

Sanjaykumar Patil

Education

- 2010–2015 **Integrate BS-MS**, *Indian Institute of Technology-Kharagpur (IIT)*, Kharagpur, **CGPA: 8.96/10**.
Master Thesis: Probing Galaxy Cluster mass discrepancy using $f(R)$ gravity
Supervisor: Prof. Somnath Bharadwaj, IIT-Kharagpur, West Bengal, India - 721302
- 2015-2019 **Ph.D.**, *School of Physics, The University of Melbourne*, Melbourne.
(expected) Thesis title: Weighing the giants with CMB lensing
Supervisor: Dr. Christian Reichardt, The University of Melbourne

Honors & Awards

- 2010-2015 Inspire Fellowship, DST, Government of India
- 2015-2019 Melbourne International Engagement Award, The University of Melbourne
- 2017 Jean. Laby PhD Travel Bursary, The University of Melbourne
- 2017-2018 Science Student Ambassador, The University of Melbourne

Publications

Refereed Journal Articles

- Measuring galaxy cluster masses with CMB lensing using a Maximum Likelihood estimator: Statistical and systematic error budgets for future experiments
S. Raghunathan, **S. Patil** et al., JCAP, 8, 030. doi: 10.1088/1475-7516/2017/08/030.[arXiv:1705.00411 [astro-ph.CO]]
- Mass Calibration of Optically Selected DES clusters using a Measurement of CMB-Cluster Lensing with SPTpol Data
S. Raghunathan, **S. Patil** et al., [arXiv:1810.10998 [astro-ph.CO]] (submitted to ApJ)
- A Measurement of CMB Cluster Lensing with SPT and DES Year 1 Data
E.J. Baxter et al., MNRAS. doi: 10.1093/mnras/sty305. [arXiv:1708.01360 [astro-ph.CO]]
- Spectroscopic Confirmation of Five Galaxy Clusters at $z > 1.25$ in the 2500 sq. deg. SPT-SZ Survey
G. Khullar et al., [arXiv:1806.01962 [astro-ph.CO]] (submitted to ApJ)
- Measurement of the Splashback Feature around SZ-selected Galaxy Clusters with DES, SPT and ACT
T. Shin et al., [arXiv:1811.06081 [astro-ph.CO]] (submitted to MNRAS)
- Cluster Cosmology Constraints from the 2500 deg² SPT-SZ Survey: Inclusion of Weak Gravitational Lensing Data from Magellan and the Hubble Space Telescope
S. Bocquet et al., [arXiv:1811.06081 [astro-ph.CO]] (submitted to ApJ)

In preparation

- A robust cluster lensing quadratic estimator to handle the thermal SZ effect in CMB temperature maps
S. Patil et al (in collaboration review)
- A measurement of CMB-Cluster lensing using SPTpol Polarization-only MAPS
S. Patil et al

Talks

- 11/2016 **CosPA 2016**, University of Sydney, Sydney, Australia
"Measuring mass of Galaxy Clusters using CMB lensing"
- 06/2017 **Annual Scientific Meeting**, ANU, Canberra, Australia

- "Measuring mass of Galaxy Clusters using CMB lensing"
- 08/2017 **University of Pennsylvania**, Pennsylvania, USA
- "Measuring mass of Galaxy Clusters using CMB lensing"
- 11/2017 **The CMB from A to Z**, Cargese, France
- "Measuring mass of Galaxy Clusters using CMB lensing"
- 11/2017 **Leiden Observatory**, Leiden, Netherlands
- "Measuring mass of Galaxy Clusters using CMB lensing"
- 06/2018 **Annual Scientific Meeting**, Swinburne University, Melbourne, Australia
- "First detection of cluster lensing in CMB polarisation data"
- 07/2018 **Yale University**, connecticut, USA
- "Weighing the giants with CMB lensing"
- 07/2018 **New York University**, New York, USA
- "Weighing the giants with CMB lensing"
- 08/2018 **Stony Brook University**, New York, USA
- "Weighing the giants with CMB lensing"
- 01/2019 **Stanford University**, California, USA
- "Measuring cluster mass using modified Quadratic Estimator (mQE)"
- 01/2019 **University of Southern California**, Los Angeles, USA
- "CMB-cluster lensing"
- 01/2019 **Caltech**, Pasadena, USA
- "Weighing the giants with CMB lensing"
- 01/2019 **University of California Los Angeles**, LA, USA
- "CMB-cluster lensing"
- 02/2019 **University of California San Diego**, San Diego, USA
- "Weighing the giants with CMB lensing"

Conferences & Workshops

- 04/2016 **SciCoder**, The University of Melbourne, Melbourne, Australia
- 07/2016 **Harley Wood School of Astronomy**, Sydney, Australia.
- 07/2016 **Annual Scientific Meeting**, University Of Sydney, Sydney, Australia
- 11/2016 **CosPA**, University of Sydney, Sydney, Australia
- 07/2017 **Annual Scientific Meeting**, ANU, Canberra, Australia
- 11/2017 **The CMB from A to Z**, Cargese, France
- 06/2018 **Annual Scientific Meeting**, Swinburne University, Melbourne, Australia

Outreach

- Volunteer Star Gazing Live World Record Attempt
- Talk Year 10 Work Experience Week
- "Early Universe"

Positions held

- 2016-2017 **Lab Demonstrator**, From the Solar System to the Universe, The University of Melbourne
- 2017-2018 **Physics Fundamentals Tutor**, The University of Melbourne
- 2017-2018 **Astro Group Meeting Organiser**, School of Physics, The University of Melbourne
- 2018- **President of Badminton Club**, Graduate Student Association, The University of Melbourne

Computer skills

- Programming Languages Python, C, Fortran(basic)
- Softwares Mathematica, MATLAB, CAMB

References

Prof. Somnath Bharadwaj

Professor, Department of Physics
Indian Institute of Technology-Kharagpur
India - 721302

✉ somnath@phy.iitkgp.ernet.in

☎ +91-3222-283806

Assoc. Prof. Tom Crawford

Research Associate Professor, Department of Astronomy
and Astrophysics
Kavli Institute of Cosmological Physics, University of
Chicago

USA - 60637

✉ tcrawfor@kicp.uchicago.edu

☎ +1-773-702-1564

Dr Christian Reichardt

Senior Lecturer, School of Physics
The University of Melbourne, Melbourne
Australia - 3010

✉ christian.reichardt@unimelb.edu.au

☎ +61-3-8344-1436