

Mathew S. Madhavacheril

Center for Particle Cosmology
University of Pennsylvania
Philadelphia, PA 19104

Email: mathm@sas.upenn.edu
Web: msyriac.github.io
Last Updated: March 8, 2023

Academic Appointments

- **Assistant Professor (2022-)**
Physics and Astronomy, University of Pennsylvania
- **Peebles Fellow (2019-2022)**
Senior Postdoctoral Fellowship, Perimeter Institute
- **Postdoctoral Research Associate (2016-2019)**
Princeton (Astrophysics)

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

- 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

- [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

- 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)

Student Supervision

- Faculty, Cambridge Tradition and Cambridge Prep Summer Schools, Oxbridge Academic Programs, taught Astronomy and Computer Science, UK (2011, 2012)
- Thesis Committee member for Jack Lashner, University of Southern California (2022)
- Advisor for graduate student project by Hongbo Cai (Pittsburgh, 2021), one publication
- Advisor and co-advisor for graduate student projects by Fiona McCarthy (Perimeter, 2020, 2021), two publications
- Co-advisor for graduate student projects by Zack Li at Princeton (2018, 2021), two publications
- Co-advisor for graduate student project by Martine Lokken at UToronto (2021), one publication
- Advisor for graduate student project by Omar Darwish at Cambridge (2020), one publication
- Co-advisor for graduate student project by Will Coulton at Princeton (2018), one publication
- Co-advisor for undergraduate student project by Boryana Hadzhiyska at Harvard (2018), one publication
- Thesis Advisor for Teva Ilan's Undergraduate Senior Thesis "Constraining the Relativistic Thermal and Bulk Kinematic Sunyaev-Zel'dovich Effects" at Princeton (2018)
- Co-advisor for undergraduate student projects by Ho Nam Nguyen at Stony Brook (2016), two publications

Professional Service

- Member, Simons Observatory Theory and Analysis Committee; steering the scientific direction of SO theory and analysis efforts (2020-)
- Pipeline Co-Lead, Lensing Reconstruction Working Group, Simons Observatory (2018-)
- Pipeline Working Group Co-Lead, "Systematics and Science Interfaces", Simons Observatory Project Work Breakdown Structure (2018-)
- 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, 09/14 - 04/18

- ACTPol telescope site visit, Cerro Toco, Chile, 12/13 to help with site operations

Collaborations

- Ongoing: Atacama Cosmology Telescope (ACT), External Collaborator on the Dark Energy Survey (DES) and Hyper Suprime Cam (HSC)
- Funded: Simons Observatory, LSST Dark Energy Science Collaboration
- Planned: CMB Stage-4, CMB-HD, PICO

Talks

1. Invited Plenary Talk: “Synergies between the Simons Observatory and Rubin Observatory LSST”, LSST-DESC virtual meeting, 02/2023
2. Invited Review Talk: “Key Challenges in Galaxy and CMB Lensing”, University of Cambridge 07/2022
3. Invited Plenary Talk: “Galaxy Clusters 2022” Symposium, STScI 04/2022
4. Seminar: Physics and Astronomy, University of Pennsylvania, Philadelphia 04/2022
5. Colloquium: Physics and Astronomy, California State University, Los Angeles, CA 4/2022
6. Invited Plenary Talk: Outreach talk at “Queen’s Space Conference”, Kingston, Ontario 02/2022
7. Invited Plenary Talk: “Spergelfest Symposium”, Princeton and New York, 10/2021
8. Invited Plenary Talk: “Cosmology From Home” conference, 07/2021
9. Invited Talk: “Cosmological Frontiers in Fundamental Physics”, Paris, France, 05/2021
10. Seminar: Cosmology Seminar, University of Oxford, UK, 05/2021
11. Seminar: Astrophysics/Gravity/Cosmology seminar, University of Illinois at Urbana-Champaign, IL, 04/2021
12. Colloquium: Department of Physics and Astronomy, University of Southern California, CA 2/2021
13. Seminar: LEPP seminar, Cornell University, NY 01/2021
14. Colloquium: University of Arizona Steward Observatory and NOIRLab, 11/2020
15. Seminar: German Center for Cosmological Lensing (GCCL), 10/2020
16. Seminar: HEA at MPA Garching, Germany, 10/2020
17. Colloquium: Aspen Physics Summer colloquium, 08/2020
18. Seminar: Institute of Astronomy, University of Cambridge, UK 06/2020
19. Seminar: Kavli IPMU, Kashiwa, Japan 04/2020 (invited, but canceled due to COVID-19)
20. Colloquium: Institute for Astronomy, University of Hawaii, 04/2020 (invited, but canceled due to COVID-19)

21. Invited Talk: Perimeter-CITA Day, Canadian Institute for Theoretical Astrophysics, ON 11/2019
22. Colloquium: Department of Physics and Astronomy, University of Southern California, CA 10/2019
23. BCCP Cosmology Seminar, University of California, Berkeley CA 04/2019
24. KIPAC Cosmology Seminar, Stanford University, Stanford CA 04/2019
25. Seminar at High Energy Theory Group, Physics Department, Boston University, MA 03/2019
26. Seminar at KICP, University of Chicago, IL 02/2019
27. Cosmology Lunch Seminar, Department of Astrophysical Sciences, Princeton University 02/2019
28. Invited Talk: BCCP Lensing Workshop, University of California, Berkeley CA 01/2019
29. Gravity Group Seminar, Physics Department, Princeton University 09/2018
30. Public outreach talk on the Hubble constant tension, Rutgers University, NJ 07/2018
31. Seminar at Rutgers University, New Brunswick NJ 11/2017
32. Seminar at University of Pennsylvania, Philadelphia PA 02/2017
33. Gravity Group Seminar, Department of Physics, Princeton University, NJ 12/2016
34. Seminar at Perimeter Institute for Theoretical Physics, Waterloo, Canada 11/2016
35. APEC Seminar at Kavli IPMU, Kashiwa, Japan, 04/2016
36. Graduate Student Prize Lecture at Astronomical Society of New York Meeting, Skidmore College, Saratoga Springs NY 11/2015
37. Astrophysics Seminar, Imperial College, UK 09/2015
38. Astrophysics Seminar, University College London, UK 09/2015
39. Institute of Astronomy Seminar, University of Cambridge, UK 09/2015
40. Oxford Astrophysics Seminar, University of Oxford, UK 09/2015
41. Joint Stony Brook / Brookhaven National Lab Cosmology Seminar, NY 06/2015
42. Seminar at Canadian Institute for Theoretical Astrophysics, Toronto 05/2015
43. Seminar at Perimeter Institute for Theoretical Physics, Waterloo, Canada 05/2015
44. Seminar at Yang Institute for Theoretical Physics, Stony Brook, NY 02/2015
45. Astronomy Seminar, Columbia University, NY 02/2015
46. Cosmology Lunch Seminar, Princeton University, NJ 01/2015
47. Department of Physics & Astrophysics Seminar, University of Delhi, India 08/2014