

# Mathew S. Madhavacheril

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## Academic Appointments

- **University of Pennsylvania**, Assistant Professor (2022-)  
Department of Physics and Astronomy
- **Perimeter Institute**, Peebles Fellow (2019-2022)  
Senior Postdoctoral Fellowship, Center for the Universe
- **Princeton University**, Postdoctoral Researcher (2016-2019)  
Department of Astrophysical Sciences

## Education

- **Stony Brook University**, *PhD* (2016) Physics
- **University of Cambridge**, *BA (Aff.)* (2011), Part II and Part III Physics
- **St. Stephen's College, University of Delhi**, *BSc. (Hons.)* (2009), Physics

## Grants

- Co-PI on Research Corporation Scialog LSST Award “Rubin LSST as a multi-wavelength discovery engine for relativistic transients”, \$66,000 (2024)
- PI on NSF Astronomy and Astrophysics Research Grant (AAG), Award 2307727 “Precision Cosmology and Astrophysics with CMB Secondaries”, \$603,824 (2023)
- Senior Personnel and WBS Level-3 Lead on NSF Mid-scale Research Infrastructure-2: “Advanced Millimeter Survey Instrumentation in Chile”, \$52.7 million, PI: Mark Devlin (2023)
- PI on NASA Astrophysics Theory (NASA-ATP) 21-ATP21-0145 “Inflation Physics from Cosmic Velocities with Joint Galaxy and CMB Simulations”, \$543,706 (2021)

## Awards

- [Research Corporation Scialog Fellow](#) (2024)
- [STFC UK Rutherford Fellowship](#), University of Cambridge (2021; declined for faculty offer)
- [P. J. E. Peebles Fellowship](#), Perimeter Institute (2019)
- [Astronomical Society of New York Graduate Paper Prize](#) (2015)
- [H. B. Silsbee Award for Excellence](#), Physics Department, Stony Brook University (2015)
- [Jonathan Kauffman Student Excellence Prize in Physics](#), Physics Department, Stony Brook University (2014)

- [Jennings Prize, Wolfson College, University of Cambridge \(2011\)](#)
- [Gates Cambridge Scholarship, University of Cambridge \(2009\)](#)

## Teaching Experience

- PHYS 5505 “Introduction to Cosmology”: graduate course in cosmology, (Spring 2025), University of Pennsylvania
- ASTR 0001 “A Survey of the Universe”: introductory astronomy for non-majors, (Spring 2023, Spring 2024, Fall 2024), University of Pennsylvania
- PHYS 5533 “Topics in Data-Oriented Cosmology”: graduate course in cosmological data analysis, (Fall 2023), University of Pennsylvania
- Instructor and Co-organizer, Atacama Cosmology Telescope Data Analysis School (2019); Instructor for CMB-S4 Data School (2021)
- Instructor, “Coding in Python” and “Statistical Techniques” workshops, Undergraduate Summer Research Program, Department of Astrophysical Sciences, Princeton (2018)
- Instructor for (1) Astronomy and (2) Pre-calculus at the Albert C. Wagner Youth Correctional Facility through the Princeton Prison Teaching Initiative (2018)
- Teaching Assistant, Stony Brook University (2011 - 2013)

## Professional Service

- Convener, 15th Conference on the Intersections of Particle and Nuclear Physics (CIPANP), Madison, WI (2025)
- Member of NASA LAMBDA Advisory Group (2024-)
- Member, Simons Observatory Theory and Analysis Committee; steering the scientific direction of SO theory and analysis efforts (2020-)
- WBS Level-3 Lead, Simons Observatory and Advanced Simons Observatory “Science Readiness (Large Aperture Telescope)” (2023-)
- WBS Level-3 Lead, Simons Observatory “Initial Science Observations (Large Aperture Telescope)” (2023-)
- Co-Lead, Lensing Reconstruction Working Group, Simons Observatory (2018-)
- Served as Pipeline Working Group Co-Lead, “Systematics and Science Interfaces”, Simons Observatory Project (2018-2023)
- Served as member of the Simons Observatory Data Management Committee (2017-2018)
- Panelist for grant review for the National Science Foundation (NSF)
- Co-organizer, Undergraduate Summer Research Program, Department of Astrophysical Sciences, Princeton (2018)
- Referee for *Nature Astronomy*, *Monthly Notices of the Royal Astronomical Society*, *Astrophysical Journal*, *Astronomy & Astrophysics*, *Journal of Cosmology & Astroparticle Physics* and *Physical Review*
- Remote Observing Coordinator, ACTPol observations (2014-2018)

## Collaboration Membership

- ACTPol telescope site visit, Cerro Toco, Chile, to help with site operations (2013)
- Ongoing:
  - Atacama Cosmology Telescope (ACT)
  - Simons Observatory
  - Rubin Observatory LSST DESC
  - External Collaborator on DESI, DES and HSC
- Planned: CMB-S4, CMB-HD, PICO

## Invited Talks

1. Plenary Talk: “Cosmic Physics and Inflation” at 15th Conference on the Intersections of Particle and Nuclear Physics (CIPANP), Madison, WI, 06/2025
2. Plenary Talk: Dark Energy Survey Collaboration Meeting “CMB x galaxies”, 05/2025
3. Colloquium: Department of Physics, City College of New York, NY, 3/2025
4. Colloquium: Department of Physics, Columbia University, NY, 12/2024
5. Seminar: Department of Astronomy, Michigan State University, 12/2024
6. Plenary Talk: Royal Society workshop on “Challenging the Standard Model”, 04/2024
7. Seminar: Johns Hopkins University, 06/2023
8. Seminar: University of Geneva, 06/2023
9. Plenary Talk: “CMB Lensing and the Late-time Universe”, EuCAPT Annual Symposium, CERN, 05/2023
10. Seminar: Rutgers University, 04/2023
11. Seminar: Department of Physics, Princeton University, 04/2023
12. Plenary Talk: “Cosmology with ACT CMB Lensing”, Future Science with CMB x LSS, Kyoto, 04/2023
13. Plenary Talk: “Synergies between the Simons Observatory and Rubin Observatory LSST”, LSST-DESC virtual meeting, 02/2023
14. Plenary Review Talk: “Key Challenges in Galaxy and CMB Lensing”, University of Cambridge 07/2022
15. Plenary Talk: “Galaxy Clusters 2022” Symposium, STScI 04/2022
16. Seminar: Physics and Astronomy, University of Pennsylvania, Philadelphia 04/2022
17. Colloquium: Physics and Astronomy, California State University, Los Angeles, CA 4/2022
18. Plenary Talk: Outreach talk at “Queen’s Space Conference”, Kinston, Ontario 02/2022

19. Plenary Talk: “Spergelfest Symposium”, Princeton and New York, 10/2021
20. Plenary Talk: “Cosmology From Home” conference, 07/2021
21. Plenary Talk: “Cosmological Frontiers in Fundamental Physics”, Paris, France, 05/2021
22. Seminar: Cosmology Seminar, University of Oxford, UK, 05/2021
23. Seminar: Astrophysics/Gravity/Cosmology seminar, University of Illinois at Urbana-Champaign, IL, 04/2021
24. Colloquium: Department of Physics and Astronomy, University of Southern California, CA 2/2021
25. Seminar: LEPP seminar, Cornell University, NY 01/2021
26. Colloquium: University of Arizona Steward Observatory and NOIRLab, 11/2020
27. Seminar: German Center for Cosmological Lensing (GCCL), 10/2020
28. Seminar: HEA at MPA Garching, Germany, 10/2020
29. Colloquium: Aspen Physics Summer colloquium, 08/2020
30. Seminar: Institute of Astronomy, University of Cambridge, UK 06/2020
31. Seminar: Kavli IPMU, Kashiwa, Japan 04/2020 (invited, but canceled due to COVID-19 pandemic)
32. Colloquium: Institute for Astronomy, University of Hawaii, 04/2020 (invited, but canceled due to COVID-19 pandemic)
33. Plenary Talk: Perimeter-CITA Day, Canadian Institute for Theoretical Astrophysics, ON 11/2019
34. Colloquium: Department of Physics and Astronomy, University of Southern California, CA 10/2019
35. Seminar: BCCP, University of California, Berkeley CA 04/2019
36. Seminar: KIPAC, Stanford University, Stanford CA 04/2019
37. Seminar: High Energy Theory Group, Physics Department, Boston University, MA 03/2019
38. Seminar: KICP, University of Chicago, IL 02/2019
39. Plenary Talk: BCCP Lensing Workshop, University of California, Berkeley CA 01/2019
40. Seminar: Gravity Group, Physics Department, Princeton University 09/2018
41. Public outreach talk on the Hubble constant tension, Rutgers University, NJ 07/2018
42. Seminar: Rutgers University, New Brunswick NJ 11/2017
43. Seminar: University of Pennsylvania, Philadelphia PA 02/2017
44. Seminar: Gravity Group, Department of Physics, Princeton University, NJ 12/2016
45. Seminar: Perimeter Institute for Theoretical Physics, Waterloo, Canada 11/2016

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46. Seminar: Kavli IPMU, Kashiwa, Japan, 04/2016
  47. Graduate Student Prize Lecture at Astronomical Society of New York Meeting, Skidmore College, Saratoga Springs NY 11/2015
  48. Seminar: Imperial College, UK 09/2015
  49. Seminar: University College London, UK 09/2015
  50. Seminar: Institute of Astronomy, University of Cambridge, UK 09/2015
  51. Seminar: Oxford Astrophysics , University of Oxford, UK 09/2015
  52. Seminar: Stony Brook / Brookhaven National Lab Cosmology group, NY 06/2015
  53. Seminar: Canadian Institute for Theoretical Astrophysics, Toronto 05/2015
  54. Seminar: Perimeter Institute for Theoretical Physics, Waterloo, Canada 05/2015
  55. Seminar: Yang Institute for Theoretical Physics, Stony Brook, NY 02/2015
  56. Seminar: Department of Astronomy, Columbia University, NY 02/2015
  57. Seminar: Cosmology Lunch, Princeton University, NJ 01/2015
  58. Seminar: Department of Physics & Astrophysics, University of Delhi, India 08/2014