CURRICULUM VITAE

Nationality: Indian

Website: aswinpvijayan.github.io

RESEARCH INTERESTS

Simulations of galaxy formation and evolution, high-redshift galaxies, dust in galaxies, forward modelling, synergy between simulations and observations.

WORK EXPERIENCE

Astronomy Research Fellow April 2024 – Present
Astronomy Centre, University of Sussex, United Kingdom

DAWN Postdoctoral Fellow Oct 2021 – March 2024
Cosmic Dawn Center, DTU Space, Technical University of Denmark (DTU)

EDUCATION

PhD in Astronomy 30 Sept 2017 – 30 Sept 2021
Astronomy Centre, University of Sussex, United Kingdom
Advisors: Prof. Peter A. Thomas & Dr. Stephen M. Wilkins
Title: The effect of dust in observing galaxies in the early Universe

MSc. Research in Astronomy, Cosmology 1 Sept 2015 - 31 July 2017
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.

Bachelor of Technology (B.Tech) in Engineering Physics 1 Aug 2010 - 31 July 2014
National Institute of Technology Calicut (NITC), Kerala, India
Bachelor Thesis: One Dimensional Organic Semiconductor Nanostructures for Solar Cell Fabrication, supervisor Dr. Vari Sivaji Reddy

FIRST & SECOND AUTHOR PUBLICATIONS

1. 2024 – **First Light And Reionisation Epoch Simulations (FLARES) XVI: Size Evolution of Massive Dusty Galaxies at Cosmic Dawn from UV to IR.** Submitted, A&A, arXiv:2408.11037
   Authors: Paurush Punyasheel, **Aswin P. Vijayan**, and others
2. 2023 – **First Light And Reionisation Epoch Simulations (FLARES) XII: The consequences of star-dust geometry on galaxies in the EoR.** Accepted, MNRAS, arxiv:2303.04177
   Authors: **Aswin P. Vijayan**, Peter A. Thomas, and others
3. 2022 – **First Light And Reionisation Epoch Simulations (FLARES) VII: The Star Formation and Metal Enrichment Histories of Galaxies in the early Universe.** Published, MNRAS, arXiv:2208.00976
   Authors: Stephen M. Wilkins, **Aswin P. Vijayan**, and others
4. 2022 – **First Light And Reionisation Epoch Simulations (FLARES) VI: The colour evolution of galaxies z=5-15.** Published, MNRAS, arXiv:2207.10920
   Authors: Stephen M. Wilkins, **Aswin P. Vijayan**, and others
5. 2022 – **First Light And Reionisation Epoch Simulations (FLARES) V: The redshift frontier.** Published, MNRAS, arXiv:2204.09431
   Authors: Stephen M. Wilkins, **Aswin P. Vijayan**, and others
6. 2022 – **First Light And Reionisation Epoch Simulations (FLARES) III: The properties of massive dusty galaxies at cosmic dawn.** Published, MNRAS, arXiv:2108.00830
   Authors: **Aswin P. Vijayan**, Stephen M. Wilkins, and others
7. 2021 – **First Light And Reionisation Epoch Simulations (FLARES) II: The Photometric Properties of High-Redshift Galaxies.** Published, MNRAS, arXiv:2008.06057
   Authors: **Aswin P. Vijayan**, Christopher C. Lovell, and others

8. 2021 – **First Light And Reionisation Epoch Simulations (FLARES) I: Environmental Dependence of High-Redshift Galaxy Evolution.** Published, MNRAS, arXiv:2004.07283
   Authors: Christopher C. Lovell, **Aswin P. Vijayan**, and others
9. 2019 – **Detailed dust modelling in the L-Galaxies semi-analytic model of galaxy formation.** Published, MNRAS, arXiv:1904.02196
   Authors: **Aswin P. Vijayan**, Scott J. Clay, Peter A. Thomas, and others

Metrics on all publications can be found from the SAO/NASA Astrophysics Data System (ADS) webpage here.

TEACHING & OTHER EXPERIENCE

Lecturer, Astrophysical Processess — Spring term 2025, University of Sussex, UK

Supervision of Paurush Punyasheel, MPhys student at BITS Pilani, Goa, India — Cosmic Dawn Center, DTU
Dust-continuum sizes of galaxies in FLARES, — September-May 2023/24
co-supervision with Prof. Thomas R. Greve

Co-supervision of Andreas Kyster Rasmussen & Maria Madsen, BSc students — Cosmic Dawn Center, DTU
An analysis of photometric redshifts in CEERS using `eazy` & `bagpipes`, — September-November 2022
co-supervision with Dr. Minju M. Lee, Dr. Steven Gillman & Prof. Thomas R. Greve

Supervision of Rebeca G Reyes Carrion, Dawn-IRES student — Cosmic Dawn Center, DTU
Star formation efficiency in the First Light And Reionisation Epoch Simulations — June-August 2022

Co-supervision of Søren Staal, BSc student — Cosmic Dawn Center, DTU
Analaysing the morphology of high-z galaxies with FLARES and *JWST*, — Feb-June 2022
co-supervision with Dr. Steven Gillman

2022 DAWN Fellowship Committee Member — Jan-Feb 2022
Committee of peers to select from applicants for the 2022 Dawn Postdoctoral Fellowship

DISCnet Work Placement, with Kenya Red Cross Society, Kenya (Online) — Mar-Nov 2020
Validation of inferences from satellite observations with ground survey data for drought impact studies

Co-supervision of Hamish Garnett, Mphys student — Astronomy Centre, University of Sussex
Mass and metallicity gradients in FLARES, main supervisor Prof. Peter A. Thomas — Oct-Apr 2019/20
Effect of random seeds and AGN on galaxy properties in the EoR using EAGLE — Oct-Apr 2020/21
simulation physics, main supervisor Prof. Peter A. Thomas

Associate Tutor, School of Mathematical & Physical Sciences, University of Sussex — 2018-2020
Associate Tutor for the Foundation year physics course Properties of Matter (F3216)
Associate Tutor for the third year undergraduate physics course Extragalactic Astronomy (F3209)

SELECTED TALKS

Seminar, University of Tokyo — Jan 2025
Talk Title: *The early Universe through the FLARES lens*

IReNa Online seminar series (Invited Talk) — April 2024
Talk Title: *First Light And Reionisation Epoch*

Bridging the models & observations of galaxies' dust in the JWST era, Trieste, Italy (Invited Talk) — April 2024
Talk Title: *Reliability of emission line ratios in the early Universe - consequences of star-dust geometry*

Shedding new light on the first billion years of the Universe, Marseille, France — July 2023
Talk Title: *Reliability of Emission Line Ratios in EoR Galaxies: Impacts of Complex Star-Dust Geometry*

Dawn Summit 2023, Cosmic Dawn Center, Denmark (Review Talk) — June 2023
Talk Title: *First Stars and Galaxies*

L-Galaxies Workshop, University of Hertfordshire, UK (Invited Talk) — Nov 2022
Talk Title: *Dust modelling in L-Galaxies and some applications*

ADAM (Annual Danish Astronomy Meeting), Fredericia, Denmark — May 2022
Talk Title: FLARES*: Unraveling the properties of massive galaxies at cosmic dawn*

NAM (National Astronomy Meeting), Bath, UK (Online) July 2021
Talk title: FLARES*: The photometric properties of galaxies at cosmic dawn*

EAS (European Astronomical Society) Meeting (Online) July 2021
Talk title: *Obscured star formation in the EoR with* FLARES

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

SAZERAC (Online) July 2020
Talk Title: *Photometric properties of galaxies in the* FLARE *simulation*

EAS (European Astronomical Society) Meeting, Leiden, The Netherlands (Online) Aug 2020
Talk title: FLARES*: First Light And Reionisation Epoch Simulations*

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

PROFESSIONAL ACTIVITIES AND ORGANISATION EXPERIENCE

co-PI of the FLARES Project, suite of re-simulations specially designed to study galaxies observable in the high-redshift Universe Jan 2020-Present

co-developer of the SYNTHESIZER Project, package to generate galaxy synthetic observations 2022-Present

Chair of High-Redshift galaxies: Apples to oranges from dusk to dawn, EAS 2024, Padova Special Session July 2024

co-Chair of Dust enrichment of early galaxies (z>5) in the era of JWST and ALMA, EAS 2024, Padova Special Session July 2024

co-Chair of Removing the Disguise: SMGs in the era of JWST , EAS 2024, Padova Special Session July 2024

LOC for D-LOCKS 2024, at DTU Space, Denmark January 2024

Virgo Consortium Meeting, Organised discussion session on Mock observations of simulations July 2022
The Virgo Consortium is an international grouping of scientists to carry out state-of-the-art cosmological simulations

DAWN Conference, Co-chair of 'DAWN to Noon' discussion session June 2022

Astronomy on Tap (AoT), Copenhagen, Organising committee member 2022 – 2023

Reviewer for Monthly Notices of the Royal Astronomical Society (MNRAS) Oct 2021 – Present

Co-organiser of DAWN caketalks, Weekly talks at the Cosmic Dawn Center on related topics Oct 2021 – Present

Scientific Organizing Committee (SOC) Member, Models and Simulations of High-Redshift Galaxies - Sazerac Sip Oct 2021
A short online conference to discuss current models and simulations of high-redshift galaxies

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

OUTREACH

Astronomy on Tap (AoT), Copenhagen, Denmark Feb 2021
Talked about cosmological simulations of galaxy formation and evolution

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

ACHIEVEMENTS

DISCnet scholarship to pursue PhD at University of Sussex, UK — 30 Sept 2017 – 30 Sept 2021

Partial **Oort/NOVA** MSc scholarship from Leiden Observatory, The Netherlands — 1 Sept 2015 – 31 July 2021

GATE (Graduate Aptitude Test) and JEST (Joint Entrance Screening Test) in Physics, 2015
All India Rank 88 and 71 (Some of the most competitive exams for graduate schools in India)

NET (National Eligibility Test, for Junior Research Fellowships) in the Physical Sciences, Dec 2014
All India Rank 51

COMPUTING SKILLS

Languages	`C`, `Fortran` (Basic), `Julia` (Basic), `Python`
Astronomy Software	`casa`, `cloudy`, `gadget`, SED fitting
Others	LaTeX, High Performance Computing, Machine Learning, Natural Language Processing

LANGUAGES

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

REFERENCES

- Prof. Stephen M. Wilkins, Astronomy Centre, University of Sussex, Brighton, UK
- Prof. Thomas R. Greve, Cosmic Dawn Center, DTU Space, DTU, Kongens Lyngby, Denmark
- Prof. Georgios E. Magdis, Cosmic Dawn Center, DTU Space, DTU, Kongens Lyngby, Denmark