

# Publication List

Peter B. Denton

Updated: April 14, 2022<sup>\*†</sup>

## Articles (52)

- [1] C. A. Argüelles *et al.*, “Snowmass White Paper: Beyond the Standard Model effects on Neutrino Flavor,” in *2022 Snowmass Summer Study*. 3, 2022.  
[arXiv:2203.10811](#) [[hep-ph](#)].
- [2] M. Ackermann *et al.*, “High-Energy and Ultra-High-Energy Neutrinos,” in *2022 Snowmass Summer Study*. 3, 2022. [arXiv:2203.08096](#) [[hep-ph](#)].
- [3] E. Abdalla *et al.*, “Cosmology Intertwined: A Review of the Particle Physics, Astrophysics, and Cosmology Associated with the Cosmological Tensions and Anomalies,” in *2022 Snowmass Summer Study*. 3, 2022.  
[arXiv:2203.06142](#) [[astro-ph.CO](#)].
- [4] P. B. Denton *et al.*, “Tau Neutrinos in the Next Decade: from GeV to EeV,”  
[arXiv:2203.05591](#) [[hep-ph](#)]. \*Editor.
- [5] J. L. Feng *et al.*, “The Forward Physics Facility at the High-Luminosity LHC,”  
[arXiv:2203.05090](#) [[hep-ex](#)].
- [6] J. M. Berryman *et al.*, “Neutrino Self-Interactions: A White Paper,” 3, 2022.  
[arXiv:2203.01955](#) [[hep-ph](#)].
- [7] D. Caratelli *et al.*, “Low-Energy Physics in Neutrino LArTPCs,” 3, 2022.  
[arXiv:2203.00740](#) [[physics.ins-det](#)].
- [8] P. B. Denton, “Sterile Neutrino Searches with MicroBooNE: Electron Neutrino Disappearance,” [arXiv:2111.05793](#) [[hep-ph](#)].
- [9] 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](#)].

---

<sup>\*</sup>For the latest version see: [peterdenton.github.io](#)

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

- [10] 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 \[hep-ph\]](#).
- [11] P. B. Denton and J. Gehrlein, “New tau neutrino oscillation and scattering constraints on unitarity violation,” [arXiv:2109.14575 \[hep-ph\]](#).
- [12] L. A. Anchordoqui *et al.*, “The Forward Physics Facility: Sites, Experiments, and Physics Potential,” [arXiv:2109.10905 \[hep-ph\]](#).
- [13] 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 \[astro-ph.CO\]](#).
- [14] 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 \[hep-ph\]](#).
- [15] H. Davoudiasl, P. B. Denton, and D. A. McGady, “Ultralight Fermionic Dark Matter,” *Phys. Rev. D* **103** (2021) 055014, [arXiv:2008.06505 \[hep-ph\]](#).
- [16] 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 \[hep-ph\]](#).
- [17] 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 \[hep-ph\]](#).
- [18] 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 \[astro-ph.HE\]](#).
- [19] H. Davoudiasl, P. B. Denton, and J. Gehrlein, “An Attractive Scenario for Light Dark Matter Direct Detection,” *Phys. Rev. D* **102** (7, 2020) 091701, [arXiv:2007.04989 \[hep-ph\]](#).
- [20] 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 \[hep-ph\]](#).
- [21] A. Abdullahi and P. B. Denton, “Visible Decay of Astrophysical Neutrinos at IceCube,” *Phys. Rev. D* **102** no. 2, (2020) 023018, [arXiv:2005.07200 \[hep-ph\]](#).
- [22] P. B. Denton, “A Return To Neutrino Normalcy,” [arXiv:2003.04319 \[hep-ph\]](#).
- [23] **FASER** Collaboration, H. Abreu *et al.*, “Technical Proposal: FASERnu,” [arXiv:2001.03073 \[physics.ins-det\]](#).

- [24] 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 \[hep-ph\]](#).
- [25] P. B. Denton, S. J. Parke, T. Tao, and X. Zhang, “Eigenvectors from Eigenvalues: a survey of a basic identity in linear algebra,” *Bull. Am. Math. Soc.* (8, 2019) , [arXiv:1908.03795 \[math.RA\]](#).
- [26] **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 \[hep-ex\]](#).
- [27] C. A. Argüelles *et al.*, “White Paper on New Opportunities at the Next-Generation Neutrino Experiments (Part 1: BSM Neutrino Physics and Dark Matter),” [arXiv:1907.08311 \[hep-ph\]](#).
- [28] P. B. Denton, S. J. Parke, and X. Zhang, “Eigenvalues: the Rosetta Stone for Neutrino Oscillations in Matter,” *Phys. Rev. D* **101** (2020) 093001, [arXiv:1907.02534 \[hep-ph\]](#).
- [29] 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.
- [30] H. Davoudiasl and P. B. Denton, “Ultra Light Boson Dark Matter and Event Horizon Telescope Observations of M87\*,” *Phys. Rev. Lett.* **123** (2019) 021102, [arXiv:1904.09242 \[astro-ph.CO\]](#).
- [31] G. A. Barenboim, P. B. Denton, and I. M. Oldengott, “Inflation meets neutrinos,” *Phys. Rev.* **D99** (2019) 083515, [arXiv:1903.02036 \[astro-ph.CO\]](#).
- [32] P. B. Denton and S. J. Parke, “Simple and Precise Factorization of the Jarlskog Invariant for Neutrino Oscillations in Matter,” *Phys. Rev.* **D100** (2019) 053004, [arXiv:1902.07185 \[hep-ph\]](#).
- [33] G. Barenboim, P. B. Denton, S. J. Parke, and C. A. Ternes, “Neutrino oscillation probabilities through the looking glass,” *Phys. Lett.* **B791** (2019) 351–360, [arXiv:1902.00517 \[hep-ph\]](#).
- [34] 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 \[hep-ph\]](#).
- [35] **GRAND** Collaboration, J. Álvarez Muñoz *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 \[astro-ph.HE\]](#).

- [36] K. Møller, P. B. Denton, and I. Tamborra, “Cosmogenic Neutrinos Through the GRAND Lens Unveil the Nature of Cosmic Accelerators,” *JCAP* **1905** (2019) 047, [arXiv:1809.04866 \[astro-ph.HE\]](#).
- [37] P. B. Denton and S. J. Parke, “The Effective  $\Delta m_{ee}^2$  in Matter,” *Phys. Rev.* **D98** (2018) 093001, [arXiv:1808.09453 \[hep-ph\]](#).
- [38] P. B. Denton, S. J. Parke, and X. Zhang, “Rotations Versus Perturbative Expansions for Calculating Neutrino Oscillation Probabilities in Matter,” *Phys. Rev.* **D98** no. 3, (2018) 033001, [arXiv:1806.01277 \[hep-ph\]](#).
- [39] P. B. Denton and I. Tamborra, “Invisible Neutrino Decay Resolves IceCube’s Track and Cascade Tension,” *Phys. Rev. Lett.* **121** no. 12, (2018) 121802, [arXiv:1805.05950 \[hep-ph\]](#).
- [40] P. B. Denton, Y. Farzan, and I. M. Shoemaker, “Testing large non-standard neutrino interactions with arbitrary mediator mass after COHERENT data,” *JHEP* **07** (2018) 037, [arXiv:1804.03660 \[hep-ph\]](#).
- [41] 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 \[astro-ph.HE\]](#).
- [42] 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 \[astro-ph.HE\]](#).
- [43] P. B. Denton and S. J. Parke, “Addendum to “Compact perturbative expressions for neutrino oscillations in matter”,” *JHEP* **06** (2018) 109, [arXiv:1801.06514 \[hep-ph\]](#).
- [44] P. B. Denton and I. Tamborra, “Exploring the Properties of Choked Gamma-ray Bursts with IceCube’s High-energy Neutrinos,” *Astrophys. J.* **855** no. 1, (2018) 37, [arXiv:1711.00470 \[astro-ph.HE\]](#).
- [45] 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 \[astro-ph.HE\]](#).
- [46] P. Coloma, P. B. Denton, M. C. Gonzalez-Garcia, M. Maltoni, and T. Schwetz, “Curtailling the Dark Side in Non-Standard Neutrino Interactions,” *JHEP* **04** (2017) 116, [arXiv:1701.04828 \[hep-ph\]](#).
- [47] P. B. Denton, H. Minakata, and S. J. Parke, “Compact Perturbative Expressions For Neutrino Oscillations in Matter,” *JHEP* **06** (2016) 051, [arXiv:1604.08167 \[hep-ph\]](#).
- [48] 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 \[astro-ph.HE\]](#).

- [49] P. B. Denton and T. J. Weiler, “The Fortuitous Latitude of the Pierre Auger Observatory and Telescope Array for Reconstructing the Quadrupole Moment,” *Astrophys.J.* **802** no. 1, (2015) 25, [arXiv:1409.0883 \[astro-ph.HE\]](#).
- [50] L. A. Anchordoqui, P. B. Denton, H. Goldberg, T. C. Paul, L. H. M. Da Silva, B. J. Vlcek, and T. J. Weiler, “Weinberg’s Higgs portal confronting recent LUX and LHC results together with upper limits on  $B^+$  and  $K^+$  decay into invisibles,” *Phys. Rev.* **D89** no. 8, (2014) 083513, [arXiv:1312.2547 \[hep-ph\]](#).
- [51] P. B. Denton and T. J. Weiler, “Using Integral Dispersion Relations to Extend the LHC Reach for New Physics,” *Phys. Rev.* **D89** no. 3, (2014) 035013, [arXiv:1311.1248 \[hep-ph\]](#).
- [52] N. Arsene, L. I. Caramete, P. B. Denton, and O. Micu, “Quantum Black Holes Effects on the Shape of Extensive Air Showers,” *Rom. Rep. Phys.* **69** (2017) 105, [arXiv:1310.2205 \[hep-ph\]](#).

## Conference Proceedings

- [1] **GRAND** Collaboration, K. Kotera, “The Giant Radio Array for Neutrino Detection (GRAND) Project,” 7, 2021. [arXiv:2108.00032 \[astro-ph.HE\]](#).
- [2] S. J. Parke, P. B. Denton, and H. Minakata, “Analytic Neutrino Oscillation Probabilities in Matter: Revisited,” [arXiv:1801.00752 \[hep-ph\]](#).
- [3] **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 \[astro-ph.IM\]](#).

## Talks (72 including 40 invited)

- [1] “CP Violation at Long-Baseline Neutrino Experiments.”.

## 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, “Peterdenton/nu-pert-compare: v1.0.0,” Jan., 2019. <https://doi.org/10.5281/zenodo.2547029>. <https://github.com/PeterDenton/Nu-Pert-Compare>.

- [2] P. B. Denton, “ANA v1.0.0: Astrophysical Neutrino Anisotropy,” Mar., 2017.  
<https://doi.org/10.5281/zenodo.438675>.  
<https://github.com/PeterDenton/ANA>.
- [3] 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\\_T](https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF3_NF1-CF7_CF0-TF11_T)  
 \*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\\_](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\\_TF](https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF4_NF6-CF7_CF3-TF9_TF)  
 \*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\\_T](https://www.snowmass21.org/docs/files/summaries/CF/SNOWMASS21-CF7_CF1-NF4_NF3-TF11_T)
- [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\\_NF](https://www.snowmass21.org/docs/files/summaries/CF/SNOWMASS21-CF7_CF0-EF6_EF7-NF5_NF)
- [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\\_AF](https://www.snowmass21.org/docs/files/summaries/CF/SNOWMASS21-CF7_CF0-EF6_EF7-AF4_AF)
- [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\\_N](https://www.snowmass21.org/docs/files/summaries/EF/SNOWMASS21-EF9_EF6_EF10_EF5-NF6_N)

- [9] L. Johns *et al.*, “Super-nova neutrinos and particle-physics opportunities.” Snowmass 2021: LOI, August, 2020.  
[https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF8\\_NF4-CF3\\_CF7-TF9\\_TF10](https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF8_NF4-CF3_CF7-TF9_TF10)
- [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\\_TF12](https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF6_NF9-CF1_CF0-TF11_TF12)
- [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\\_RF5](https://www.snowmass21.org/docs/files/summaries/NF/SNOWMASS21-NF2_NF3-EF9_EF0-RF4_RF5)
- [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.  
<http://etd.library.vanderbilt.edu/available/etd-07052016-131020/>.