

PERSONAL DATA

PLACE AND DATE OF BIRTH: Kolhapur, Maharashtra, India | July 1994
NATIONALITY AND GENDER: Indian | Female
PHONE AND EMAIL: +91 7021983364 | swatigavas47@gmail.com

POST-DOCTORAL POSITIONS

TENURE: APR 2025 - Present
ADVISOR/HOST: [Dr. Nishikanta Khandai](#)
INSTITUTE: National Institute of Science Education and Research (NISER), Bhubaneswar

PHD

TENURE: AUG 2018 - DEC 2024
TOPIC: Aspects of gravitational clustering and structure formation in the Universe
ADVISOR: [Prof. Jasjeet Singh Bagla](#)
INSTITUTE: Indian Institute of Science Education and Research (IISER), Mohali

EDUCATION

JULY 2017 Master of Science in PHYSICS,
Department of Physics, Savitribai Phule Pune University, Pune
Major: Astronomy and Astrophysics | CGPA: 8.27/10

JULY 2015 Bachelor of Science in PHYSICS
DBJ College, Chiplun, **Mumbai University** | CGPA: 7/7
Secured third rank at the University level

RESEARCH INTEREST

- Gravitational clustering and large-scale structure formation through simulations and analytical approaches
- Dark matter halos, galaxy formation, and baryonic processes
- Thermodynamics of late-time cosmology

PUBLICATIONS [NASA-ADS](#)

2022 : Swati Gavas, Jasjeet Bagla, Nishikanta Khandai, Girish Kulkarni
Halo mass function in scale invariant models,
[MNRAS, Volume 521, Issue 4, June 2023, Pages 5960–5971](#)

2024 : Swati Gavas, Jasjeet Bagla, Nishikanta Khandai
Dispersion in the Hubble-Lemaître constant measurements from
gravitational clustering,
[Phys. Rev. D 111, 043516 – 10 February, 2025](#)

Jasjeet Bagla, Swati Gavas
On the origin of transient features in cosmological N-Body Simulations,
[JOAA, Volume 46, article number 33, 16 June 2025](#)

2025 : [Submitted]
Dipayan Mukherjee, Harkirat Singh Sahota, Swati Gavas
A dynamical systems perspective on the thermodynamics of late-time cosmology
[gr-qc](#), [astro-ph.CO](#)

[In preparation]
Ayan Nanda, Nishikanta Khandai, Jasjeet Singh Bagla, Swati Gavas
Self-Similarity of Halo Shapes in Cosmological Simulations.

[In preparation]
Swati Gavas, Ayan Nanda, Nishikanta Khandai
Finite box size effect on halos scales

CONFERENCES, SCHOOLS AND WORKSHOPS

- 29-2 OCT 2025: (presented talk)
Challenges and Innovations in Computational Astrophysics VI
Held at Indian Institute of Science Education and Research (IISER), Mohali
Talk title: Numerical Artifacts of Restricted Power Spectrum in cosmological N-Body Simulations
- 11 NOV 2024: (presented talk)
Computational and Observational Cosmology Group at the Observatório Nacional - ON(RJ/Brazil)
Talk title: Dispersion in the Hubble-Lemaître constant measurements from gravitational clustering
- 14-25 OCT 2024: **3rd IAGRG School on Gravitation and Cosmology**
Held at International Centre for Theoretical Sciences (ICTS), Bengaluru, India
- 1-2 JULY 2024: (presented talk)
Séminaire Univers Institut d'Astrophysique de Paris (IAP)
Visit to Prof. Stephane Colombi at Institut d'Astrophysique de Paris (IAP), France
Talk title: Halo mass function in scale-invariant models
- 17-28 JUNE 2024: (presented talk)
Summer School on Cosmology
Held at International Centre for Theoretical Physics (ICTP), Trieste, Italy
Talk title: Dispersion in the Hubble-Lemaître constant measurements from gravitational clustering
- 1-4 FEB 2024: (presented talk)
42nd Meeting of Astronomical Society of India
Held at IISc, ISRO and JNP Bengaluru, India
Talk title: Dispersion in the Hubble-Lemaître constant measurements from gravitational clustering
- 6-9 DEC 2023: (presented talk)
10th International Conference on Gravitation and Cosmology
Held at IIT Guwahati, India
Talk title: A Local Perspective on Hubble Tension from Cosmological N-body Simulations

- 7-9 Nov 2023: (presented talk)
Challenges and Innovations in Computational Astrophysics V
 Virtual Meeting
 Talk title: A Local Perspective on Hubble Tension from Cosmological N-body Simulations
- 24-28 OCT 2022: (presented talk)
The 10th KIAS Workshop on Cosmology and Structure Formation
 Held at KIAS, South Korea
 Talk title : Halo mass function in scale invariant models
- 27-31 JAN 2020: **School on Observing The First Billion Years of the Universe Using Next Generation Telescopes**
 Five days school held at IIT Indore, India

FELLOWSHIPS, SCHOLARSHIPS & AWARDS

- ANRF-ITS 2024: International travel grant to attend school in Italy
- INSA-INYAS SCIART 2021: International SciArt Image Competition 2021
 Third prize in simulation category for first entry
 Certificate of appreciation for second entry
- UGC-SET 2018: For lectureship in physics
- INSPIRE FELLOWSHIP 2017: Fellowship for Doctorate program in physics
- GATE PHYSICS 2018: All India Rank- 484
- JAM PHYSICS 2015: All India Rank- 460
- INSPIRE SHE: INSPIRE Scholarship for Higher Education
 Tenure: 2012-2017

OTHER RESEARCH EXPERIENCE

- JAN-MAY 2017 **Masters project at IUCAA, Pune, India**
N-body simulations to study large scale structure of the universe and study halo properties.
 Supervisor : Dr. Aseem Paranjape, IUCAA, Pune, India.
- JUN-JULY 2016 **Summer School Project at IPR, Gandhinagar, India.**
Time dependent electron-ion collision frequency in a strong laser field using non-Maxwellian electron velocity distribution function
 Supervisor : Dr. Mrityunjay Kundu, IPR, Gandhinagar, India.

TEACHING & MENTORING

- JAN-PRESENT 2025: Co-mentoring a PhD student as a part of collaboration
- AUG-DEC 2022: PHY111 Physics lab Mechanics (IISER Mohali)
- JAN-MAY 2021: IDC201 Introduction to astronomy (IISER Mohali)
- JAN-MAY 2020: PHY212 Modern Physics Lab (IISER Mohali)
- AUG-DEC 2019: PHY411 Nuclear Physics Lab (IISER Mohali)

TECHNICAL SKILLS

HIGH PERFORMANCE COMPUTING : [Kalinga\(NISER\)](#), astro (NISER), [HPC-IISERM](#)
PROGRAMMING LANGUAGES : Python, Julia, Fortran90, C/ C++.
OPERATING SYSTEMS : Linux based systems
TYPESETTING SOFTWARE : \LaTeX

LANGUAGES

MOTHER TONGUE: Marathi
FLUENT: English, Hindi

OTHERS

- MAY 2017: Video on 'zero shadow day' shown in outrageous acts of sciences (UK) / you have been warned (USA), a Discovery channel show.
- JAN 2011: **INSPIRE Internship**
Won first prize in the 'Innovation in Mechanics' competition during the internship.
- DEC 2009: **National Means Cum-Merit Scholarship Scheme (NMMSS)**
Tenure: 2009-2012