

Akash Vani

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Education

- July 2022** (expected) **Master of Science in Physics** | University of Heidelberg, Germany
Thesis: Properties of Stellar Populations in the JJ-model (Milky Way disc model) based on Gaia EDR3 data
Supervisor: Prof. Andreas Just, Astronomisches Rechen-Institut, Heidelberg
- June 2019** **Bachelor of Science in Physics** | Savitribai Phule Pune University, India
Project: *Photometric Calibration of UVIT* (UV telescope on Astrosat)
Guide: Prof. Shyam Tandon, Inter-University Centre for Astronomy and Astrophysics, Pune
- July 2016** **Higher Secondary Schooling Certificate** | St. Xaviers Higher Sec. School, Goa - India
- June 2014** **Secondary Schooling Certificate** | New Goa G.S. Amonkar Vidhya Mandir, Goa - India

Key Projects

- June 2021 - Present | Assess the Completeness and Luminosity function of the CNS5**
The aim is to explore and understand the CNS5 data, assess the completeness limit, the luminosity function and render color magnitude diagrams in the optical and NIR regime.
Guide: Prof. Andreas Just, ARI and Alex Golovin, LSW, University of Heidelberg, Germany
- May 2021 - Present | Investigation of two interesting M-dwarf Binaries in the CNS5**
Discovered in the CNS5 catalogue, these two M-dwarf binaries are a potential candidate to an interesting system, possibly a quadruple. This project is about investigating the properties of these two systems.
Guide: Prof. Andreas Just, ARI and Prof. Sabine Reffert, LSW, University of Heidelberg, Germany
- Oct 2020 - Oct 2020 | Quantum Key Distribution: BB84 & E91 Protocol**
We a team of two, demonstrated the working of the BB84 and E91 protocol on the IBMQ quantum computer. We also looked into the transmission of the qubits with and without repeaters to illustrate the working of a quantum network.
Guide: Prof. Fred Jendrzejewski, KIP, University of Heidelberg, Germany
- Sept 2020 - Oct 2020 | Deep Learning in Astronomy**
Understanding basic deep learning techniques by using TensorFlow. Here a simple neural network is implemented to find whether a galaxy is spiral or elliptical based on photometric data or images obtained from SDSS. The data was provided by Ashish Mahabal during the 7BISS (2020) summer school.
Self-guided
- Aug 2019 - Oct 2020 | The study of LMXB 4U 1702-429 using ASTROSAT data**
The spectral and timing study of thermonuclear (Type-I) X-ray burst of 4U 1702-429, a low mass X-ray binary system, using ASTROSAT's Large Area X-ray Proportional Counter (LAPXC) data.
Guide: Prof. Sudip Bhattacharyya, TIFR, Mumbai and Navin Sridhar, University of Columbia, New York, USA
- June 2019 - Aug 2019 | Introduction to Polarimetry**
A literature survey and a presentation on the theme of polarimetry, covering the topics of Jones and Stokes formalism and material interactions with a hands-on laboratory component.
Guide: Prof. Nirmalya Ghosh, IISER Kolkata, India
- Jan 2019 - Mar 2019 | CPT synthesis of layered BiOI nanodiscs and its photocatalytic applications**
We, a group of two, synthesized Bismuth Oxyiodide (BiOI) nanodiscs using co-precipitative (CPT) method and intern used X-ray diffraction and Scanning electron microscopy to confirm its formation. We also tried to experiment with its photocatalytic properties.
Guide: Prof. Sambhaji Warule, Nowrosjee Wadia College, Pune, India

Extra-curricular activities

- Aug 2021 | Selected for ZTF (Virtual) Summer School 2021, Caltech, USA
- July 2021 | Participated in 2021 Sagan Exoplanet Summer Virtual Workshop, Nasa Exoplanet Science Institute, Caltech, USA
- Jan 2021 | Participated in Astronomy Winter School (Virtual): High-Energy Astrophysics by NTHU, Taiwan
- Oct 2020 | Participated in the SHINE Autumn School (Virtual) @ CERN, Switzerland
- Nov 2019 | Selected for Astrosat's Data Analysis workshop, Goa University, India

Experience

- Oct 2021 - Present | Student Aid at Career Service, **DKFZ**, Heidelberg
- Aug 2020 - Sept 2020 | Photography and editor intern at **Luminance**, Goa, a photography studio
- Aug 2019 - March 2020 | Technical intern at **Bal Bandhoo**, Goa, a wrist watch manufacturing firm

Achievements

- **Summer Student**
 - 2021 | 'Stellar Ecosystems', IMPRS-HD Summer School (Virtual), Heidelberg, Germany
 - 2020 | 'Astronomy and Data Science' Byurakan International Summer School (Virtual), Armenia
 - 2019 | 'Quantum Information and Quantum Technology' summer school by IISER Kolkata, India
 - 2018 | 'Introductory Summer School in Astronomy and Astrophysics' by IUCAA, Pune, India
- **Science exhibitions and camps**
 - 2017 & 2019 | First and Second place at intra college science exhibition, Nowrosjee Wadia College, Pune
 - 2016 | Selected for National Level, Western India Science Fair, Mumbai, India
 - 2014 | INSPIRE camp, Goa by the Dept of Science and Technology, India

Community service and Volunteering

- **April 2020** | **Covid – 19 Relief Support Mission, Mapusa-Goa, India**
 - Communications team
 - Finding resources and facilitating logistics
- **Dec 2019** | **Serendipity Arts Festival, Goa, India**
 - Hospitality and Management Volunteer
 - Volunteered to help artists to set up their art installations

Select MSc Courses

- Statistical Methods Summer Semester 21
- Computational Statistics and Data Analysis Summer Semester 21
- Solving Problems on Quantum Hardware Winter Semester 20/21
- Introduction to GPU Accelerated Computing Winter Semester 20/21

Competencies

Languages

- English, German, Chinese/Mandarin (basic), Hindi, Marathi, Konkani

Programing

- Python, C, C++, R, SQL

Basic utilities

- Photoshop, MS Word, MS Excel, MS PowerPoint, LaTeX

Operating System

- Windows, Ubuntu