

EDUCATION

Savitribai Phule Pune University <i>Master of Science in Physics</i>	Aug. 2021 – May. 2023 Pune, India
St. Xavier's College <i>Bachleor of Science in Physics</i>	May. 2018 – April. 2021 Ahmedabad, India

RESEARCH EXPERIENCE

Studying the central region of Galaxy Clusters and their Morphological Study <i>Advisor: Dr. Viral Parekh</i>	Aug. 2023 - Present NRAO, USA
<ul style="list-style-type: none"> – Analyzed Radio and X-ray data of Galaxy clusters to study the radio halos/relics and extended emissions from GC's central regions from the MGCLS clusters using MaDCoWS Catalogs, conducting a comprehensive analysis – Skills: CASA, Aladin, Python, VLA, Chandra X-ray 	
Cosmological Models in Modified Theory of Gravity with Observational Constraints <i>Advisors: Dr. Saibal Ray, Dr. Anil K. Yadav, Dr. Lokesh K. Sharma</i>	Jun. 2023 - Present Mathura, India
<ul style="list-style-type: none"> – Role: Developed a pipeline to determine the parameters of cosmological models using observational data (OHD, BAO, and Pantheon) and performed cosmography – Skills: Python, Bayesian Statistics, MCMC, Observational Cosmology 	
Extended X-Ray Jets in Radio-loud Quasars: A Morphological Study <i>Advisor: Dr. Vaidehi Paliya</i>	Aug. 2022 - May. 2023 IUCAA, India
<ul style="list-style-type: none"> – Developed a pipeline to detect X-ray-to-radio offsets from low-count X-ray images using Bayesian Analysis and a powerful statistical tool Low-count Image Reconstruction Algorithm (LIRA) – Skills: CIAO, Sherpa, MARX, LIRA, Python, R, Bayesian Statistics, MCMC, Chandra X-Ray 	
Detecting and studying Vela Pulsar timing using Ooty Radio Telescope <i>Advisor: Prof. Avinash Deshpande</i>	Sep. 2022 - Dec. 2022 IUCAA, India
<ul style="list-style-type: none"> – Analyzed the period of the Vela Pulsar using the Ooty Telescope data by implementing Fourier Transform and dedispersion techniques on the radio data – Skills: Python, De-convolution, Fast Fourier Transform (FFT) 	
Methods of Increasing Efficiency of Solar Cells <i>Advisor: Dr. Sanjeev Gupta</i>	May. 2020 - April. 2021 St. Xavier's College, Ahmedabad
<ul style="list-style-type: none"> – Explored solar cells' mechanics and material properties, aiming to enhance efficiency by 5-8% 	

PUBLICATIONS

A power law solution for FLRW Universe with observational Constraints <i>L. Sharma, S. Parekh, S. Maurya, K. Singh, S. Ray, et al.</i>	[arXiv:2310.18665] IJGMMP (under review)
Modified power law cosmology: theoretical scenarios and observational constraints <i>L. Sharma, S. Parekh, S. Ray, A. Yadav et al.</i>	[Preprints.org] MDPI (under review)
Constraining anisotropic universe under $f(R, T)$ theory of gravity <i>L. Sharma, S. Parekh, S. Ray, A. Yadav et al.</i>	[arXiv:2402.13596] JHEAP (under review)
A power law solution for Bianchi-I Universe with observational constraints <i>L. Sharma, S. Parekh, S. Ray, A. Yadav et al.</i>	[PrePrint] IJGMMP (under review)
Generation of Bulk Viscous Cosmological Model in $f(R, T)$ Gravity & observational constraints <i>L. Sharma, S. Parekh, S. Ray, A. Yadav et al.</i>	Under Review PRD
Cosmological aspects of a hyperbolic solution in $f(R, T)$ theory of gravity & observational constraints <i>L. Sharma, S. Parekh, S. Ray, A. Yadav et al.</i>	[PrePrint] In Prep
Overcoming the hurdles in imparting Astronomy education in Schools <i>Vaibhav Trivedi, S. Parekh</i>	Publication IAU Proceedings
Innovative computational experiment on projectile motion <i>S. Parekh</i>	Publication IAPT Publication

TEACHING EXPERIENCE

Trainer for The International Astronomical Search Collaboration (IASC) <i>St. Xavier's College, Ahmedabad</i>	May. 2022 - Dec. 2022 Ahmedabad, India
Tutor: Introduction to Python and Simulations <i>Bajaj Science Education Center</i>	May. 2021 - June. 2021 Wardha, India

WORKSHOPS / CONFERENCES / TALKS

10 th International Conference on Gravitation and Cosmology (ICGC 2023) <i>Invited to present my paper on Power Law solution for FLRW Universe with Observational Constraints</i>	Dec. 2023 IIT Guwahati, India
4th Shaw-IAU Workshop on Astronomy for Education <i>Invited to present my paper on Overcoming the hurdles in imparting Astronomy Education in Schools</i>	Nov. 2022 Virtual
Talk and Debate on opportunities for students and Indian Space missions <i>News Channels: Sandesh News, ETV, TV9, VTV, ABP Asmita</i>	Nov. 2022 Virtual
Meerkat Pulsar Timing Student Workshop by SARA0 (Online) <i>Hands-on workshop with measuring the relativistic time delay</i>	Sep. 2021 SARA0, South Africa
2021 African Radio Interferometry Winter School (Online) <i>Flagging, calibration, and imaging of continuum and spectral line data and time-domain pulsar science</i>	Jun. 2021 SARA0, South Africa
Introductory Summer School in Astronomy and Astrophysics (ISSAA) <i>Introduction to Astronomy, Hands-on Pulsar timing array, General Relativity and Cosmology</i>	May 2021 IUCAA, Pune
34 th IAPT National Convention <i>Invited to present my innovative work on Understanding Projectile Motion in an Interactive Manner</i>	Oct. 2019 IIIT Allahabad, India

ACHIEVEMENTS

Earned a Gold Medal for excellence in research for Bachelor's thesis at St. Xavier's College, Ahmedabad (2021)
Honoured as Citizen Scientist by NASA for the discovery of the 2020 HS24 asteroid in the [IASC campaign](#) (2020)
Received a Certificate of Excellence in National Anveshika Experimental Skill Test ([NAEST](#)) (2020)
Earned Gold Honour in the International Astronomy and Astrophysics Competition ([IAAC](#)) 2020
Winner of National Competition for Innovation in Computational Physics ([NCICP](#)) 2019
Winner of State Level Competition for Innovation in Computational Physics held in Gujarat sector (2019)

LEADERSHIP AND COMMUNITY OUTREACH

Founder and Team Lead of Astronomica: Astronomy Club of St. Xavier's College, Ahmedabad (2019 - 21)
Co-ordinated and organized astronomy outreach events in local schools/colleges (2020)
Co-founder and Editor of Infinoscope Magazine, an initiative to popularize STEM (2019 - 22)
Member and Educator at Universe Science Forum (USF), conducting local school outreach (2019 - 21)
Writer at Volume Stories for Space and Beyond carousel Blog (2021 - 22)
Volunteer at the National Science Day event organized by the Institute of Plasma Research (2020)

SKILLS

Programming: Python | Fortran | MATLAB | Mathematica | R
Modules: CIAO | CASA | Scipy | Astropy | DS9
Markup: \LaTeX | HTML | CSS
Designing: Canva | Adobe Premiere Pro
Language Proficiency: English | Gujarati | Hindi