prize Awardee (2021)
  - NSF GRFP Awardee (2017)
- Dr. Christopher Barnes, PhD student (PhD; 7/2021); present position: Senior Aviation Data Scientist and Machine Learning Engineer at MITRE
  - MicroBooNE Software Release Manager (2017-2019)
  - DOE SCGSR Fellow (2017-2018)
- Dr. Rory Fitzpatrick, PhD student (PhD; 4/2021); present position: Senior Advisor, Bureau of Economic and Business Affairs, US Department of State
  - Terwilliger Thesis Prize winner (2022)
  - NSF GRFP Honorable Mention (2018)
- Dr. Eric Marzec, postdoc (6/2019-present)
  - JSNS^2 KDAR Physics Convener (2019-present)
  - JSNS^2 Michigan Electronics Convener (2019-present)
- Dr. Joel Mousseau, postdoc (11/2015-5/2021); present position: Software Engineer at divvyDOSE
  - SBND X-ARAPUCA Light Collection System Convener (2016-2021)
  - MicroBooNE Cross Section Group Convener (2017-2020)
  - MicroBooNE Data Management and Production Convener (2016-2018)
- Dr. Eito Iwai, postdoc (7/2016-10/2018); present position: Scientist at RIKEN

Undergraduate and Post-baccalaureate Students Supervised

- Andrew Calabrese-Day (12/2023-present); present position: works in Spitz group
- Kathryn Ream (9/2023-present); present position: works in Spitz group
- Hannah Ross (6/2023-8/2023); present position: undergraduate student at Baldwin Wallace University

- Andrea Pellot Jimenez (3/2023-present); present position: works in Spitz group
- Evan Kattapong-Graber (1/2023-present); present position: works in Spitz group
- Elizabeth Kane (REU student; 6/2022-8/2022); present position: PhD student at U. Colorado
- Josh Zhang (5/2022-5/2023); present position: undergraduate student at University of Michigan
- Alexander Antonakis (5/2021-9/2022); present position: PhD student at UCSB
- Alexis Metzler (2/2020-7/2021); present position: works at Deloitte
- Daniel Mishins (4/2019-8/2022); present position: Masters student at University of Michigan
- Miguel Botran (Post-baccalaureate; 9/2019-9/2020); present position: works at Waymo
- Benjamin Bogart (REU student; 6/2020-8/2020); present position: PhD student at University of Michigan
- Nicholas Kamp (9/2018-8/2019); present position: PhD student at MIT (NSF GRFP)
- Polina Abratenko (9/2016-1/2019); present position: PhD student at Tufts University (NSF GRFP)
- Lilly Bralts-Kelly (REU student; 6/2018-8/2018); present position: PhD student at University of Illinois at Urbana-Champaign
- Claire Savard (2/2016-9/2017); present position: PhD student at University of Colorado Boulder
- William Warner (9/2016-8/2017); present position: PhD student at University of Texas at Austin
- TJ Borucki (4/2016-6/2017); present position: Unknown
- Efrain Segarra (5/2016-8/2016); present position: PhD student at MIT (NSF GRFP)

Thesis/Prospectus Committees

- Dillon Fitzgerald, Prospectus Defense Committee member (1/10/2020), PhD Thesis Committee member (12/11/2023)
- Mackenzie Devilbiss, Prospectus Defense Committee member (5/4/2021), PhD Thesis Committee member (11/3/2023)
- Miguel Hernandez, Prospectus Defense Committee member (8/28/2023)
- Chamindu Amarasinghe, PhD Thesis Committee member (7/17/2023)
- Luke Korley, Prospectus Defense Committee member (8/25/2021), PhD Thesis Committee member (1/9/2023)
- Chelsea Hendrus, Prospectus Defense Committee member (10/11/2016), PhD Thesis Committee member (12/13/2022)
- Harvey Birch, Prospectus Defense Committee member (12/1/2022)
- Cassandra Little, Prospectus Defense Committee chair (8/25/2022)
- Chris Dessert, PhD Thesis Committee member (7/21/2022)
- Yongyi Wu, Prospectus Defense Committee member (12/7/2017), PhD Thesis Committee member (7/20/2022)

- Maris Arthurs, Prospectus Defense Committee member (12/7/2017), PhD Thesis Committee member (7/7/2022)
- Johnathon Jordan, Prospectus Defense Committee chair (12/6/2017), PhD Thesis Committee chair (4/14/2022)
- Zhichen Wang, Prospectus Defense Committee member (8/27/2021)
- Michael Williams, Prospectus Defense Committee member (8/23/2021)
- Joshua Foster, PhD Thesis Committee member (8/17/2021)
- Christopher Barnes, Prospectus Defense Committee chair (5/4/2017), PhD Thesis Committee chair (7/19/2021)
- Rory Fitzpatrick, Prospectus Defense Committee chair (12/6/2017), PhD Thesis Committee chair (4/1/2021)
- Melissa Hutcheson, Prospectus Defense Committee member (4/20/2018), PhD Thesis Committee member (3/17/2021)
- Felicia Sutanto, Prospectus Defense Committee member (12/12/2019), PhD Thesis Committee member (1/29/2021)
- Cynthia Nuñez, Prospectus Defense Committee member (8/17/2020)
- Callum Jones, PhD Thesis Committee member (3/24/2020)
- Rachel Hyneman, PhD Thesis Committee member (1/31/2020)
- Shuzhou Zhang, Prospectus Defense Committee member (5/8/2019)
- Natasha Sachdeva, PhD Thesis Committee member (1/14/2019)
- Joseph Osborn, PhD Thesis Committee member (5/29/2018)
- Ariana Hackenburg (Yale University), External PhD dissertation reader (5/2018)
- Noah Steinberg, Prospectus Defense Committee member (12/15/2017)

Internal Service at U. Michigan

- Physics Department Undergraduate Research Coordinator (2023-present)
- Physics Department Executive Committee member (2022-2024)
- Instrument Oversight Committee member (2021-present)
- Curriculum/Concerns (Majors and Minors) Committee member (2020-2021, 2021-2022)
- Editorial Advisory Board Committee member (2019-2020, 2020-2021)
- Commencement Marshal (2019-2020)
- Faculty Search Committee member (2018-2019, 2019-2020, 2020-2021, 2021-2022)
- Mentor for Junior Faculty: Brian Beckford (2017-2018, 2018-2019, 2019-2020)
- Undergraduate Major Adviser (2018-2019)
- General Colloquium Committee chair (2018-2019)
- General Colloquium Committee member (2017-2018)
- Graduate Admissions Committee member (2015-2016, 2017-2018)
- HEP and Astrophysics Seminar co-chair (2015-2016, 2016-2017)