List of Publications – Mathew Madhavacheril

h-index: 37
5300+ citations
A full publication list is available online at my Google Scholar profile.

Legend:
🄯 indicates that I supervised or co-supervised the corresponding student-led publication.
☑ indicates that it has been accepted in a journal after peer-review.
▮▮ indicates that it is intended for peer-review but has not been accepted yet.

Out of 87 articles, 71 have been submitted for peer-review and 66 have been accepted.

First author or second author (co-lead) papers

1. 🄯 ☑ The Bias to Cosmic Microwave Background Lensing Reconstruction from the Kinematic Sunyaev-Zel'dovich Effect at Reionization
H. Cai, **MS Madhavacheril**, J. C. Hill, A. Kosowsky, 11/2021, arxiv:2111.01944, *Phys. Rev. D 105, 043516*

2. 🄯 ☑ Improving models of the cosmic infrared background using CMB lensing mass maps
F. McCarthy, **MS Madhavacheril**, 11/2020, arxiv:2010.16405, *Phys. Rev. D 103, 103515 (2021)*

3. ☑ CMB lensing power spectrum estimation without instrument noise bias
MS Madhavacheril, K. Smith, B. Sherwin, S. Naess, 11/2020, arxiv:2011.02475, *JCAP, Volume 2021, 028*

4. ☑ Weighing distant clusters with the most ancient light
MS Madhavacheril, C. Sifon, N. Battaglia et al. ACT collaboration, 09/2020, arxiv:2009.07772, *ApJ Letters, 903, 1*

5. 🄯 ☑ A CMB lensing mass map over 2100 square degrees of sky and its cross-correlation with BOSS-CMASS galaxies
O. Darwish, **MS Madhavacheril**, B. Sherwin et al. ACT collaboration, 04/2020, arxiv:2004.01139, *MNRAS, Volume 500, Issue 2*

6. ☑ Component-separated maps of CMB temperature and the thermal Sunyaev-Zel'dovich effect
MS Madhavacheril, J. C. Hill, S. Naess et al. ACT Collaboration, 11/2019, arxiv:1911.05717, *Physical Review D 102 (2), 023534*

7. ☑ Constraining neutrino mass with the tomographic weak lensing one-point probability distribution function and power spectrum
J Liu, **MS Madhavacheril**, 04/2019, arxiv:1809.10747, *Physical Review D 99 (8), 083508*

8. ☑ Cosmology with kSZ: breaking the optical depth degeneracy with Fast Radio Bursts
MS Madhavacheril, N Battaglia, KM Smith, JL Sievers, 01/2019, arxiv:1901.02418, *Physical Review D 100 (10), 103532*

9. ☑ Constraining local non-Gaussianities with kSZ tomography
M Münchmeyer, **MS Madhavacheril**, S Ferraro, MC Johnson, KM Smith, 10/2018, arxiv:1810.13424, *Physical Review D 100, 083508*

10. ▮▮ KSZ tomography and the bispectrum
KM Smith, **MS Madhavacheril**, M Münchmeyer, S Ferraro, U Giri, MC Johnson, 10/2018, arxiv:1810.13423, *submitted to Physical Review D*

11. ☑ Mitigating foreground biases in CMB lensing reconstruction using cleaned gradients
MS Madhavacheril, JC Hill, 07/2018, arxiv:1802.08230, *Physical Review D 98 (2), 023534*

12. The weight of cosmic lenses (invited News and Views article; not peer-reviewed)
MS Madhavacheril, 11/2017, *Nature Astronomy 1 (11), 751-752*

13. ☑ Fundamental physics from future weak-lensing calibrated Sunyaev-Zel'dovich galaxy cluster counts
MS Madhavacheril, N Battaglia, H Miyatake, 11/2017, arxiv:1708.07502, *Physical Review D 96 (10), 103525*

14. ☑ Internal delensing of cosmic microwave background acoustic peaks
N Sehgal, **MS Madhavacheril**, B Sherwin, A van Engelen, 05/2017, arxiv:1612.03898, *Physical Review D (10), 103512*

15. ☑ Measurement of a cosmographic distance ratio with galaxy and cosmic microwave background lensing
H Miyatake, **MS Madhavacheril**, N Sehgal, A Slosar, DN Spergel, B Sherwin, A van Engelen, 04/2017, arxiv:1605.05337, *Physical Review Letters 118 (16), 161301*

16. ☑ Evidence of lensing of the cosmic microwave background by dark matter halos
MS Madhavacheril, N Sehgal et al. ACTPol Collaboration, 04/2015, arxiv:1411.7999, *Physical Review Letters 114 (15), 151302*

17. ☑ Building unbiased estimators from non-Gaussian likelihoods with application to shear estimation
MS Madhavacheril, P McDonald, N Sehgal, A Slosar, 01/2015, arxiv:1407.1906, *Journal of Cosmology and Astroparticle Physics 2015 (01), 022*

18. ☑ Current dark matter annihilation constraints from CMB and low-redshift data
MS Madhavacheril, N Sehgal, TR Slatyer, 05/2014, arxiv:1310.3815, *Physical Review D 89 (10), 103508*

Papers with major contributions

19. ⓘ ▮▮ Probing early structure and model-independent neutrino mass with high-redshift CMB lensing mass maps
F. J. Qu, B. D. Sherwin, O. Darwish, T. Namikawa, **MS Madhavacheril**, 08/2022, arxiv:2208.04253, *pre-print*

20. ⓘ ☑ Simulated catalogs and maps of radio galaxies at millimeter wavelengths in Websky
Z. Li, G. Puglisi, **MS Madhavacheril**, M. Alvarez, 10/2021, arxiv:2110.15357, *JCAP 08 (2022) 029*

21. ☑ Cosmology with the moving lens effect
S. C. Hotinli, K. M. Smith, **MS Madhavacheril**, M. Kamionkowski, 08/2021, arxiv:2108.02207, *Phys. Rev. D 104, 083529*

22. ☑ A high-resolution view of the filament of gas between Abell 399 and Abell 401 from the Atacama Cosmology Telescope and MUSTANG-2
A. Hincks, F. Radiconi, C. Romero, **MS Madhavacheril** et al. ACT and MUSTANG-2 collaborations, 07/2021, arxiv:2107.04611, *MNRAS, Volume 510, Issue 3*

23. ☑ Superclustering with the Atacama Cosmology Telescope and Dark Energy Survey: I. Evidence for thermal energy anisotropy using oriented stacking
M. Lokken, R. Hlozek, A. van Engelen, **MS Madhavacheril** et al. ACT and DES collaborations, 07/2021, arxiv:2107.05523, *ApJ 933 134*

24. ☑ Baryonic feedback biases on fundamental physics from lensed CMB power spectra
F. McCarthy, J. C. Hill, **MS Madhavacheril**, 03/2021, arxiv:2103.05582, *Phys. Rev. D 105, 023517*

25. Combining information from multiple cosmological surveys: inference and modeling challenges
D. Alonso et al (incl. **MS Madhavacheril**), 03/2021, arxiv:2103.05320, *response to DOE/NASA RFI*

26. ☑ The Atacama Cosmology Telescope: Summary of DR4 and DR5 Data Products and Data Access
Mallaby-Kay et al (incl. **MS Madhavacheril**), 03/2021, arxiv:2103.03154, *ApJS 255 11*

27. ☑ Quadratic estimators for CMB weak lensing
A. Maniyar, Y. Ali-Haimoud, J. Carron, A. Lewis, **MS Madhavacheril**, 01/2021, arxiv:2101.12193, *Phys. Rev. D 103, 083524 (2021)*

28. ☑ A Catalog of more than 4000 Sunyaev-Zel'dovich Galaxy Clusters
M. Hilton, C. Sifón, S. Naess, **MS Madhavacheril** et al. ACT, DES, HSC, KiDS collaborations, 09/2020, arxiv:2009.11043, *ApJS 253 3*

29. ☑ A Measurement of the Cosmic Microwave Background Power Spectra at 98 and 150 GHz
S. Choi et al. ACT collaboration (incl. **MS Madhavacheril**), 07/2020, arxiv:2007.07289, *JCAP12(2020)045*

30. ☑ DR4 Maps and Cosmological Parameters
S. Aiola et al. ACT collaboration (incl. **MS Madhavacheril**), 07/2020, arxiv:2007.07288, *JCAP12(2020)047*

31. ☑ The Atacama Cosmology Telescope: Delensed Power Spectra and Parameters
D. Han, N. Sehgal, A. MacInnis, A. van Engelen, B. D. Sherwin, **MS Madhavacheril** et al. ACT collaboration, 07/2020, arxiv:2007.14405, *JCAP, Issue 01, article id. 031 (2021)*

32. ☑ Constraining neutrino mass with the tomographic weak lensing bispectrum
WR Coulton, J Liu, **MS Madhavacheril**, V Böhm, DN Spergel, 05/2019, arxiv:1810.02374, *Journal of Cosmology and Astroparticle Physics 2019 (05), 043*

33. ☑ Improving Small-Scale CMB Lensing Reconstruction
B Hadzhiyska, BD Sherwin, **MS Madhavacheril**, S Ferraro, 05/2019, arxiv:1905.04217, *Physical Review D 100 (2), 023547*

34. ☑ Improving Constraints on Fundamental Physics Parameters with the Clustering of Sunyaev-Zeldovich Selected Galaxy Clusters
D Cromer, N Battaglia, **MS Madhavacheril**, 03/2019, arxiv:1903.00976, *Physical Review D 100 (6), 063529*

35. ☑ The Simons Observatory: science goals and forecasts
Ade et al. Simons Observatory Collaboration (incl. **MS Madhavacheril**), 02/2019, arxiv:1808.07445, *Journal of Cosmology and Astroparticle Physics 2019 (02), 056*

36. ☑ Measuring the small-scale matter power spectrum with high-resolution CMB lensing
HN Nguyen, N Sehgal, **MS Madhavacheril**, 01/2019, arxiv:1710.03747, *Physical Review D 99 (2), 023502*

37. ☑ Disentangling dark physics with cosmic microwave background experiments
Z Li, V Gluscevic, KK Boddy, **MS Madhavacheril**, 12/2018, arxiv:1806.10165, *Physical Review D (12), 123524*

38. ☑ Two-season Atacama Cosmology Telescope polarimeter lensing power spectrum
BD Sherwin, A Van Engelen, N Sehgal, **MS Madhavacheril** et al. ACTPol Collaboration, 06/2017, arxiv:1611.09753, *Physical Review D 95 (12), 123529*

39. CMB-S4 science book
Abazajian et al. CMB-S4 collaboration (incl. **MS Madhavacheril**), 10/2016, arxiv:1610.02743, *unsubmitted (for arXiv only)*

Papers with some contribution

40. ▮▮ The Atacama Cosmology Telescope: limits on dark matter-baryon interactions from DR4 power spectra
Z. Li et al ACT collaboration (incl. **MS Madhavacheril**), 08/2022, arxiv:2208.08985, *pre-print*

41. ▮▮ The Atacama Cosmology Telescope: The Persistence of Neutrino Self-Interaction in Cosmological Measurements
C. D. Kreisch et al ACT collaboration (incl. **MS Madhavacheril**), 07/2022, arxiv:2207.03164, *pre-print*

42. Snowmass 2021 CMB-S4 White Paper
Abazajian et al. CMB-S4 collaboration (incl. **MS Madhavacheril**), 03/2022, arxiv:2203.08024, *Contribution to Snowmass 2021*

43. Snowmass 2021 CMB-HD White Paper
Aiola et al. CMB-HD collaboration (incl. **MS Madhavacheril**), 03/2022, arxiv:2203.05728, *Contribution to Snowmass 2021*

44. ▮▮ The Simons Observatory: a new open-source power spectrum pipeline applied to the Planck legacy data
Z. Li et al Simons Observatory collaboration (incl. **MS Madhavacheril**), 12/2021, arxiv:2112.13839, *pre-print*

45. ☑ The Atacama Cosmology Telescope: Measurement and Analysis of 1D Beams for DR4
M. Lungu et al ACT collaboration (incl. **MS Madhavacheril**), 12/2021, arxiv:2112.12226, *JCAP 05 (2022) 044*

46. ☑ The Simons Observatory: Constraining inflationary gravitational waves with multi-tracer B-mode delensing
T. Namikawa et al SO collaboration (incl. **MS Madhavacheril**), 10/2021, arxiv:2110.09730, *Phys. Rev. D 105, 023511*

47. ☑ The Atacama Cosmology Telescope: Constraints on Pre-Recombination Early Dark Energy
J. C. Hill, E. Calabrese et al ACT collaboration (incl. **MS Madhavacheril**), 09/2021, arxiv:2109.04451, *Phys. Rev. D 105, 123536*

48. ☑ Cross-correlation of DES Y3 lensing and ACT/Planck thermal Sunyaev Zel'dovich Effect II: Modeling and constraints on halo pressure profiles
S. Pandey et al ACT and DES collaborations (including **MS Madhavacheril**), 08/2021, arxiv:2108.01601, *Phys. Rev. D 105, 123526*

49. ☑ Cross-correlation of DES Y3 lensing and ACT/Planck thermal Sunyaev Zel'dovich Effect I: Measurements, systematics tests, and feedback model constraints
M. Gatti et al ACT and DES collaborations (including **MS Madhavacheril**), 08/2021, arxiv:2108.01600, *Phys. Rev. D 105, 123525*

50. ☑ The mass and galaxy distribution around SZ-selected clusters
T. Shin et al. ACT collaboration (incl. **MS Madhavacheril**), 05/2021, arxiv:2105.05914, *MNRAS, Volume 507, Issue 4*

51. ☑ The Atacama Cosmology Telescope: Microwave Intensity and Polarization Maps of the Galactic Center
Y. Guan et al. ACT collaboration (including **MS Madhavacheril**), 05/2021, arxiv:2105.05267, *ApJ 920 6*

52. ☑ The Atacama Cosmology Telescope: A search for Planet 9
S. Naess et al. ACT collaboration (incl. **MS Madhavacheril**), 04/2021, arxiv:2104.10264, *ApJ 923 224*

53. ☑ The Atacama Cosmology Telescope: Detection of the Pairwise Kinematic Sunyaev-Zel'dovich Effect with SDSS DR15 Galaxies
V. Calafut et al. ACT collaboration, 01/2021, arxiv:2101.08374, *Phys. Rev. D 104, 043502 (2021)*

54. ☑ The Atacama Cosmology Telescope: Probing the Baryon Content of SDSS DR15 Galaxies with the Thermal and Kinematic Sunyaev-Zel'dovich Effects
E. Vavagiakis et al. ACT collaboration, 01/2021, arxiv:2101.08373, *Phys. Rev. D 104, 043503 (2021)*

55. NDRIO White Paper: Envisioning Digital Research Infrastructure for the Simons Observatory
A. Hincks et al. (incl. **MS Madhavacheril**), 12/2020, arxiv:2012.12205, *NDRIO white paper*

56. ☑ The Atacama Cosmology Telescope: Detection of mm-wave transient sources
S. Naess et al. ACT collaboration (incl. **MS Madhavacheril**), 12/2020, arxiv:2012.14347, *ApJ 915 14*

57. ☑ Strong detection of the CMB lensing x galaxy weak lensing cross-correlation from ACT-DR4, Planck Legacy and KiDS-1000
N. Robertson et al. ACT collaboration, 11/2020, arxiv:2011.11613, *A&A 649, A146 (2021)*

58. ☑ The Simons Observatory: Bandpass and polarization-angle calibration requirements for B-mode searches
M. Abitbol et al Simons Observatory collaboration, 11/2020, arxiv:2011.02449, *JCAP05(2021)032*

59. ☑ Combined kinematic and thermal Sunyaev-Zel'dovich measurements from BOSS CMASS and LOWZ halos
E. Schaan et al. ACT collaboration, 09/2020, arxiv:2009.05557 , *Phys. Rev. D 103, 063513 (2021)*

60. ☑ Modelling the Gas Thermodynamics in BOSS CMASS galaxies from Kinematic and Thermal Sunyaev-Zel'dovich Measurements
S. Amodeo et al. ACT collaboration, 09/2020, arxiv:2009.05558 , *Phys. Rev. D 103, 063514 (2021)*

61. ☑ Probing galaxy evolution in massive clusters using ACT and DES: splashback as a cosmic clock
S. Adhikari et al. ACT, DES collaborations, 08/2020, arxiv:2008.11663, *ApJ 923 37*

62. ☑ CMB-S4: Forecasting Constraints on Primordial Gravitational Waves
CMB-S4 collaboration, 08/2020, arxiv:2008.12619, *ApJ 926 54*

63. ☑ Arcminute-resolution maps of 18,000 square degrees of the microwave sky from ACT 2008-2018 data combined with Planck
S. Naess et al. ACT collaboration, 07/2020, arxiv:2007.07290, *JCAP12(2020)046*

64. ☑ The cross correlation of the ABS and ACT maps
Z. Li et al. ACT collaboration, 02/2020, arxiv:2002.05717, *Journal of Cosmology and Astroparticle Physics 09(2020)010*

65. ☑ Constraints on Cosmic Birefringence
T. Namikawa et al. ACT collaboration, 01/2020, arxiv:2001.10465, *Physical Review D 101 (8), 083527*

66. Microwave Spectro-Polarimetry of Matter and Radiation across Space and Time
Delabrouille et al., 09/2019, arxiv:1909.01591, *Science White Paper submitted in response to the ESA Voyage 2050 call*

67. Astro2020 APC White Paper, Project: The Simons Observatory
Abitbol et al. Simons Observatory collaboration, 09/2019, arxiv:1907.08284, *Bulletin of the American Astronomical Society*

68. A Space Mission to Map the Entire Observable Universe using the CMB as a Backlight
Basu et al., 09/2019, arxiv:1909.01592, *Science White Paper submitted in response to the ESA Voyage 2050 call*

69. CMB-S4 Science Case, Reference Design, and Project Plan
Abazajian et al. CMB-S4 collaboration, 07/2019, arxiv:1907.04473, *submitted as a Decadal Survey Report*

70. CMB-HD: An Ultra-Deep, High-Resolution Millimeter-Wave Survey Over Half the Sky
N Sehgal et al. CMB-HD collaboration, 06/2019, arxiv:1906.10134, *submitted to Astro2020 Decadal Survey*

71. ☑ Measurement of the splashback feature around SZ-selected Galaxy clusters with DES, SPT, and ACT
T Shin et al. DES, SPT and ACT collaborations, 05/2019, arxiv:1811.06081, *Monthly Notices of the Royal Astronomical Society 487 (2), 2900-2918*

72. ☑ Weak-lensing Mass Calibration of ACTPol Sunyaev–Zel'dovich Clusters with the Hyper Suprime-Cam Survey
H Miyatake et al. ACTPol and HSC collaborations, 04/2019, arxiv:1804.05873, *The Astrophysical Journal 875 (1), 63*

73. Science from an Ultra-Deep, High-Resolution Millimeter-Wave Survey
N Sehgal et al., 03/2019, arxiv:1903.03263, *submitted to Astro2020 Decadal Survey*

74. Probing Feedback in Galaxy Formation with Millimeter-wave Observations
N Battaglia et al., 03/2019, arxiv:1903.04647, *submitted to Astro2020 Decadal Survey*

75. Messengers from the Early Universe: Cosmic Neutrinos and Other Light Relics
D Green et al., 03/2019, arxiv:1903.04763, *submitted to Astro2020 Decadal Survey*

76. Cosmological Probes of Dark Matter Interactions: The Next Decade
V Gluscevic et al., 03/2019, arxiv:1903.05140, *submitted to Astro2020 Decadal Survey*

77. PICO: Probe of Inflation and Cosmic Origins
S Hanany et al., 02/2019, arxiv:1902.10541, *submitted to Astro2020 Decadal Survey*

78. ☑ Non-Gaussianity of secondary anisotropies from ACTPol and Planck
WR Coulton et al. ACTPol Collaboration, 09/2018, arxiv:1711.07879, *Journal of Cosmology and Astroparticle Physics 2018 (09), 022*

79. ☑ The Atacama Cosmology Telescope: the two-season ACTPol Sunyaev–Zel'dovich effect selected cluster catalog
M Hilton et al. ACTPol Collaboration, 03/2018, arxiv:1709.05600, *The Astrophysical Journal Supplement Series 235 (1), 20*

80. ☑ MassiveNuS: cosmological massive neutrino simulations
J Liu, S Bird, JMZ Matilla, JC Hill, Z Haiman, **MS Madhavacheril**, A Petri, DN Spergel , 03/2018, arxiv:1711.10524, *Journal of Cosmology and Astroparticle Physics 2018 (03), 049*

81. ☑ Two-season ACTPol spectra and parameters
T Louis et al. ACTPol Collaboration, 06/2017, arxiv:1610.02360, *Journal of Cosmology and Astroparticle Physics 2017 (06), 031*

82. ☑ Detection of the pairwise kinematic Sunyaev-Zel'dovich effect with BOSS DR11 and the Atacama Cosmology Telescope
F De Bernardis et al. ACTPol Collaboration, 03/2017, arxiv:1607.02139, *Journal of Cosmology and Astroparticle Physics 2017 (03), 008*

83. ☑ Survey strategy optimization for the Atacama Cosmology Telescope
F De Bernardis et al. ACTPol Collaboration, 07/2016, arxiv:1607.02120, *Observatory Operations: Strategies, Processes, and Systems VI 9910, 991014*

84. ☑ Evidence for the kinematic Sunyaev-Zel'dovich effect with the Atacama Cosmology Telescope and velocity reconstruction from the Baryon Oscillation Spectroscopic Survey
E. Schaan et al. ACTPol Collaboration, 04/2016, arxiv:1510.06442, *Physical Review D 93 (8), 082002*

85. ☑ Lensing of CMB temperature and polarization derived from cosmic infrared background cross-correlation
A. van Engelen et al. ACTPol collaboration, 07/2015, arxiv:1412.06260, *The Astrophysical Journal 808 (1), 7*

86. ☑ Measuring radio galaxy bias through cross-correlation with lensing
R Allison et al. ACTPol Collaboration, 05/2015, arxiv:1502.06456, *Monthly Notices of the Royal Astronomical Society 451 (1), 849-858*

87. ☑ CMB polarization at $200 < \ell < 9000$
S Naess et al. ACTPol Collaboration, 10/2014, arxiv:1405.5524, *Journal of Cosmology and Astroparticle Physics 2014 (10), 007*