

SAHIL JHAWAR

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EDUCATION

Universität Potsdam

Master of Science in Astrophysics
Grade*: 1.8 (gut/good)

October 2021 - Present
Potsdam, Germany

Coursework:

- Gravitational Wave Astrophysics
- General Relativity
- Multi-messenger astronomy
- Computational Astrophysics
- Bayesian Statistics[†]
- Statistics[†]

Christ (Deemed to be University)

Bachelor of Science (Physics, Maths and Electronics)
GPA: 3.68/4.0

July 2018 - June 2021
Bengaluru, India

Final Year Project: Gesture Controlled System based on Raspberry Pi Pico *Report*

RESEARCH EXPERIENCE

Theoretical Astrophysics Group, Universität Potsdam

Master's Thesis

March 2023 - Present
Potsdam, Germany

Master's thesis student under **Prof. Dr. Tim Dietrich**.

- Working on Bayesian techniques for Multi Messenger Astronomy using *NMMA* 📧.
- Characterizing the non stationary systematic uncertainties that arise in the modeling of electromagnetic counterparts of multi-messenger source (merged PR 📧)
- Using parallel computing techniques such as MPI and multi-threading to make inferences and analysis faster.

Universität Potsdam & Astronomical Institute of CAS

Participant

August 2022 - September 2022
Prague, Czech Republic

- Utilized the Perek 2m telescope at the Ondřejov Observatory to acquire stellar spectra
- Performed data reduction and analysis using IRAF Python for data visualization

IUCAA & NCRA-TIFR

Winter Student

December 2020 - January 2021
Pune, India

Radio Astronomy Winter School 2020: Learned basics of radio astronomy, from theory to instrumentation and computational aspects. Workshop enabled me to work on few physical experiments and on GMRT and ORT data of Vela pulsar.

Detailed reports can be found here

Krittika, IIT Bombay

Summer Project Intern

May 2020 - August 2020
Mumbai, India

Developed a Python package to analyse various types of binary star system.

PUBLICATIONS

1. **Sahil Jhawar**, Thibaud Wouters, Peter T. H. Pang, et al. *A data-driven approach for modeling the temporal and spectral evolution of kilonova systematic uncertainties*. 2024. arXiv: 2410.21978 [astro-ph.HE].

*See here on how to interpret German grade: Welche Form der Benotung wird an der Uni Potsdam verwendet?

[†]University coursework without credits

2. Malina Desai, Deep Chatterjee, **Sahil Jhawar**, et al. *Kilonova Light Curve Parameter Estimation Using Likelihood-Free Inference*. 2024. arXiv: 2408.06947 [astro-ph.IM].
3. T. Hussenot-Desenonges, T. Wouters, N. Guessoum, et al. *Multi-band analyses of the bright GRB 230812B and the associated SN2023pel*. 2023. arXiv: 2310.14310 [astro-ph.HE].

WORK EXPERIENCE

Deutsches GeoForschungsZentrum Potsdam (GFZ)

July 2024 - Present

Student Assistant

Potsdam, Germany

Student Software Developer in the Section 2.7 - Space Physics and Space Weather

- Translated data assimilation algorithms from MATLAB to Python, enhancing efficiency, readability and integration with modern software practices.
- Collaborated with team members to ensure seamless implementation and testing of the translated Python-based workflows.
- Converted legacy geomagnetic model Fortran code into Python

Leibniz-Institut für Astrophysik Potsdam (AIP)

December 2022 - March 2024

Student Assistant

Potsdam, Germany

Student Assistant in the Project Management team for building (integration, installation and maintenance) the 4-metre Multi-Object Spectroscopic Telescope *4MOST*.

- Using Python (OOP and scientific computing) to implement *4MOST* commissioning procedures during 3 week coding campaign (November 2023)
- Utilized technical skills in troubleshooting and problem-solving within the specialized environment of an astronomical integration hall.
- Proactively managed procurement activities, liaising with vendors to procure essential large-scale items for the integration hall.

TECHNICAL PROJECTS

NMMA

contributor and maintainer

A Pythonic library for probing nuclear physics and cosmology with multimessenger analysis.

GPInter

Gaussian Processes from scratch with interactive visualization.

uptime

A Github Action and Pages based uptime monitor in Python.

directory-cleaner

Python script to help you clean your directory by rearranging the files in sub-directories as per the file kind.

git-overleaf-sync

Python script that let's you sync your overleaf documents with GitHub/GitLab for free and efficient version control.

SKILLS

Technical Languages

Python, C/C++ (intermediate), \LaTeX , MATLAB (beginner)

Technical Skills

Git (-Lab and -Hub), Unix based OS and Windows, Bayesian Inference, Data analysis and visualisation

Packages and tools

NumPy, SciPy, Pandas, Matplotlib, Astropy, Bilby, Seaborn, Sphinx, CI\CD, Parallel computing

OUTREACH AND COMMUNITY ENGAGEMENT

Let's Talk Astronomy, Christ

Student coordinator

November 2019 - January 2021

Bengaluru, India

Acted as a liaison between students and faculty. Conducted 15+ talks.

LIGO-India, Vigyan Samagam (DAE-DST-NCSM, G.O.I) *September and December 2019*

Scientific Communicator

Bengaluru and Kolkata, India

Successfully played the role of science communicator by explaining GW Science and GW Exhibits to an audience of all ages. Catered to nearly 500 visitors.

Astronomical Society of India

Volunteer

February 2019

Bengaluru, India

Worked with hospitality committee to cater to all needs of guests and help in the smooth running of the conference during the 37th Annual Meeting of ASI at Christ (Deemed to be University).

OBSERVING EXPERIENCE

Perek 2m Telescope Assisted with 7 nights (Ondřejov, Czech Republic)

OST 0.5m Telescope Assisted with 2 nights (Potsdam, Germany)

CO-CURRICULAR ACTIVITIES

POSITIONS OF RESPONSIBILITY

Student Coordinator of Mathematics Association, Christ

Student Coordinator of Sequence 2021, Christ

Student Coordinator of Event Horizon 2021, Christ

Head of Events Core Committee for Sequence 2020, Christ

PRIZES, AWARDS AND HONORS

2024 Fully funded visiting fellowship by European Union's Horizon 2020 Programme under the AHEAD 2020 hosted by Dr. Mattia Bulla at University of Ferrara, Italy

2024 Fellowship of €500 by ESA for dotAstronomy 2024, ESAC Madrid, Spain

2023 Scholarship of ₹35,000 by Badrilal Soni Maheshwari Shiksha Sahyog Kendra, India

2021 Awarded co-curricular activities based scholarship from Christ (Deemed to be University)

2021 Won numerous inter and intra collegiate events, and successfully lead a team of players resulting in various rolling trophies for the department

2020 Gold honor in International Astronomy and Astrophysics Competition (IAAC), secured 38/40 and placed in the top 1% worldwide