SAHIL JHAWAR

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EDUCATION

Universität Potsdam

Master of Science in Astrophysics Grade¹: 1.8 (gut/good)

Coursework:

- Gravitational Wave Astrophysics
- Computational Astrophysics
- \bullet General Relativity
- Bayesian Inference

July 2018 - June 2021

Bengaluru, India

Christ (Deemed to be University) Bachelor of Science (Physics, Maths and Electronics) GPA: 3.68/4.0

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

RESEARCH EXPERIENCE

Theoretical Astrophysics Group, Universität Potsdam	March 2023 - Present
Master's Thesis	Potsdam, Germany

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

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

Universität Potsdam & Astronomical Institute of CASAugust 2022 - September 2022ParticipantPrague, Czech Republic

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

IUCAA & NCRA-TIFR

December 2020 - January 2021 Pune, India

 Winter Student
 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.

 C Detailed reports can be found here

Krittika, IIT Bombay

May 2020 - August 2020 Mumbai, India

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

PUBLICATIONS

1. Malina Desai, Deep Chatterjee, **Sahil Jhawar**, Philip Harris, Erik Katsavounidis, and Michael Coughlin. *Kilonova Light Curve Parameter Estimation Using Likelihood-Free Inference*. 2024. arXiv: 2408.06947 [astro-ph.IM]. URL: https://arxiv.org/abs/2408.06947.

October 2021 - Present Potsdam, Germany

- Multi-messenger astronomy
- Statistics

¹See here on how to interpret German grade: Welche Form der Benotung wird an der Uni Potsdam verwendet?

- 2. Data driven study on kilonova modelling systematics via Bayesian analysis. In preparation.
- 3. T. Hussenot-Desenonges et al. Multi-band analyses of the bright GRB 230812B and the associated SN2023pel. 2023. arXiv: 2310.14310 [astro-ph.HE].

WORK EXPERIENCE

Student Assistant

Deutsches GeoForschungsZentrum Potsdam (GFZ)

July 2024 - Present Potsdam, Germany

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

- Re-writing legacy space weather code from MATLAB to Python
- Re-writing section's data assimilation code from MATLAB and C++ to 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.

- Participated in a 3 weeks coding campaign for the 4MOST commissioning (November 2023)
- Collaborated with a team of 5 developers, following the Scrum agile methodology, to deliver high-quality code in short iterations, with regular feedback from stakeholders/product owner.
- Using Python (OOP and scientific computing) to implement commissioning procedures.
- 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 largescale items for the integration hall.

TECHNICAL PROJECTS

NMMA 🖸

contributor and maintainer

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

GPInter **Q**

Gaussian Processes from scratch with interactive visualization.

uptime 🖸

A Github Action and Pages based uptime monitor in Python.

directory-cleaner \bigcirc

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

git-overleaf-sync \Box

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

$\mathbf{cowin-vaccine} \ \mathbf{\cowin}$

Student coordinator

Python script to help you know the availability of vaccines around you (CoWIN).

OUTREACH AND COMMUNITY ENGAGEMENT

Let's Talk Astronomy, Christ

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

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 37^{th} Annual Meeting of ASI at Christ (Deemed to be University).

OBSERVING EXPERIENCE

Perek 2m Telescope	Assisted with 7 nights (Ondrejov, Czech Republic)
OST 0.5m Telescope	Assisted with 2 nights (Potsdam, Germany)

SKILLS

Volunteer

Technical Languages Technical Skills	Python, C\C++, IAT _E X Git (-Lab and -Hub), Slurm, Unix based OS and Windows, MS Office, Bayesian Inference, Data analysis and visualisation
Packages and tools	NumPy, SciPy, Pandas, Matplotlib, Astropy, Bilby, Seaborn, Sphinx, CI\CD, Parallel computing
Languages	English and Hindi

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 $\in 500$ 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