

Curriculum Vitae - Piyush Marmat

October 3, 2023

DoB: 1st of December, 1999

Email: pmarmat@ph.iitr.ac.in

Research Interests Compact Stars, Computational High Energy Astrophysics, Observational Astronomy, Gravitational waves

EDUCATION

Integrated Master of Science in Physics (Dual-Degree)

July 2017 – May 2022

Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India

Master's Thesis: *Equation of State based on phenomenological relativistic mean field theory for single and double fluid Neutron Stars*

Thesis Supervisor: Prof. Paramasivan Arumugam, Department of Physics, IIT Roorkee

EXPERIENCES

Visiting Scientist

Mar-Apr 2023

International Space Science Institute, Bern, Switzerland.

ThinkSwiss Research Scholar

Sep-Nov 2022

I have been awarded the ThinkSwiss Research Scholarship by the Swissnex in India, Consulate General of Switzerland for conducting a research project under supervision of **Prof. Maurizio Falanga, Institute for physics, University of Bern, Switzerland.**

Associate member of the Indian Pulsar Timing Array

May 2021 - Dec 2022

Head Secretary (May 2020 - April 2021) and **Joint Secretary** (July 2019 - April 2020) at **Physics and Astronomy Club-IIT Roorkee**

PUBLICATIONS

Using low-frequency scatter broadening measurements for precision estimates of dispersion measures

Monthly Notices of Royal Astronomical Society (2023)

Jaikhomba Singha, et al. (Indian Pulsar Timing Array)

Nanohertz Gravitational Wave Astronomy during the SKA Era: An InPTA perspective

Journal of Astrophysics and Astronomy (2022)

Bhal Chandra. Joshi, et al. (Indian Pulsar Timing Array)

The Indian Pulsar Timing Array: First data release

Publications of the Astronomical Society of Australia (2022)

P. Tarafdar, et al. (Indian Pulsar Timing Array)

Low-frequency wide-band timing of InPTA pulsars observed with the uGMRT

Monthly Notices of Royal Astronomical Society (2022)

K. Nobleson, et al. (Indian Pulsar Timing Array and Tim Pennucci)

Evidence for profile changes in PSR J1713+0747 using the uGMRT

Monthly Notices of Royal Astronomical Society Letters (2021)

Jaikhomba Singha, et al. (Indian Pulsar Timing Array)

CONFERENCES

66th Symposium on Nuclear Physics

Dec 2022

Posters co-authored:

1. **The glitch rise times of rotating neutron stars**
2. **Neutron Star Equation of state in single and two fluid formalism**

40th Meeting of Astronomical Society of India

Mar 2022

Posters authored and co-authored:

1. A python based pipeline to analyse Interstellar scintillation of radio pulsars observed with ORT and uGMRT
2. Building a 5m aperture small radio-telescope at IIT Roorkee
3. Using low frequency scatter-broadening measurements for precision estimates of DM

WORKSHOPS

Forum on Lunar Gravitational-Wave Observation

Oct 2022

HPC Workshop on Radio Astronomy Data Analysis in the SKA Era

Mar 2022

Second Chennai Symposium on Gravitation and Cosmology - Online

Feb 2022

Online IR Astronomy School organised by SOFIA-NASA

Feb 2022

TIFR-ICTS CSGP Online Meeting

Dec 2021

GBO and Arecibo Online Single Dish School

Sep 2021

IPTA Online Student Week

Jun 2021

SKILLS

Programming languages - Python, C, C++, FORTRAN

Operating systems - Linux (Ubuntu and CentOS) and Windows

Softwares - PSRCHIVE, DSPSR, TEMPO2, Aladin, Stellarium, Adobe Illustrator

Web Development - HTML5-CSS, JS

Languages known: Hindi (Native)

English, TOEFL 2022 scores: 98/120 with 25(R)-27(L)-24(S)-22(W)

OUTREACH

'Is Betelgeuse going to be a supernova soon?'

Feb 2020

I presented a brief review of the Betelgeuse's dimming in late 2019 which suspected its untimely supernova explosion in a student-colloquium organised by Indian Physics Association-Roorkee Chapter. **(Role: Speaker)**

Workshop on Stellarium and Basic Astronomy

Dec 2020

One-day workshop organised by Student Technical Council - IIT Roorkee. I guided undergraduate students about the basics of observational astronomy and using the Stellarium open-source planetarium software. **(Role: Host and Instructor)**

Mysteries of Universe-1 and 2

2020-2021

An online colloquium series jointly organised by PaAC-IITR, IPA-Roorkee, ILS-IITR and Prof. Aalok Misra, IIT Roorkee. **(Role: Co-organiser)**

Astro with ARIES lecture series

2020-2021

An online colloquium series jointly organised by PaAC-IITR, IPA-Roorkee, ILS-IITR and ARIES, Nainital. **(Role: Co-organiser)**

AWARDS

IIT Kanpur's Hyperion-case study challenge

Oct 2021

I participated in a team of 3, secured **first position in this national level case-study challenge**. The problem-statements were related to galactic dark-matter density.

9th Inter-IIT Tech-Meet, IIT Mandi

Mar 2021

I participated in a team of 8 and **won a silver medal representing the institution**. We developed a web-based catalog for observations made through the ISRO's AstroSat.