

Daniel Meerburg

Senior kavli fellow

Publications

Refereed.

Major Contribution/First Author (27)

- [1] D. Green, P. D. Meerburg, and J. Meyers. “Aspects of Dark Matter Annihilation in Cosmology”. In: *JCAP* 1904 (2019), p. 025. arXiv: 1804.01055 [3].
- [2] S. Foreman et al. “Cosmic variance mitigation in measurements of the integrated Sachs-Wolfe effect”. In: *Phys. Rev. D* 99.8 (2019), p. 083506. arXiv: 1811.00529 [2].
- [3] J. Aguirre et al. “The Simons Observatory: Science goals and forecasts”. In: *JCAP* 1902 (2019), p. 056. arXiv: 1808.07445 [72].
- [4] R. Hills et al. “Concerns about modelling of the EDGES data”. In: *Nature* 564.7736 (2018), E32–E34. arXiv: 1805.01421 [31].
- [5] S. Foreman et al. “Lensing reconstruction from line intensity maps: the impact of gravitational nonlinearity”. In: *JCAP* 1807.07 (2018), p. 046. arXiv: 1803.04975 [11].
- [6] J. Meyers et al. “Beyond CMB cosmic variance limits on reionization with the polarized Sunyaev-Zel’dovich effect”. In: *Phys. Rev. D* 97.10 (2018), p. 103505. arXiv: 1710.01708 [8, PRD editors suggestion].
- [7] P. D. Meerburg, J. Meyers, and A. van Engelen. “Reconstructing the Primary CMB Dipole”. In: *Phys. Rev. D* 96.8 (2017), p. 083519. arXiv: 1704.00718 [8].
- [8] C. Sheere et al. “Establishing the origin of CMB B-mode polarization”. In: *Phys. Rev. D* 96.6 (2017), p. 063508. arXiv: 1610.09365 [3].
- [9] P. D. Meerburg et al. “Reconstructing CMB fluctuations and the mean reionization optical depth”. In: *Phys. Rev. D* 95.12 (2017), p. 123538. arXiv: 1701.06992 [6].
- [10] P. D. Meerburg et al. “Prospects for Cosmological Collider Physics”. In: *JCAP* 1703.03 (2017), p. 050. arXiv: 1610.06559 [35].
- [11] X. Chen, P. D. Meerburg, and M. Münchmeyer. “The Future of Primordial Features with 21 cm Tomography”. In: *JCAP* 1609.09 (2016), p. 023. arXiv: 1605.09364 [21].
- [12] P. D. Meerburg et al. “CMB B -mode non-Gaussianity”. In: *Phys. Rev. D* 93 (2016), p. 123511. arXiv: 1603.02243 [26].
- [13] P. D. Meerburg, M. Münchmeyer, and B. Wandelt. “Joint resonant CMB power spectrum and bispectrum estimation”. In: *Phys. Rev. D* 93.4 (2016), p. 043536. arXiv: 1510.01756 [22].
- [14] P. D. Meerburg and M. Münchmeyer. “Optimal CMB estimators for bispectra from excited states”. In: *Phys. Rev. D* 92.6 (2015), p. 063527. arXiv: 1505.05882 [9].
- [15] P. D. Meerburg et al. “Multiwavelength constraints on the inflationary consistency relation”. In: *Phys. Rev. D* 91.10 (2015), p. 103505. arXiv: 1502.00302 [27].
- [16] M. Münchmeyer, P. D. Meerburg, and B. D. Wandelt. “Optimal estimator for resonance bispectra in the CMB”. In: *Phys. Rev. D* 91.4 (2015), p. 043534. arXiv: 1412.3461 [20].
- [17] P. D. Meerburg. “Alleviating the tension at low ℓ through axion monodromy”. In: *Phys. Rev. D* 90.6 (2014), p. 063529. arXiv: 1406.3243 [18].
- [18] Y. Ali-Haïmoud, P. D. Meerburg, and S. Yuan. “New light on 21 cm intensity fluctuations from the dark ages”. In: *Phys. Rev. D* 89.8 (2014), p. 083506. arXiv: 1312.4948 [22].
- [19] P. D. Meerburg and D. N. Spergel. “Searching for oscillations in the primordial power spectrum. II. Constraints from Planck data”. In: *Phys. Rev. D* 89.6 (2014), p. 063537. arXiv: 1308.3705 [63].
- [20] P. D. Meerburg, D. N. Spergel, and B. D. Wandelt. “Searching for oscillations in the primordial power spectrum. I. Perturbative approach”. In: *Phys. Rev. D* 89.6 (2014), p. 063536. arXiv: 1308.3704 [52].
- [21] P. D. Meerburg, C. Dvorkin, and D. N. Spergel. “Probing Patchy Reionization through τ -21 cm Correlation Statistics”. In: *Astrophys. J.* 779 (2013), p. 124. arXiv: 1303.3887 [8].
- [22] P. D. Meerburg and E. Pajer. “Observational Constraints on Gauge Field Production in Axion Inflation”. In: *JCAP* 1302 (2013), p. 017. arXiv: 1203.6076 [53].

- [23] P. D. Meerburg, R. Wijers, and J. P. van der Schaar. *WMAP 7 Constraints on Oscillations in the Primordial Power Spectrum*. 2012, In: Mon. Not. Roy. Astron. Soc. 421 (2012), p. 369. arXiv: 1109.5264 [47].
- [24] P. D. Meerburg and J. P. van der Schaar. *Minimal cut-off vacuum state constraints from CMB bispectrum statistics*. 2011, In: Phys. Rev. D83 (2011), p. 043520. arXiv: 1009.5660 [13].
- [25] P. D. Meerburg. *Oscillations in the Primordial Bispectrum: Mode Expansion*. 2010, In: Phys. Rev. D82 (2010), p. 063517. arXiv: 1006.2771 [31].
- [26] P. D. Meerburg, J. P. van der Schaar, and M. G. Jackson. *Bispectrum signatures of a modified vacuum in single field inflation with a small speed of sound*. 2010, In: JCAP 1002 (2010), p. 001. arXiv: 0910.4986 [63].
- [27] P. D. Meerburg, J. P. van der Schaar, and P. S. Corasaniti. *Signatures of Initial State Modifications on Bispectrum Statistics*. 2009, In: JCAP 0905 (2009) p. 018. arXiv: 0901.4044 [181].

Limited Contribution/Co-author (1)

- [28] T. Bagnoli et al. *An Inner Gaseous Disk around the Herbig Be Star MWC 147*. 2010. arXiv: 1010.1414 [6].

Unrefereed / to appear.

Major Contribution/First Author; ArXiv (4)

- [29] D. Kodwani et al. *Initial conditions of the universe: A sign of the sine mode*. 2019. arXiv: 1903.05042 [1, under review].
- [30] R. Ansari et al. *Inflation and Early Dark Energy with a Stage II Hydrogen Intensity Mapping experiment*. 2018. arXiv: 1810.09572 [16].
- [31] Y. Akrami et al. *Planck 2018 results. X. Constraints on inflation*. 2018. arXiv: 1807.06211 [307, under review].
- [32] K. N. Abazajian et al. *CMB-S4 Science Book, First Edition*. 2016. arXiv: 1610.02743 [483].

Limited Contribution/Co-author (2)

- [33] *Planck 2018 results. I. Overview and the cosmological legacy of Planck*. 2018. arXiv: 1807.06205 [103, under review].
- [34] *Testing Inflation with Large Scale Structure: Connecting Hopes with Reality*. 2014. arXiv: 1412.4671 [91].

Proceedings (4)

- [35] G. J. Stacey et al. "CCAT-prime: Science with an Ultra-widefield Submillimeter Observatory at Cerro Chajnantor". In: 2018. arXiv: 1807.04354 [7].
- [36] P. D. Meerburg. "The holiest grail". In: 2016. arXiv: 1605.04431 [astro-ph.CO]. URL: <http://inspirehep.net/record/1459002/files/arXiv:1605.04431.pdf>.
- [37] P. D. Meerburg, D. N. Spergel, and B. D. Wandelt. "Searching for oscillations in the primordial power spectrum". In: *Proceedings, 49th Rencontres de Moriond on Cosmology*. 2014, pp. 27–32. arXiv: 1406.0548 [16]. URL: <http://inspirehep.net/record/1298944/files/arXiv:1406.0548.pdf>.
- [38] P. D. Meerburg. "Oscillations in the primordial bispectrum". In: *Proceedings, 16th International Symposium on Particles, strings and cosmology (PASCOS 2010)*. Vol. 259. 2010, p. 012049. arXiv: 1010.2234 [4].

White papers.

White Papers (10)

- [39] *Dark Energy and Modified Gravity*. 2019. arXiv: 1903.12016 [0].
- [40] *Scratches from the Past: Inflationary Archaeology through Features in the Power Spectrum of Primordial Fluctuations*. 2019. arXiv: 1903.09883 [2].
- [41] *Inflation and Dark Energy from spectroscopy at $z > 2$* . 2019. arXiv: 1903.09208 [1].
- [42] *"SZ spectroscopy" in the coming decade: Galaxy cluster cosmology and astrophysics in the submillimeter*. 2019. arXiv: 1903.04944 [astro-ph.CO].
- [43] *Primordial Non-Gaussianity*. 2019. arXiv: 1903.04409 [1].
- [44] *Messengers from the Early Universe: Cosmic Neutrinos and Other Light Relics*. 2019. arXiv: 1903.04763 [0].
- [45] *Dark Matter Science in the Era of LSST*. 2019. arXiv: 1903.04425 [0].
- [46] *Science from an Ultra-Deep, High-Resolution Millimeter-Wave Survey*. 2019. arXiv: 1903.03263 [4].
- [47] *Observing the Evolution of the Universe*. 2009. arXiv: 0903.0902 [6].
- [48] *The Origin of the Universe as Revealed Through the Polarization of the Cosmic Microwave Background*. 2009. arXiv: 0902.3796 [17].

Other

Scientific editor of Oerknal. Een definitief ABC van de kosmologie. , *Govert Schilling*, Fontaine Uitgevers 2014.
(Scientific) Consulting on fiction novel, *Daniel Samkalden*, Bezige Bij 2018.

Talks

Invited.

1. *Applications of CMB reconstruction*, Relativity and Cosmology Seminar Series, Queen Mary, November 2018
2. *Applications of CMB reconstruction*, Astrophysics Seminar, Surrey, November 2018
3. *The CMB, reionization, and the 21cm line: lessons from current data, and future directions*, Seminar, Meudon, October 2018
4. *The CMB, reionization, and the 21cm line: lessons from current data, and future directions*, Cosmology seminar, Sussex, April 2018
5. *Cosmological challenges: neutrino mass*, Astrophysics Seminar, Imperial College, February 2018
6. *Cosmological challenges: neutrino mass*, Dutch Cosmology meeting, RUG, January 2018
7. *Beyond 2-point statistics*, B-mode from space workshop, Berkeley, December 2017
8. *Towards a measurement of the neutrino mass in cosmology*, API seminar, University of Amsterdam, November 2017
9. *Towards a measurement of the neutrino mass in cosmology*, IoA lunch talk, Cambridge, October 2017
10. *New Targets in Cosmology*, Kapteyn seminar, RUG, September 2017
11. *Beyond Concordance*, VSI seminar, RUG, September 2017
12. *New things to do with the CMB: part deux*, Cosmology lunch seminar, Princeton/IAS, April 2017
13. *New things to do with the CMB*, Cosmology seminar, Cambridge, March 2017
14. *The next decade of CMB cosmology*, Cosmology seminar, Perimeter, February 2017
15. *The next decade of CMB cosmology*, Cosmology seminar, Leiden, February 2017
16. *The future of Primordial Universe Cosmology*, Theory seminar, OKC/Nordita Stockholm University, May 2016
17. *B-mode non-Gaussianity*, Cosmology seminar, MPA, May 2016
18. *The holiest grail*, Cosmology seminar, Utrecht University, April 2016
19. *The future of Primordial Universe Cosmology*, Grappa seminar, Amsterdam University, April 2016
20. *Fundamental features in the bispectrum*, Johns Hopkins University, Baltimore, May 2015
21. *Putting inflation to the test*, New York University, New York, April 2015
22. *Putting inflation to the test*, McGill, Montreal, March 2015
23. *Qualitative and Quantative tests of inflation*, A&M, College Station, March 2015
24. *Putting inflation to the test*, Lawrence Berkeley Lab, Berkeley, December 2014
25. *Beyond slow roll* University of Minnesota, Minneapolis, November 2014
26. *Beyond slow roll*, University of Minnesota, Duluth, November 2014
27. *Beyond slow roll*, Perimeter, Kitchener, October 2014
28. *Oscillations in the primordial power spectrum*, Leiden University, June 2013
29. *In search for hints of resonance in the CMB*, Case Western Reserve, Cleveland, April 2013
30. *Probing Patchy Reionization through tau-21cm correlation statistics*, Gravity Lunch, Princeton, February 2013
31. *Cosmological constraints on axion inflation*, UT, Austin, October 2012
32. *The Shape of Non-Gaussianities*, Grappa meeting, Amsterdam, February 2010
33. *Oscillations in the Primordial Bispectrum*, DAMTP, Cambridge, England, June 2010

Seminars and Colloquia.

1. The CMB, reionization, and the 21cm line: lessons from current data, and future directions, NYU, June 2018
2. The holiest grail, Cosmology seminar, Oxford, June 2016
3. The holiest grail, Cosmology seminar, Groningen University, June 2016
4. Resonance in the sky, University of Chili, Santiago, Chili, August 2015
5. Resonance in the sky, University of British Columbia, Vancouver, July 2015
6. Testing inflationary consistency relationships, KICP, Chicago, November 2014
7. Searching for oscillations in the primordial power spectrum, Carnegie Mellon University, Pittsburgh, November 2013
8. Searching for oscillations in the primordial power spectrum, Cornell, Ithaca, October 2013
9. Searching for oscillations in the primordial power spectrum, Penn State, State College, October 2013
10. Searching for oscillations in the primordial power spectrum, SUNY, Stonybrook, September 2013
11. In search for hints of resonance in the CMB, Universiteit van Amsterdam, Amsterdam, June 2013
12. A new light on 21 cm fluctuations from the dark ages, Groningen University, Groningen, April 2014
13. Searching for oscillations in the primordial power spectrum, Groningen University, Groningen, April 2014
14. A new light on 21 cm fluctuations from the dark ages, Johns Hopkins University, Baltimore, November 2013
15. Oscillations in the Primordial Bispectrum, ISCAP Columbia, New York, USA December 2010
16. 21 centimeters: the next cosmological probe, Lunch Talk, Universiteit van Amsterdam, Amsterdam, March 2010
17. Oscillations in the Primordial Bispectrum: detection methods, Caltech, Pasadena, USA, November 2010
18. Vacuum constraints from bispectrum statistics, U penn, Philadelphia, USA, November 2010
19. Cosmological Signatures of New Physics, Princeton, Princeton, USA, November 2010

Contributed Conference talks.

1. February 2019, Keynote speaker, Concordances and challenges in cosmology after Planck, Sesto, Italy
Talk: TBD
2. July 2018, Invited speaker, Tremendous radio arrays, BNL, NY, USA
Talk: The Dark Ages
3. July 2018, Keynote speaker, The Information Universe, Groningen, The Netherlands
Talk: Past, Present and Future in cosmology
4. July 2017, Advances in Theoretical Cosmology in Light of Data, Nordita, Stockholm Sweden
Talk: Reconstructing CMB fluctuations
5. August 2016, COSMO 16, Ann Arbor, USA
Talk: The holiest grail
6. March 2016, Moriand, Italy
Talk: The holiest grail
7. June 2015, String Theory and Cosmology, Hong Kong, China
Talk: Fundamental features in the bispectrum
8. March 2015, Closing in on the Cosmological Model, Aspen, USA
Talk: A potential window into the small scale Universe
9. December 2014, The primordial Universe after Planck, Paris, France
Talk: Putting inflation to the test
10. March 2014, Moriand, Italy
Talk: Searching for oscillations in the primordial power spectrum
11. June 2013, PCTS Planck 2013, Princeton, USA
Talk: Resonance in the CMB
12. July 2012, Effective Field Theory in Inflation, Lorentz Center, Leiden
Talk: Cosmological constraints on axion inflation
13. March 2012, , Aspen, USA
Talk: Cosmological constraints on A_μ production in axion inflation
14. July 2011, YITP, Kyoto, Japan
Poster: Oscillations in the bispectrum
15. May 2011, NAC, Dwingeloo
Talk: Probing the initial conditions of the Universe
16. July 2010, PASCOS 2010, Valencia, Spain
Talk: Oscillations in the Primordial Bispectrum
17. December 2010, PFNG, Allahabad, India
Talk: Oscillations in the Primordial Bispectrum from an Excited Initial State
18. February 2009, APP meeting Netherlands, Leiden
CMB Non-Gaussianities and the Vacuum State in Cosmology
19. June 2008, PASCOS 2008, Perimeter Waterloo, Canada