

SAHIL MAHESHWARI

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EDUCATION

Universität Potsdam

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

October 2021 - Present
Potsdam, Germany

Coursework:

- Gravitational Wave Astrophysics
- Atomic Spectroscopy
- Computational Astrophysics
- General Relativity
- Stellar Evolution
- Bayesian Inference
- Multi-messenger astronomy
- Galactic Dynamics
- 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

WORK

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 (draft PR [🔗](#))
- Using parallel computing techniques such as MPI and multi-threading to make inferences and analysis faster.

Leibniz-Institut für Astrophysik Potsdam (AIP)

Student Assistant

December 2022 - March 2024
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 large-scale items for the integration hall.

PUBLICATIONS

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

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

RESEARCH EXPERIENCE

Universität Potsdam & Astronomical Institute of CAS *August 2022 - September 2022*
Participant *Prague, Czech Republic*

Research workshop on evolved stars: The workshop involved the acquisition of spectra for a select group of stars, identified from a catalog containing several hundred thousand stars. To accomplish this, the Perek 2m (spectroscopic) telescope, situated at the Ondřejov Observatory, was utilized. Subsequently, the data was subjected to reduction and analysis using IRAF, while Python was employed for visualization purposes.

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.

TECHNICAL PROJECTS

NMMA 
contributor and maintainer

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

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.

cowin-vaccine 

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*
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 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)

SKILLS

| | |
|----------------------------|---|
| Technical Languages | Python, C\C++, L ^A T _E X |
| Technical Skills | 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 |
| Personal | Critical thinking, Problem solving, Leadership, Research and Analysis, Computational thinking |
| 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

- 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)
- Awarded a fellowship of €500 by European Space Agency for dotAstronomy 2024, ESAC Madrid, Spain (2024)
- Awarded a scholarship of ₹35,000 (~ €400) by Badrilal Soni Maheshwari Shiksha Sahyog Kendra, India (2023)
- 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 (2018-2021)
- Gold honor in International Astronomy and Astrophysics Competition (IAAC), secured 38/40 and placed in the top 1% worldwide (2020)

REFERENCES

Prof. Dr. Tim Dietrich

Main supervisor

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Dr. Peter T. H. Pang

Co-supervisor

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