

Aswin P Vijayan

Curriculum Vitae

DAWN Fellow
Cosmic Dawn Center, Denmark
📧 <https://aswinpvijayan.github.io>
github.com/aswinpvijayan
Nationality: Indian

Research Interests

Simulations of galaxy formation and evolution, high-redshift galaxies, dust in galaxies

Work Experience

2021–Present **DAWN Fellow**, *Cosmic Dawn Center at DTU*, Denmark.

Education

- 2017–2021 **PhD in Astronomy**, *Astronomy Centre, University of Sussex*, United Kingdom,
Advisors: Prof. Peter A. Thomas & Dr. Stephen M. Wilkins
Title: SIMULATIONS AT THE EPOCH OF REIONISATION.
Using the latest semi-analytic models and hydrodynamical simulations to study the properties of galaxies and their evolution in the Epoch of Reionisation
- 2015–2017 **MSc. Research in Astronomy, Cosmology**, *Sterrewacht Leiden*, Universiteit Leiden, The Netherlands.
Major Project: Analysing the impact of environment and mergers on halo concentrations,
supervisor Dr. Camila A. Correa.
Minor project: A search for serendipitous emission lines in ALMA observations of high-redshift galaxies,
supervisor Dr. Jacqueline Hodge.
- 2010–2014 **Bachelor of Technology (B.Tech) in Engineering Physics**, *National Institute of Technology Calicut (NITC)*, Kerala, India.
Bachelor Thesis: One Dimensional Organic Semiconductor Nanostructures for Solar Cell Fabrication,
supervisor Dr. Vari Sivaji Reddy.
Mini project: Literature survey and fabrication of Alq₃ based Organic LED by Thin Film Deposition,
supervisor Dr. Vari Sivaji Reddy.

First & Second Author Publications

- 2022 **First Light And Reionisation Epoch Simulations (FLARES) V: The redshift frontier.**
Stephen M. Wilkins, **Aswin P. Vijayan**, Christopher C. Lovell, and others
Submitted, MNRAS, [arXiv:2204.09431](https://arxiv.org/abs/2204.09431)
- 2021 **First Light And Reionisation Epoch Simulations (FLARES) III: The properties of massive dusty galaxies at cosmic dawn.**
Aswin P. Vijayan, Stephen M. Wilkins, Christopher C. Lovell, and others
Published, MNRAS, [arXiv:2108.00830](https://arxiv.org/abs/2108.00830)
- 2021 **First Light And Reionisation Epoch Simulations (FLARES) II: The Photometric Properties of High-Redshift Galaxies.**
Aswin P. Vijayan, Christopher C. Lovell, Stephen M. Wilkins, and others
Published, MNRAS, [arXiv:2008.06057](https://arxiv.org/abs/2008.06057)
- 2021 **First Light And Reionisation Epoch Simulations (FLARES) I: Environmental Dependence of High-Redshift Galaxy Evolution.**
Christopher C. Lovell, **Aswin P. Vijayan**, Peter A. Thomas, and others
Published, MNRAS, [arXiv:2004.07283](https://arxiv.org/abs/2004.07283)
- 2019 **Detailed dust modelling in the L-Galaxies semi-analytic model of galaxy formation.**
Aswin P. Vijayan, Scott J. Clay, Peter A. Thomas, and others
Published, MNRAS, [arXiv:1904.02196](https://arxiv.org/abs/1904.02196)

Co-authored Publications

- 2020 **Nebular Line Emission During the Epoch of Reionization.**
Stephen M. Wilkins, Christopher C. Lovell, and others including **Aswin P. Vijayan**
Published, MNRAS, [arXiv:1904.07504](https://arxiv.org/abs/1904.07504)

Computer skills

Language PYTHON, C, FORTRAN (basic)
Software L^AT_EX, GADGET, CASA
Others High Performance Computing, NLP, Machine Learning

Achievements

2015-2017 Recipient of partial Oort/NOVA scholarship from the Leiden Observatory
2015 GATE (Graduate Aptitude Test) and JEST (Joint Entrance Screening Test) in Physics, All India Rank 88 and 71
Dec 2014 NET (National Eligibility Test) in the Physical Sciences, All India Rank 51

Talks

July 2021 **NAM**, Bath, (Online),
Session: Theory and Observations of the First Light and Reionisation Epoch.
Talk title: *FLARES: The photometric properties of galaxies at cosmic dawn*

July 2021 **EAS**, (Online),
Session: Towards a Complete Census of Star-Formation in the Early Universe.
Talk title: *Obscured star formation in the EoR with FLARES*

June 2021 **SAZERAC2**, (Online).
Talk title: *Properties of massive dusty-galaxies at cosmic dawn*

Jan 2021 **Virgo Consortium Meeting**, (Online).
Talk title: *Photometric Properties of galaxies in the FLARE simulation*

July 2020 **SAZERAC**, (Online).
Talk title: *Photometric Properties of galaxies in the FLARE simulation*

Aug 2020 **EAS**, Leiden, (Online),
Session: Probing cosmic dawn with current and future facilities and simulations.
Talk title: *FLARES: First Light And Reionisation Epoch Simulations*

Jan 2020 **Virgo Consortium Meeting**, Durham.
Talk title: *FLARES: First Light And Reionisation Epoch Simulations*

Dec 2018 **Virgo Consortium Meeting**, Leiden.
Talk title: *Detailed dust modelling in the L-Galaxies' semi-analytic model of galaxy formation*

Teaching & Work Experience

Oct 2021 **SOC, Models and Simulations of High-Redshift Galaxies - Sazerac Sip**.
A short online conference to discuss current models and simulations of high-redshift galaxies

Feb 2021 **SOC, CIDER: The Cold ISM During the Epoch of Reionisation - Sazerac Sip**.
A short online conference to discuss current works on the cold ISM and dust in the EoR

Mar-Nov 2020 **Work Placement**, with Kenya Red Cross Society, Kenya.
Validation of inferences from satellite observations with ground survey data for drought impact studies

Oct-Apr 2019/20 **Co-supervision of Hamish Garnett, Mphys student**, University of Sussex.
Mass and metallicity gradients in the FLARE simulations, supervisor Prof. Peter A. Thomas

Oct-Apr 2020/21 Effect of random seeds and AGN on galaxy properties in the EoR using EAGLE simulation physics, supervisor Prof. Peter A. Thomas

2018-2020 **Associate Tutor**, University of Sussex.
Associate Tutor for the Foundation year physics course Properties of Matter ([F3216](#))
Associate Tutor for the third year undergraduate physics course Extragalactic Astronomy ([F3209](#))

2018-2019 **Organizer**, Extragalactic Astronomy Journal Club, University of Sussex.
Organizing the the extragalactic astronomy journal club, by delegating latest papers to discuss

Outreach

Feb 2021 **Astronomy on Tap**, Copenhagen, Denmark.
Talked about cosmological simulations of galaxy formation and evolution

July 2018 **BlueDot Festival**, Manchester, UK.
Volunteered at the Webb Telescope stand, talking to the public about the realm of astronomy it would be exploring

Conferences & Meetings Attended

- 2022 [ADAM 2022](#).
- 2021 [EAS 2021 \(Online\)](#), [SAZERAC2 \(Online\)](#), [Virgo Consortium Meeting \(Online\)](#).
- 2020 [The Rise of Metals and Dust in Galaxies through Cosmic Time \(Online\)](#), [EAS 2020 \(Online\)](#), [SAZERAC \(Online\)](#), [International Conference on Observing The First Billion Years of the Universe Using Next Generation Telescopes \(Indore, India\)](#), [Virgo Consortium Meeting \(ICC, Durham, UK\)](#).
- 2019 [St Andrews Monte Carlo Radiation Hydrodynamics Summer School \(University of St Andrews, UK\)](#), [STFC Data Intensive, Artificial Intelligence and Machine Learning Summer School 2019 \(University of Sussex, UK\)](#).
- 2018 [Parallel and GPU Programming in Python \(Surfsara, Amsterdam, The Netherlands\)](#), [Virgo Consortium Meeting \(Lorentz Centre, Leiden, The Netherlands\)](#), [STFC Summer School in Artificial Intelligence and Machine Learning \(University College London, UK\)](#), [DISCnet: High Performance Computing \(Old Thorns Manor, Liphook, UK\)](#), [DISCnet: Machine Learning \(Old Thorns Manor, Liphook, UK\)](#), [GRADnet: Observational Astrophysics Workshop \(Old Thorns Manor, Liphook, UK\)](#), [DISCnet: Statistics and Data Analysis \(Old Thorns Manor, Liphook, UK\)](#).
- 2017 [Virgo Consortium Meeting \(Max-Planck-Institut für Astrophysik, Garching, Germany\)](#), [DISCnet: Introduction to Big Data \(Old Thorns Manor, Liphook, UK\)](#), [DISCnet: Software Carpentry and Public Engagement with Research Training \(Old Thorns Manor, Liphook, UK\)](#).

Languages

Malayalam (Native), English (Fluent), Hindi (Intermediate), Sanskrit (Intermediate)

References

Prof. Peter A. Thomas

Astronomy Centre, University of Sussex, Brighton, UK
Email: P.A.Thomas@sussex.ac.uk

Dr. Stephen M. Wilkins

Astronomy Centre, University of Sussex, Brighton, UK
Email: s.wilkins@sussex.ac.uk

Dr. Robert M. Yates

Astrophysics Research Group, Department of Physics, University of Surrey, Guildford, UK
Email: r.m.yates@surrey.ac.uk