# SAHIL JHAWAR

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## EDUCATION

**Universität Potsdam** *October 2021 - Present*
Master of Science in Astrophysics *Potsdam, Germany*
Grade*: 1.8 (gut/good)

***Coursework***:

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

**Christ (Deemed to be University)** *July 2018 - June 2021*
Bachelor of Science (Physics, Maths and Electronics) *Bengaluru, India*
GPA: 3.68/4.0

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

## 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*.
- 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** *August 2022 - September 2022*
*Participant* *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** *December 2020 - January 2021*
*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.
*Detailed reports can be found here*

**Krittika, IIT Bombay** *May 2020 - August 2020*
*Summer Project Intern* *Mumbai, India*
Developed a Python package to analyse various types of binary star system.

## PUBLICATIONS

1. **Sahil Jhawar**, Thibeau Wouters, Peter T. H. Pang, Mattia Bulla, Michael W. Coughlin, and Tim Dietrich. *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**, Philip Harris, Erik Katsavounidis, and Michael Coughlin. *Kilonova Light Curve Parameter Estimation Using Likelihood-Free Inference*. 2024. arXiv: 2408.06947 [astro-ph.IM].
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

**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 geomagentic 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

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|---|---|
| **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** *November 2019 - January 2021*
*Student coordinator* *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*
*Volunteer* *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 (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