Jiten Dhandha

PhD student - University of Cambridge

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Employment

Jun. 2021 - Aug. 2021	**Summer research project**, University of Manchester. Modelling the cosmological 21-cm signal in `Recfast++` and `CosmoTherm` to study their synergy with CMB spectral distortions. Supervised by Prof. Jens Chluba.
Jun. 2020 - Sep. 2020	**Summer research project**, University of Manchester. Testing and debugging `LOFAR-VLBI` calibration/imaging pipeline for gravitational lenses. Supervised by Dr. Neal Jackson.
Jul. 2019 - Sep. 2019	**Summer Intern Programme**, British Petroleum / University of Manchester. Simulating mitigation techniques for sulphate reducing bacteria responsible for fouling crude oil. Supervised by Dr. Thomas Waigh.

Education

2022 - *present*	**PhD in Astronomy**, Institute of Astronomy, University of Cambridge. Supervised by Prof. Anastasia Fialkov and Dr. Eloy de Lera Acedo.
2018 - 2022	**MPhys. Physics with Astrophysics, First Class**, University of Manchester. Project involved simulating turbulent molecular clouds in ISM and studying filament and star formation. Performed with Zoe Faes and supervised by Dr. Rowan Smith.
2016 - 2018	**All India Senior School Certificate Examination**, DPS - Modern Indian School, Doha, Qatar. Average of 95.2% in AISSCE (A-level equivalent) examination.

Publications

First Author

July 2023	**J. Dhandha**, Z. Faes, R. J. Smith. *Decaying turbulence in molecular clouds: how does it affect filament networks and star formation?*, arXiv:astro-ph.GA, arXiv:2307.12428.

Contributing Author

March 2024	A. Fialkov, T. Gessey-Jones, **J. Dhandha**. *Cosmic mysteries and the hydrogen 21-cm line: bridging the gap with lunar observations*, Philosophical Transactions of the Royal Society A, Volume 382, Issue 2271, arXiv:2311.05366.
February 2024	O. S. D. O'Hara, F. Dulwich, E. de Lera Acedo, **J. Dhandha**, T. Gessey-Jones, D. Anstey, A. Fialkov. *Understanding spectral artefacts in SKA-LOW 21-cm cosmology experiments: the impact of cable reflections*, arXiv:astro-ph.CO, arXiv:2402.04008.
September 2022	S. K. Acharya, **J. Dhandha**, J. Chluba. *Can accreting primordial black holes explain the excess radio background?*, Monthly Notices of the Royal Astronomy Societ, Volume 517, Issue 2, Pages 2454-2461, arXiv:2208.03816.
February 2022	S. Badole, D. Venkattu, N. Jackson, S. Wallace, **J. Dhandha**, P. Hartley, C. Riddell-Rovira, A. Townsend, L. K. Morabito, J. P. McKean. *High-resolution imaging with the International LOFAR Telescope: Observations of the gravitational lenses MG 0751+2716 and CLASS B1600+434*, Astronomy & Astrophysics, Volume 658, Issue 11, arXiv:2108.07293.

Talks

Conference and Workshop talks

February 2024	*Synergies between 21-cm experiments and JWST observations*, Science with the 21-cm line, KICC, University of Cambridge.
September 2023	*Bringing 21-cm simulations to the JWST era*, REACH Annual Meeting, University of Malta.
September 2023	*FIlamEntary STructure Analysis (fiesta)*, AREPO-ISM workshop, University of Manchester.
October 2022	*Can accreting primordial black holes explain the excess radio background?*, PDAT Laboratory, K. N. Toosi University of Technology (virtual webinar).

Outreach talks

October 2022	*Like beads on a string... Where do massive stars in our Universe come from? A brief look into studying our cosmos*, Pembroke Papers, Pembroke College, University of Cambridge.

Grants and awards

July 2022	**Tessella Prize for Software** (£125), for outstanding work implementing software in Mphys project.
April 2019	**BP Achievement Award** (£1000), for best essay on petrophysical logging tools.
December 2018	**Physics Success Scholarship** (£2000), for academic excellence in physics and maths.

Conference organisation

February 2024	Kavli Science Focus: Science with the 21-cm line, member of Organising Committee and session chair, KICC, University of Cambrdige.

Teaching responsibilities

Oct. 2023 - *present*	**Co-Supervision** of Rachel Incley (Masters student) with Prof. Anastasia Fialkov. Working on comparison of Epoch of Reionization in simulation codes `21cmSPACE` and `C2-Ray`.
Feb. 2023 - Mar. 2023	**Demonstration of Part IA Scientific Computing** for 22 hours, University of Cambridge.

Software

`CFit`	Main author and maintainer: Smart curve fitting tool using method of least squares in Python.
`fiesta`	Main author and maintainer: Toolkit for analyzing filament networks and density field meshes.
`luminobs`	Main author and maintainer: Compendium of high-redshift galaxy UVLF observations.

In the media

August 2021	Most detailed-ever images of galaxies revealed using LOFAR. Press release for LOFAR observations from ASTRON.
August 2021	Astronomers develop novel way to 'see' first stars through fog of early Universe. Press release for LOFAR observations from BBC.

Extracurricular activities

May 2023 - *present*	**Inclusion and Fairness** committee member, Institute of Astronomy, University of Cambridge.
Jul. 2023 - *present*	**Graduate Parlour**, Ethnic Minorities officer, Pembroke College, University of Cambridge.
Oct. 2022 - *present*	**Postgraduate Forum** representative, Institute of Astronomy, University of Cambridge.
Oct. 2022 - Apr. 2023	**Pembroke Papers** committee memeber, Pembroke College, University of Cambridge.
Sep. 2021 - Jul. 2022	**Student Representative** representing astronomy/astrophysics, University of Manchester.
Jul. 2020 - Jul. 2022	**Touch Rugby Society**, Inclusion officer and COVID-19 safety officer, University of Manchester.
Sep. 2019 - Jun. 2020	**Peer-Assisted Study Session** leader, Peer Support Scheme, University of Manchester.
Nov. 2016 - *present*	**English Wikipedia**, volunteer editor.

Skills

Programming	**Proficient**: Python, MATLAB, **Experienced**: C++, Java
Markup	**Experienced**: LaTeX, Wikitext, **Intermediate**: HTML, CSS, reStructuredText, Markdown
Languages	**Proficient**: English, Hindi, **Intermediate**: Gujarati