Publication List

Peter B. Denton

Updated: November 25, 2024*†

Articles (70)

[1] P. B. Denton and Y. Kini, "Individual Neutrino Masses From a Supernova," arXiv:2411.13634 [hep-ph].

[2] H. Davoudiasl and P. B. Denton, "How fast can protons decay?," arXiv:2410.19045 [hep-ph].

[3] P. B. Denton, A. Giarnetti, and D. Meloni, "Solar Neutrinos and the Strongest Oscillation Constraints on Scalar NSI," arXiv:2409.15411 [hep-ph].

[4] P. B. Denton and J. Gehrlein, "A Modern Look at the Oscillation Physics Case for a Neutrino Factory," arXiv:2407.02572 [hep-ph].

[5] J. F. Acevedo, J. Berger, and P. B. Denton, "Dark matter raining on DUNE and other large volume detectors," *JHEP* **11** (2024) 011, arXiv:2407.01670 [hep-ph].

[6] P. B. Denton and S. J. Parke, "Fast and accurate algorithm for calculating long-baseline neutrino oscillation probabilities with matter effects," *Phys. Rev. D* **110** no. 7, (2024) 073005, arXiv:2405.02400 [hep-ph].

[7] P. B. Denton and S. J. Parke, "Smallness of matter effects in long-baseline muon neutrino disappearance," *Phys. Rev. D* **109** no. 5, (2024) 053002, arXiv:2401.10326 [hep-ph].

[8] P. B. Denton, "Probing CP Violation with Neutrino Disappearance Alone," *Phys. Rev. Lett.* **133** no. 3, (2024) 031801, arXiv:2309.03262 [hep-ph].

[9] P. B. Denton and J. Gehrlein, "Survey of neutrino flavor predictions and the neutrinoless double beta decay funnel," *Phys. Rev. D* **109** no. 5, (2024) 055028, arXiv:2308.09737 [hep-ph].

*For the latest version see: peterdenton.github.io

†Most author lists are in alphabetical order as that is the standard in particle physics.

[10] P. B. Denton and J. Gehrlein, "Neutrino constraints and the ATOMKI X17 anomaly," *Phys. Rev. D* **108** no. 1, (2023) 015009, arXiv:2304.09877 [hep-ph].

[11] P. B. Denton and J. Gehrlein, "Here Comes the Sun: Solar Parameters in Long-Baseline Accelerator Neutrino Oscillations," *JHEP* **06** (2023) 090, arXiv:2302.08513 [hep-ph].

[12] P. B. Denton, "Techniques for solving static Klein-Gordon equation with self-interaction $\lambda\phi^4$ and arbitrary spherical source terms," *Phys. Lett. B* **855** (2024) 138860, arXiv:2301.11106 [physics.comp-ph].

[13] H. Davoudiasl and P. B. Denton, "Sterile neutrino shape shifting caused by dark matter," *Phys. Rev. D* **108** no. 3, (2023) 035013, arXiv:2301.09651 [hep-ph].

[14] P. B. Denton, M. Friend, M. D. Messier, H. A. Tanaka, S. Böser, J. a. A. B. Coelho, M. Perrin-Terrin, and T. Stuttard, "Snowmass Neutrino Frontier: NF01 Topical Group Report on Three-Flavor Neutrino Oscillations," arXiv:2212.00809 [hep-ph].

[15] P. Huber *et al.*, "Snowmass Neutrino Frontier Report," 11, 2022. arXiv:2211.08641 [hep-ex].

[16] P. B. Denton, A. Giarnetti, and D. Meloni, "How to identify different new neutrino oscillation physics scenarios at DUNE," *JHEP* **02** (2023) 210, arXiv:2210.00109 [hep-ph].

[17] A. de Gouvêa *et al.*, "Theory of Neutrino Physics – Snowmass TF11 (aka NF08) Topical Group Report," arXiv:2209.07983 [hep-ph].

[18] A. Coleman *et al.*, "Ultra high energy cosmic rays The intersection of the Cosmic and Energy Frontiers," *Astropart. Phys.* **149** (2023) 102819, arXiv:2205.05845 [astro-ph.HE].

[19] P. B. Denton and J. Gehrlein, "New reactor data improves robustness of neutrino mass ordering determination," *Phys. Rev. D* **106** (2022) 015022, arXiv:2204.09060 [hep-ph].

[20] C. A. Argüelles *et al.*, "Snowmass white paper: beyond the standard model effects on neutrino flavor: Submitted to the proceedings of the US community study on the future of particle physics (Snowmass 2021)," *Eur. Phys. J. C* **83** no. 1, (2023) 15, arXiv:2203.10811 [hep-ph].

[21] M. Ackermann *et al.*, "High-energy and ultra-high-energy neutrinos: A Snowmass white paper," *JHEAp* **36** (2022) 55–110, arXiv:2203.08096 [hep-ph].

[22] M. Abdullah *et al.*, "Coherent elastic neutrino-nucleus scattering: Terrestrial and astrophysical applications," in *2022 Snowmass Summer Study*. 3, 2022. arXiv:2203.07361 [hep-ph].

[23] M. A. Acero *et al.*, "White paper on light sterile neutrino searches and related phenomenology," *J. Phys. G* **51** no. 12, (2024) 120501, arXiv:2203.07323 [hep-ex].

[24] E. Abdalla *et al.*, "Cosmology intertwined: A review of the particle physics, astrophysics, and cosmology associated with the cosmological tensions and anomalies," *JHEAp* **34** (2022) 49–211, arXiv:2203.06142 [astro-ph.CO].

[25] P. B. Denton* *et al.*, "Tau neutrinos in the next decade: from GeV to EeV," *J. Phys. G* **49** no. 11, (2022) 110501, arXiv:2203.05591 [hep-ph]. *Co-Editor.

[26] J. L. Feng *et al.*, "The Forward Physics Facility at the High-Luminosity LHC," *J. Phys. G* **50** no. 3, (2023) 030501, arXiv:2203.05090 [hep-ex].

[27] J. M. Berryman *et al.*, "Neutrino self-interactions: A white paper," *Phys. Dark Univ.* **42** (2023) 101267, arXiv:2203.01955 [hep-ph].

[28] D. Caratelli *et al.*, "Low-Energy Physics in Neutrino LArTPCs," 3, 2022. arXiv:2203.00740 [physics.ins-det].

[29] P. B. Denton, "Sterile Neutrino Search with MicroBooNE's Electron Neutrino Disappearance Data," *Phys. Rev. Lett.* **129** no. 6, (2022) 061801, arXiv:2111.05793 [hep-ph].

[30] P. B. Denton and R. Pestes, "Neutrino oscillations through the Earth's core," *Phys. Rev. D* **104** no. 11, (2021) 113007, arXiv:2110.01148 [hep-ph].

[31] P. B. Denton, "Tau neutrino identification in atmospheric neutrino oscillations without particle identification or unitarity," *Phys. Rev. D* **104** no. 11, (2021) 113003, arXiv:2109.14576 [hep-ph].

[32] P. B. Denton and J. Gehrlein, "New oscillation and scattering constraints on the tau row matrix elements without assuming unitarity," *JHEP* **06** (2022) 135, arXiv:2109.14575 [hep-ph].

[33] L. A. Anchordoqui *et al.*, "The Forward Physics Facility: Sites, experiments, and physics potential," *Phys. Rept.* **968** (2022) 1–50, arXiv:2109.10905 [hep-ph].

[34] H. Davoudiasl, P. B. Denton, and J. Gehrlein, "Connecting the Extremes: A Story of Supermassive Black Holes and Ultralight Dark Matter," *Phys. Rev. Lett.* **128** no. 8, (2022) 081101, arXiv:2109.01678 [astro-ph.CO].

[35] P. B. Denton and S. J. Parke, "Parameter symmetries of neutrino oscillations in vacuum, matter, and approximation schemes," *Phys. Rev. D* **105** no. 1, (2022) 013002, arXiv:2106.12436 [hep-ph].

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[37] P. B. Denton and J. Gehrlein, "A Statistical Analysis of the COHERENT Data and Applications to New Physics," *JHEP* **04** (2021) 266, arXiv:2008.06062 [hep-ph].

[38] P. B. Denton, J. Gehrlein, and R. Pestes, "CP-Violating Neutrino Non-Standard Interactions in Long-Baseline-Accelerator Data," *Phys. Rev. Lett.* **126** (2021) 051801, arXiv:2008.01110 [hep-ph].

[39] P. B. Denton and Y. Kini, "Ultra-High-Energy Tau Neutrino Cross Sections with GRAND and POEMMA," *Phys. Rev. D* **102** (2020) 123019, arXiv:2007.10334 [astro-ph.HE].

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[41] P. B. Denton and R. Pestes, "The Impact of Different Parameterizations on the Interpretation of CP Violation in Neutrino Oscillations," *JHEP* **05** (2021) 139, arXiv:2006.09384 [hep-ph].

[42] A. Abdullahi and P. B. Denton, "Visible Decay of Astrophysical Neutrinos at IceCube," *Phys. Rev. D* **102** no. 2, (2020) 023018, arXiv:2005.07200 [hep-ph].

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[44] P. B. Denton, S. J. Parke, and X. Zhang, "Fibonacci Fast Convergence for Neutrino Oscillations in Matter," *Phys. Lett.* **B807** (2020) 135592, arXiv:1909.02009 [hep-ph].

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[48] P. Bhupal Dev*, K. Babu*, P. B. Denton*, P. A. Machado*, *et al.*, "Neutrino Non-Standard Interactions: A Status Report," *SciPost Phys. Proc.* **2** (2019) 001, arXiv:1907.00991 [hep-ph]. *Co-Editors.

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[53] P. B. Denton, Y. Farzan, and I. M. Shoemaker, "Activating the fourth neutrino of the 3+1 scheme," *Phys. Rev.* **D99** no. 3, (2019) 035003, arXiv:1811.01310 [hep-ph].

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[59] K. Møller, A. M. Suliga, I. Tamborra, and P. B. Denton, "Measuring the supernova unknowns at the next-generation neutrino telescopes through the diffuse neutrino background," *JCAP* **1805** (2018) 066, arXiv:1804.03157 [astro-ph.HE].

[60] P. B. Denton and I. Tamborra, "The Bright and Choked Gamma-Ray Burst Contribution to the IceCube and ANTARES Low-Energy Excess," *JCAP* **1804** no. 04, (2018) 058, arXiv:1802.10098 [astro-ph.HE].

[61] P. B. Denton and S. J. Parke, "Addendum to "Compact perturbative expressions for neutrino oscillations in matter"," *JHEP* **06** (2018) 109, arXiv:1801.06514 [hep-ph].

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[63] P. B. Denton, D. Marfatia, and T. J. Weiler, "The Galactic Contribution to IceCube's Astrophysical Neutrino Flux," *JCAP* **1708** no. 08, (2017) 033, arXiv:1703.09721 [astro-ph.HE].

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[66] P. B. Denton and T. J. Weiler, "Sensitivity of full-sky experiments to large scale cosmic ray anisotropies," *JHEAp* **8** (2015) 1–9, arXiv:1505.03922 [astro-ph.HE].

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Conference Proceedings

[1] **GRAND** Collaboration, R. Alves Batista *et al.*, "The Giant Radio Array for Neutrino Detection (GRAND) Collaboration – Contributions to the 38th International Cosmic Ray Conference (ICRC 2023)," in *38th International Cosmic Ray Conference*. 7, 2023. arXiv:2308.00120 [hep-ex].

[2] **UHECR** Collaboration, F. Schroeder *et al.*, "Snowmass UHECR Whitepaper: Requirements on Future Instrumentation," *PoS* **ICRC2023** (2023) 206.

[3] **GRAND** Collaboration, K. Kotera, "The Giant Radio Array for Neutrino Detection (GRAND) Project," 7, 2021. arXiv:2108.00032 [astro-ph.HE].

[4] S. J. Parke, P. B. Denton, and H. Minakata, "Analytic Neutrino Oscillation Probabilities in Matter: Revisited," arXiv:1801.00752 [hep-ph].

[5] **JEM-EUSO** Collaboration, P. B. Denton, L. A. Anchordoqui, A. A. Berlind, M. Richardson, and T. J. Weiler, "Sensitivity of orbiting JEM-EUSO to large-scale cosmic-ray anisotropies," *J.Phys.Conf.Ser.* **531** (2014) 012004, arXiv:1401.5757 [astro-ph.IM].

Collaboration Papers

[1] **DUNE** Collaboration, A. Abed Abud *et al.*, "The hypothetical track-length fitting algorithm for energy measurement in liquid argon TPCs," arXiv:2409.18288 [physics.ins-det].

[2] **DUNE** Collaboration, A. Abed Abud *et al.*, "DUNE Phase II: Scientific Opportunities, Detector Concepts, Technological Solutions," arXiv:2408.12725 [physics.ins-det].

[3] **GRAND** Collaboration, R. Alves Batista *et al.*, "GRANDlib: A simulation pipeline for the Giant Radio Array for Neutrino Detection (GRAND)," arXiv:2408.10926 [astro-ph.IM].

[4] **DUNE** Collaboration, A. Abed Abud *et al.*, "First Measurement of the Total Inelastic Cross-Section of Positively-Charged Kaons on Argon at Energies Between 5.0 and 7.5 GeV," arXiv:2408.00582 [hep-ex].

[5] **DUNE** Collaboration, A. Abed Abud *et al.*, "Supernova Pointing Capabilities of DUNE," arXiv:2407.10339 [hep-ex].

[6] **DUNE** Collaboration, A. Abed Abud *et al.*, "Performance of a modular ton-scale pixel-readout liquid argon time projection chamber," arXiv:2403.03212 [physics.ins-det].

[7] **DUNE** Collaboration, A. Abed Abud *et al.*, "Doping liquid argon with xenon in ProtoDUNE Single-Phase: effects on scintillation light," *JINST* **19** no. 08, (2024) P08005, arXiv:2402.01568 [physics.ins-det].

[8] **DUNE** Collaboration, A. Abed Abud *et al.*, "The DUNE Far Detector Vertical Drift Technology. Technical Design Report," *JINST* **19** no. 08, (2024) T08004, arXiv:2312.03130 [hep-ex].

[9] D. Ayzenberg *et al.*, "Fundamental Physics Opportunities with the Next-Generation Event Horizon Telescope," arXiv:2312.02130 [astro-ph.HE].

[10] **DUNE** Collaboration, A. Abed Abud *et al.*, "Impact of cross-section uncertainties on supernova neutrino spectral parameter fitting in the Deep Underground Neutrino Experiment," *Phys. Rev. D* **107** no. 11, (2023) 112012, arXiv:2303.17007 [hep-ex].

[11] **DUNE** Collaboration, A. Abed Abud *et al.*, "Highly-parallelized simulation of a pixelated LArTPC on a GPU," *JINST* **18** no. 04, (2023) P04034, arXiv:2212.09807 [physics.comp-ph].

[12] **FASER** Collaboration, H. Abreu *et al.*, "Technical Proposal: FASERnu," arXiv:2001.03073 [physics.ins-det].

[13] **FASER** Collaboration, H. Abreu *et al.*, "Detecting and Studying High-Energy Collider Neutrinos with FASER at the LHC," *Eur. Phys. J.* **C80** no. 1, (2020) 61, arXiv:1908.02310 [hep-ex].

[14] **GRAND** Collaboration, J. Álvarez Muñiz *et al.*, "The Giant Radio Array for Neutrino Detection (GRAND): Science and Design," *Sci. China Phys. Mech. Astron.* **63** no. 1, (2020) 219501, arXiv:1810.09994 [astro-ph.HE].

Talks (104 including 67 invited)

[1] "Connecting the Extremes: A Story of Supermassive Black Holes and Ultralight Dark Matter." https://physics.ucsd.edu/events/seminars-colloquia/event?event_id=1396. **Invited** seminar at UCSD, October 2024.

[2] "Dark Matter Raining on DUNE and Other Large Volume Detectors." https://indico.bnl.gov/event/24793/. Talk at the BNL HET Group, October 2024.

[3] "Unitarity Violation in Neutrino Physics: Brief Pedagogy." https://indico.fnal.gov/event/66471/. **Invited** talk at DUNE collaboration call, October 2024.

[4] "Modern Neutrino Oscillation Theory." https://indico.fnal.gov/event/63406/contributions/297152/. **Invited** keynote plenary at NuFact, Argonne, September 2024.

[5] "NuFast: Fast and Accurate Algorithm for Calculating Long-Baseline Neutrino Oscillation Probabilities with Matter Effects." https://agenda.infn.it/event/39753/contributions/240076/. **Invited** talk at NOW, Otranto Italy, August 2024.

[6] "CP-Violation with Neutrino Disappearance and NuFast." https://indico.sanfordlab.org/event/69/timetable/#132-talk-dark-matter-raining-o. **Invited** talk at the Center for Center for Theoretical Underground Physics and Related Areas (CETUP*) workshop, Lead SD, July 2023.

[7] "NuFast: Fast and Accurate Algorithm for Calculating Long-Baseline Neutrino Oscillation Probabilities with Matter Effects."

https://indico.fnal.gov/event/60082/contributions/291412/. Talk at DUNE Collaboration Meeting at Fermilab, May 2024.

[8] "CP Violation with Neutrino Disappearance.". **Invited** seminar at Colorado State University, April 2024.

[9] "CP Violation with Neutrino Disappearance.". **Invited** seminar at Colorado State University, March 2024.

[10] "CP Violation with Neutrino Disappearance." https://indico.bnl.gov/event/21760/. Talk at the BNL HET Group, March 2024.

[11] "CP Violation with Neutrino Disappearance." https://indico.fnal.gov/event/63560/. Talk at the DUNE LBL WG, March 2024.

[12] "Knowns and Unknowns in Neutrinos." https://web.mit.edu/lns/news/archives/index.html. **Invited** colloquium at MIT, Boston, October 2023.

[13] "LMA-Dark: Large New Physics Effects in Neutrino Oscillations.". **Invited** talk at the COHERENT collaboration, August 2023.

[14] "Testing Unitarity of the Leptonic Mixing Matrix with Oscillations: A Focus on Tau Neutrinos." https://ifirse.icise.vn/nugroup/nuworkshop2023/program.html. **Invited** plenary at the 19th Rencontres du Vietnam, July 2023.

[15] "Light Sterile Neutrinos: A Modern Picture and a Model to Evade Cosmology." https://indico.ihep.ac.cn/event/18269/contributions/135575/. **Invited** talk at WIN, July 2023.

[16] "Light Sterile Neutrinos: A Modern Picture and a Model to Evade Cosmology." https://indico.sanfordlab.org/event/53/contributions/822/. **Invited** talk at the Center for Center for Theoretical Underground Physics and Related Areas (CETUP*) workshop, Lead SD, July 2023.

[17] "Here Comes the Sun: Solar Parameters in Long-Baseline Accelerator Neutrino Oscillations." https://indico.cern.ch/event/1218225/contributions/5384272/. Talk at Pheno, Pittsburgh, May 2023.

[18] "Light Sterile Neutrinos: A Modern Picture and a Model to Evade Cosmology." https://indico.cern.ch/event/1258338/contributions/5307365/. **Invited** talk at University of Cape Town, April 2023.

[19] "Knowns and Unknowns in Neutrinos.". **Invited** colloquium at University of Wisconsin, Madison, April 2023.

[20] "Neutrinos at Snowmass.". **Invited** seminar at Kings College London, January 2023.

[21] "Knowns and Unknowns in Neutrinos.". **Invited** colloquium at Stony Brook University, New York, October 2022.

[22] "Light (Fermionic?) Dark Matter." https://indico.cern.ch/event/1189979/contributions/5012521/. **Invited** talk at the International Conference on Neutrinos and Dark Matter in Egypt, October 2022.

[23] "Connecting the Extremes: A Story of Supermassive Black Holes and Ultralight Dark Matter.". **Invited** talk at Dark Matter in Compact Objects, Stars, and in Low Energy Experiments at INT, Seattle, August 2022.

[24] "Tau Neutrinos: from GeV to EeV." https://indico.fnal.gov/event/22303/contributions/246362/. **Invited** talk at Snowmass, Seattle, July 2022.

[25] "Sterile neutrinos at 1 eV." https://www.mpi-hd.mpg.de/lin/seminar_theory.en.php. **Invited** seminar at MPI Heidelberg, July 2022.

[26] "Connecting the Extremes: Story of Supermassive Black Holes and Ultralight Dark Matter." https://n3as.berkeley.edu/p/event/su22-jun14/. **Invited** seminar at UC Berkeley via N3AS, June 2022.

[27] "Connecting the Extremes: Story of Supermassive Black Holes and Ultralight Dark Matter." https://theory.tifr.res.in/~sotu/previous.php. **Invited** seminar at Tata Institute of Fundamental Research, India, June 2022.

[28] "Flavor mixing, CP violation, and Unitarity." https://neutrino2022.org/program/detail_program. **Invited** plenary talk at Neutrino 2022, Seoul Korea, June 2022.

[29] "CP Violation at Long-Baseline Neutrino Experiments." https://indico.cern.ch/event/1125426/contributions/4868720/. **Invited** plenary talk at the Mitchell Conference on Collider, Dark Matter, and Neutrino Physics; Texas A&M, College Station TX, May 2022.

[30] "Neutrino Theory Overview." https://indico.sanfordlab.org/event/28/contributions/310/. **Invited** plenary talk at the Conference on Science at the Sanford Underground Research Facility (CoSSURF), May 2022.

[31] "Nu physics: Theory and practice." https://indico.cern.ch/event/1089132/contributions/4863585/. **Invited** plenary talk at the Phenomenology Symposium, Pittsburgh, May 2022.

[32] "CP Violation at Long-Baseline Neutrino Experiments." https://lawphysics.wordpress.com/2022/04/20/w131-peter-denton-cp-violation-at-long- **Invited** seminar in the Latin American Webinar Physics series, April 2022.

[33] "CP Violation at Long-Baseline Neutrino Experiments.". **Invited** seminar at Harvard, April 2022.

[34] "Connecting the Extremes: Story of Supermassive Black Holes and Ultralight Dark Matter.". **Invited** seminar at MIT, April 2022.

[35] "New Perspectives on Atmospheric Neutrinos.". **Invited** seminar at INFN Torino, March 2022.

[36] "Tau Neutrino Identification at IceCube for Unitary Violation Tests." https://indico.cern.ch/event/1103445/contributions/4724172/. Talk at Snowmass BSM neutrino workshop, February 2022.

[37] "Neutrinos and Cosmic Rays at Snowmass." https://indico.bnl.gov/event/13887/. Talk at BNL Snowmass Retreat, December 2021.

[38] "Astrophysical Neutrino Decay." https://indico.ipmu.jp/event/397/contributions/6390/. **Invited** talk at Dark Sectors of Astroparticle Physics at IPMU, Japan December 2021.

[39] "Neutrino Oscillations at FPF." https://indico.cern.ch/event/1076733/contributions/4577119/. Talk at Third Forward Physics Facility October 2021.

[40] "Astrophysical Neutrino Decay." https://indico.ific.uv.es/event/6178/contributions/15526/. Talk at TAUP August 2021.

[41] "Astrophysical Neutrino Decay." https://indico.desy.de/event/28202/contributions/105961/. Talk at EPS-HEP July 2021.

[42] "CP-Violating Neutrino Non-Standard Interactions in Long-Baseline-Accelerator Data." https://indico.cern.ch/event/1034469/contributions/4430079/. Talk at DPF at FSU July 2021.

[43] "CP-Violating Neutrino Non-Standard Interactions in Long-Baseline-Accelerator Data." https://indico.ibs.re.kr/event/357/timetable/. Talk at PASCOS in IBS Koreas June 2021.

[44] "CP-Violating Neutrino Non-Standard Interactions in Long-Baseline-Accelerator Data." https://indico.cern.ch/event/982783/contributions/4362341/. Talk at Pheno May 2021.

[45] "Neutrino Oscillations in Matter and Linear Algebra.". **Invited** colloquium at Illinois Institute of Technology April 2021.

[46] "CP Violation at Long-Baseline Neutrino Experiments.". **Invited** seminar at Michigan State University March 2021.

[47] "Astrophysical Neutrino Decay." https://agenda.infn.it/event/24250/contributions/129755/. Talk at the XIX International Workshop on Neutrino Telescopes February 2021.

[48] "CP Violation at Long-Baseline Neutrino Experiments." https://indico.cern.ch/event/1001277/. **Invited** seminar at Sydney CPPC February 2021.

[49] "Ultralight Fermionic Dark Matter.". **Invited** talk at Asymptotic Safety and Dark Matter workshop at OSU December 2020.

[50] "Ultralight Fermionic Dark Matter." https://www.ictp-saifr.org/dmw2020/. Talk at 3rd South American Dark Matter Workshop at ICTP in Sao Paulo December 2020.

[51] "3+1+NSI and CP Violation.". **Invited** seminar at KIAS November 2020.

[52] "CP Violation at Long-Baseline Neutrino Experiments." https://indico.bnl.gov/event/8008/. Talk at BNL HET Group October 2020.

[53] "CP Violation at Long-Baseline Neutrino Experiments." https://npc.fnal.gov/neutrino-seminar-series/. **Invited** Neutrino Physics Center seminar October 2020 at Fermilab.

[54] "The Lightest Dark Matter.". **Invited** seminar October 2020 at University of Sussex.

[55] "Astrophysical Neutrino Decay." https://indico.cern.ch/event/868940/contributions/3899680/. Talk at ICHEP July 2020 in Prague (virtual).

[56] "Visible Decay of Astrophysical Neutrinos." https://indico.bnl.gov/event/7985/. Talk at BNL HET Group May 2020.

[57] "Ultralight Boson Dark Matter Constraints from Superradiance Leveraging the Event Horizon Telescope Collaboration's Observations of M87*." https://indico.cern.ch/event/858682/contributions/3837326/. Talk at Pheno May 2020 in Pittsburgh, PA (virtual).

[58] "Beyond the Standard Model physics with accelerator neutrino experiments." https://aps-april.onlineeventpro.freeman.com/sessions/15336169/subsession/25117238/ **Invited** plenary at APS April Meeting 2020 (virtual).

[59] "LMA-Dark: Large New Physics Effects in Neutrino Oscillations." https://indico.bnl.gov/event/7665/. Talk at BNL HET Group February 2020.

[60] "Motivation for neutrino precision in oscillations." https://indico.bnl.gov/event/7282/. **Invited** talk at BNL Snowmass Intensity Frontier & Astrophysics Workshop February 2020.

[61] "Recent results in neutrino oscillation theory." https://www.physics.umass.edu/events/2019-11-15-recent-results-neutrino-oscillatior **Invited** seminar at UMass Amherst November 2019.

[62] "Realizing the physics goals at DUNE." https://indico.fnal.gov/event/21535/other-view. **Invited** talk at Modules Of Opportunity for DUNE workshop at BNL November 2019.

[63] "Recent results in neutrino oscillation theory." https://physics.osu.edu/events/high-energy-physics-seminar-peter-dentonbrookahaven- **Invited** seminar at OSU November 2019.

[64] "New physics probes in future neutrino experiments." https://indico.bnl.gov/event/6652/. **Invited** colloquium at BNL October 2019.

[65] "Recent results in neutrino oscillation theory." https://indico.cern.ch/event/800930/contributions/3557081/. Talk at CERN Neutrino Platform October 2019.

[66] "Neutrino theory in the coming years." https://indico.bnl.gov/event/6710/. **Invited** talk at BNL Snowmass Discussion October 2019.

[67] "Recent results in neutrino oscillation theory." https://theory.fnal.gov/events/event/tbd-neutrinos/. **Invited** theory seminar at Fermilab September 2019.

[68] "Exact neutrino oscillation probabilities in matter." https://indico.ific.uv.es/event/3649/contributions/11349/. Talk given at TomFest at Vanderbilt August 2019.

[69] "Neutrino oscillation probabilities in matter." https://indico.cern.ch/event/782953/contributions/3444777/. Talk given at the 2019 DPF meeting at Northeastern July 2019.

[70] "Neutrino self interactions in the early universe." https://indico.cern.ch/event/812851/contributions/3432032/. **Invited** talk at NTN NSI Workshop at Wash U May 2019.

[71] "Partial neutrino decay resolves icecube's track and cascade tension." https://indico.bnl.gov/event/5875/. Talk at BNL HET Group May 2019.

[72] "Neutrino Oscillation Probabilities in Matter." http://theory.physics.uci.edu/seminars.html. **Invited** seminar at UC Irvine May 2019.

[73] "Neutrino Oscillation Probabilities in Matter." http://www.theory.caltech.edu/people/carol/seminar.html. Seminar at Caltech May 2019.

[74] "Partial Neutrino Decay Addresses the Track – Cascade Tension at IceCube." https://indico.cern.ch/event/777988/contributions/3410555/. Talk at Pheno May 2019 in Pittsburgh, PA.

[75] "Neutrino Oscillation Probabilities in Matter." https://www.phys.psu.edu/seminars/all-seminars. **Invited** seminar at Penn State April 2019.

[76] "Neutrino Oscillation Probabilities in Matter." https://www.phys.vt.edu/Talks/NeutrinoPhysicsSeminar.html. **Invited** seminar at Virginia Tech February 2019.

[77] "Analytic and Compact Expressions for Neutrino Oscillations in Matter." https://dx.doi.org/10.5281/zenodo.2642372. **Invited** talk at PONDD workshop at Fermilab December 2018.

[78] "Finding the Unexpected in IceCube.". **Invited** N-Talk at Niels Bohr International Academy September 2018 in Copenhagen.

[79] "High Energy Neutrino Parameter Estimation.". **Invited** talk at GRAND workshop at IAP August 2018.

[80] "New Neutrino Interactions: Breaking Degeneracies and Relaxing Sterile Tensions.". **Invited** seminar at BNL August 2018.

[81] "Analytic and compact perturbative expressions for neutrino oscillations in matter." https://indico.cern.ch/event/686555/contributions/2977525/. Talk at the International Conference of High Energy Physics (ICHEP) July 2018 in Seoul.

[82] "Gamma Ray Bursts, Supernovae, Neutrinos, and IceCube.". **Invited** talk at IIHE April 2018 in Brussels.

[83] "Gamma Ray Bursts, Supernovae, Neutrinos, and IceCube.". **Invited** talk at DESY January 2018 in Zeuthen.

[84] "Gamma Ray Bursts, Supernovae, Neutrinos, and IceCube.". **Invited** talk at Arizona State University January 2018.

[85] "Supernova - Gamma Ray Burst - Neutrino Connection.". **Invited** SUPER-STARS talk at DARK Cosmology Center November 2017 in Copenhagen.

[86] "Gamma Ray Bursts, Supernovae, Neutrinos, and IceCube.". **Invited** N-Talk at Niels Bohr International Academy November 2017 in Copenhagen.

[87] "Analytic and compact perturbative expressions for neutrino oscillations in matter.". **Invited** seminar at Campinas State University October 2017.

[88] "COHERENT and the LMA-Dark NSI Solution." https://indico.uu.se/event/324/session/20/contribution/182. **Invited** talk at the NUFACT 2017 workshop September 2017 in Uppsala.

[89] "What We Can Tell About the Sources of IceCube's Neutrinos, and What IceCube Can Tell Us About Gamma Ray Bursts." http://astro.fnal.gov/events/event/tbd-35/. Astrophysics theory seminar at Fermilab August 2017 in Batavia, IL.

[90] "The Galactic Contribution to IceCube's Astrophysical Neutrino Flux." https://indico.cern.ch/event/615891/contributions/2608935/. Talk at TeV Particle Astrophysics at CCAPP in Columbus, OH.

[91] "Finding Anisotropies in Cosmic Rays and Neutrinos." http://nbia.nbi.ku.dk/nbia-seminars/nbia-seminar-peter-denton/. **Invited** seminar at the Niels Bohr International Academy astroparticle seminar April 2017 in Copenhagen.

[92] "Analytic and compact perturbative expressions for neutrino oscillations in matter.". Talk at the Center of Excellence for Particle Physics at the Terascale at the University of Melbourne December 2016.

[93] "Spherical Harmonics as a Tool for Finding Anisotropies in UHECR and Astrophysical Neutrino Fluxes.". **Invited** talk at the Danish Astroparticle Physics Meeting October 2016 in Odense.

[94] "The Standard Neutrino Oscillation Parameters and a Surprising Alternative Solution.". **Invited** N-Talk at Niels Bohr International Academy September 2016 in Copenhagen.

[95] "Analytic and compact perturbative expressions for neutrino oscillations in matter." http://indico.cern.ch/event/432527/contributions/1071859/. Talk at the International Conference of High Energy Physics (ICHEP) August 2016 in Chicago, IL.

[96] "Analytic and compact perturbative expressions for neutrino oscillations in matter." http://theory.fnal.gov/seminars/seminars.html. **Invited** talk at the Fermilab theory seminar July 2016 in Batavia, IL.

[97] "Methods for Probing New Physics at High Energies." https://events.vanderbilt.edu/index.php?eID=90084. Successful dissertation defense at Vanderbilt University June 2016 in Nashville, TN.

[98] "Analytic and compact perturbative expressions for neutrino oscillations in matter." http://www.ccsem.infn.it/issp2016/index.html. Talk at the International School of Subnuclear Physics May 2016 in Erice, Sicily.

[99] "Analytic and compact perturbative expressions for neutrino oscillations in matter." https://indico.cern.ch/event/489180/contributions/2158195/. Talk at Pheno May 2016 in Pittsburgh, PA.

[100] "Cosmic Ray Anisotropy with Partial Sky Exposure.". **Invited** seminar November 2015 at CCAPP.

[101] "The Effect of a Maximum Lepton Energy on the Stability of Pions and Cosmic Ray Physics." http://meetings.aps.org/link/BAPS.2015.APR.M14.1. Talk at the APS April meeting 2015 in Baltimore, MD.

[102] "Particle Physics at the Highest Energies.". **Invited** seminar December 2014 at the University of Wisconsin – Madison.

[103] "Sensitivity of orbiting JEM-EUSO to large-scale cosmic-ray anisotropies.". Talk at the Cosmic Ray Anisotropy Workshop September 2013 in Madison, WI.

[104] "Using dispersion relations to look for new physics in pp elastic scattering at the LHC." http://meetings.aps.org/link/BAPS.2013.APR.H12.8. Talk at the APS April meeting 2013 in Denver, CO.

Lectures

[1] "Neutrino Oscillations and Theory Biases.". Lecture for students at the CETUP workshop in Lead SD, July 2023.

[2] "Neutrino Oscillations and Theory Biases." https://indico.bnl.gov/event/19465/timetable/. Lecture for students at BNL, June 2023.

[3] "Neutrino Oscillations and Theory Biases." https://indico.bnl.gov/event/15829/timetable/. Lecture for students at BNL, June 2022.

[4] "Neutrino Oscillations.". Two lectures for undergraduates at TIFR, May 2021.

Notes

[1] P. B. Denton, H. Minakata, and S. J. Parke, "Comment on 1801.10488v3,". https://zenodo.org/record/1177535.

Code

[1] P. B. Denton and S. J. Parke, "NuFast.". https://github.com/PeterDenton/NuFast/.

[2] A. Abdullahi and P. B. Denton, "Astro-Nu-Decay.". https://github.com/PeterDenton/Astro-Nu-Decay.

[3] P. B. Denton, "Peterdenton/nu-pert-compare: v1.0.0," Jan., 2019. https://doi.org/10.5281/zenodo.2547029. https://github.com/PeterDenton/Nu-Pert-Compare.

[4] P. B. Denton, "ANA v1.0.0: Astrophysical Neutrino Anisotropy," Mar., 2017. https://doi.org/10.5281/zenodo.438675. https://github.com/PeterDenton/ANA.

[5] P. B. Denton, "Nu-Pert v0.2.2: Analytic and compact perturbative expressions for neutrino oscillations in matter," June, 2016. https://doi.org/10.5281/zenodo.54629. https://github.com/PeterDenton/Nu-Pert.

Miscellaneous

[1] P. B. Denton* *et al.*, "Neutrino Non-Standard Interactions." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF3_NF1-CF7_CF0-TF11_ *Editor.

[2] P. B. Denton* and S. J. Parke, "Direct Probes of the Matter Effect in Neutrino Oscillations." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF1_NF3-TF0_TF0_Peter *Editor.

[3] M. Bustamante*, P. B. Denton*, S. Wissel*, *et al.*, "Ultra-High-Energy Neutrinos." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF4_NF6-CF7_CF3-TF9_T *Editor.

[4] P. B. Denton* *et al.*, "Computing Neutrino Oscillations in Matter Efficiently." Snowmass 2021: LOI, July, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF8-CompF2-005.pdf. *Editor.

[5] L. A. Anchordoqui, M. Bustamante, *et al.*, "Cosmic Neutrino Probes of Fundamental Physics." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/CF/SNOWMASS21-CF7_CF1-NF4_NF3-TF11_

[6] L. A. Anchordoqui *et al.*, "Synergy of astro-particle physics and collider physics." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/CF/SNOWMASS21-CF7_CF0-EF6_EF7-NF5_N

[7] D. Soldin *et al.*, "Studies of the Muon Excess in Cosmic Ray Air Showers." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/CF/SNOWMASS21-CF7_CF0-EF6_EF7-AF4_A

[8] J. L. Feng, F. Kling, *et al.*, "Forward Physics Facility." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/EF/SNOWMASS21-EF9_EF6_EF10_EF5-NF6_

[9] L. Johns *et al.*, "Supernova neutrinos and particle-physics opportunities." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF8_NF4-CF3_CF7-TF9_T

[10] K. Scholberg *et al.*, "Neutrino Opportunities at the ORNL Second Target Station." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF6_NF9-CF1_CF0-TF11_

[11] M. Hostert *et al.*, "Opportunities and signatures of non-minimal Heavy Neutral Leptons." Snowmass 2021: LOI, August, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF2_NF3-EF9_EF0-RF4_R

[12] D. A. Sierra *et al.*, "Coherent elastic neutrino-nucleus scattering: Theoretical and experimental impact." Snowmass 2021: LOI, May, 2020. https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF0-002.pdf.

Thesis

[1] P. B. Denton, *Methods for Probing New Physics at High Energies*. PhD thesis, Vanderbilt U., 2016-12-18. https://ir.vanderbilt.edu/handle/1803/12817.