

HIMANSHU BHISIKAR

Curriculum Vitae

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EDUCATION

Indian Institute of Science Education and Research, Pune (IISER-P)

Pune, India

BS-MS Dual Degree

Aug 2016 – May 2022

Major in Physics + Minor in Biology

RESEARCH EXPERIENCE

Search for massive, compact and relic galaxies in the local universe

Aug 2022 – Present

Visiting Postgraduate researcher (GC-2 : Stars and Galaxies group)

Indian Institute of Astrophysics, Bengaluru

- Worked with **Prof. Smitha Subramanian** on investigating the presence of **Red nuggets** in the local universe.
- Carried out a systematic search of local analogs of high-redshift red nugget galaxies by use of the 7th SDSS data release. Used multi-wavelength photometric and spectroscopic data to study and characterize such galaxies, and performed spectral analysis of stellar populations to identify and distinguish the most-probable candidate galaxies.

Understanding Star Formation in NGC 4571 using UVIT-SDSS-ALMA

July 2021 – May 2022

Visiting Master's intern (Astrosat Ultra Deep Field team)

Inter-University Centre for Astronomy and Astrophysics, Pune

- Worked with **Prof. Kanak Saha & Dr. Chayan Mondal** on investigating the star formation properties of the nearby virgo cluster galaxy NGC 4571.
- Studied the star formation properties of the Star Forming Clumps (SFCs) identified throughout the galaxy by UVIT. conducting a multi-wavelength photometric study using data from the UVIT, SDSS and ALMA missions.

Gray Immunity Model Gives Qualitatively Different Predictions

May – Oct 2021

Research collaborator

Indian Institute of Science Education and Research (IISER) Pune

- Worked in collaboration with **Prof. Milind Watve** on the creation of a **Gray Immunity model** to explain infections.
- Created a Non-compartmental Epidemiological model using python by considering immunity as a continuous variable, rather than a discrete one. Incorporated factors that brought about Small Immunity Effects (SIE). Also modeled COVID-19 cases and explained the variations found in actual country-wise data.

Elements of Regression Analysis and Model fitting

Jan – May 2021

Semester project intern

Indian Institute of Science Education and Research (IISER) Pune

- Worked with **Prof. Soumen Maity** on the applications of **Regression analysis** in the context of astronomical data.
- Read through the theory of Regression analysis, with particular focus on the topics of Linear and Multiple Regression, Model selection and Model fitting. Subsequently worked on the implementation of above algorithms to specialized data in python.

A primer on Radio astronomy: Signals, Fourier transforms, Interferometry

Dec 2019 – May 2020

Semester project intern

Indian Institute of Science Education and Research (IISER) Pune

- Worked with **Prof. Ramana Athreya** on the computation and data visualization of **Fourier transforms**.
- Read through the theory of Radio signals, Fourier transforms, and the associated statistics. Carried out a thorough reading of the topics of Single-dish radio telescopes and Radio Interferometry. Created an algorithm in C to compute the FFT of a given signal, and to visualize it.

ACADEMIC PRESENTATIONS

Institute VSP seminar, IIA-Bengaluru	13 July 2023
”A search for Relic galaxies in the local universe”	Talk
41st meeting of the Astronomical Society of India (ASI-2023), IIT-Indore	2 - 5 March, 2023
”Recent Star-forming clumps in NGC 4571: A FUV-ALMA study”	Poster
Annual Thesis Defence, IISER-Pune	13 May, 2022
”A Study of Star-forming clumps in NGC 4571 using UVIT and SDSS”	Talk

PUBLICATIONS

[3] A search for relic galaxies in the local universe	(In preparation)
Bhisikar, H, Subramanian, S	2023
[2] Deciphering the young star-forming regions in NGC 4571: A UVIT-SDSS-ALMA study	(In preparation)
Bhisikar, H, Saha, K, & Mondal, C	2023
[1] Epidemiology: ”Gray Immunity Model Gives Qualitatively Different Predictions	(Accepted, J. Biosciences)
Watve, M.G, Bhisikar, H, Kharate, R & Bajpei, S	2023

CONFERENCES, SCHOOLS, SYMPOSIUMS, WORKSHOPS (CONCISE)

41st Meeting of the Astronomical Society of India (ASI) (Physical)	Mar, 2023
Organizer: Indian Institute of Technology (IIT), Indore	
3rd Indo-French CEFIPRA Astronomy Meeting (IFCAM) (Physical)	Jan, 2023
Organizer: Indian Institute of Astrophysics (IIA), Bengaluru	
7th Indo-French Astronomy School (IFAS7) (Physical)	Nov, 2022
Organizer: Inter-University Centre for Astronomy and Astrophysics, Pune (IUCAA)	
Celebrating 7 years of Astrosat (Physical)	Sep, 2022
Organizer: Indian Space Research Organization (ISRO), Bengaluru	
Gaia Symposium: DR3 and beyond (Physical)	July, 2022
Organizer: Indian Institute of Astrophysics (IIA), Bengaluru	
Connecting Science Communication with Cognition (Virtual)	Aug – Oct, 2021
Organizer: National Institute for Advanced Studies - IISc (NIAS-IISc)	
ACM Winter School of Geometric Algorithms (Physical)	Dec, 2019
Organizer: Indian Institute of Science Education and Research, Pune (IISER-P)	

SKILLS

Programming	python (Advanced + Machine learning), C/C++, fortran (intermediate), R, MATLAB (preliminary)
Software & codes	CASA, IRAF, GALFIT, SExtractor, CCDLAB, SDSS-MARVIN, CIGALE, FIREFLY, DS9, topcat
Data archives	SDSS, UVIT, GALEX, ALMA, SPITZER, SDSS-MANGA, HST, Gaia
Linux shell	bash, zsh, fish
Markup languages	TeX (L ^A T _E X, B _I B _T E _X), markdown, RMarkdown, reStructuredText
Query languages	SQL, ADQL
Text editors	Atom, VScode, Gedit, Kate, Doom Emacs, Notepad
Developer tools	Git, Jupyter, Anaconda
Office suites	Microsoft Office, Libreoffice, OnlyOffice, Google Suite
Languages	Proficient in English (TOEFL iBT score - 106/120), Hindi, Marathi (Native language) and Tamil

OBSERVING PROPOSALS

Ultraviolet Imaging Telescope (UVIT / Astrosat)

2023

Ultraviolet imaging (as Co-Investigator) | 160 ks

Title : *FUV view of star formation in the discs of local analogs of high-redshift red nuggets*

NON-ACADEMIC TALKS

- "Creating your Curriculum Vitae CV" as a mentor for the workshop "Intro2Astro"

July 2022
- "The Spread of True and False news online" for the workshop "Connecting science communication & cognition"

Oct 2021
- "exospectra - A python package to plot transmission spectra of exoplanets" for the online workshop "Code/Astro"

June 2021

MAJOR LEADERSHIP POSITIONS AND RESPONSIBILITIES

Volunteer team	IFCAM-III-2023, IIA, BENGALURU	Jan 2023
Web designer	SENSIBLE-AUDACIOUS-FREE-ENLIGHTENED	Nov 2021 – Jan 2023
Elected member	DINING COMMITTEE, IISER-P	Sep 2021 – May 2022
Joint Coordinator	CAREER DEVELOPMENT AND PLACEMENT CELL, IISER-P	Sep 2021 – May 2022
Elected Councillor	STUDENT COUNCIL, IISER-P	Sep 2021 – May 2022
Organizing team	STARTUP AND INNOVATION E-SUMMIT, THINK INDIA	Oct – Nov, 2020
Head Coordinator	HOSPITALITY, MIMAMSA, IISER-P	Mar, 2019
Coordinator	INVIGILATION TEAM, MIMAMSA, IISER-K	Jan, 2019

REFERENCES

Dr. Smitha Subramanian, Associate Professor, Indian Institute of Astrophysics (IIA), Bengaluru
✉ smitha.subramanian@iiap.res.in

Dr. Kanak Saha, Professor, Inter University Center for Astronomy and Astrophysics (IUCAA), Pune
✉ kanak@iucaa.in

Dr. Milind Watve, Professor (Now Independent researcher), Indian Institute for Science Education and Research (IISER), Pune
✉ milindwatve@gmail.com