Giridharan Sankar | CV

+91-70103 70625 • giridharan-sankar.github.io
giridharan.s@students.iiserpune.ac.in

Education

Integrated BS-MS in Physics — **Pune, India**
Indian Institute of Science Education and Research (IISER) Pune — *2020–2025 (expected)*
CGPA: 8.8/10

Grade 12 — **Tiruchirappalli, India**
Sri Vignesh Vidyalaya Senior Secondary School (CBSE) — *2019–2020*
95.8% overall

Awards & Scholarships

2020–: DST INSPIRE Scholarship for Higher Education

June–September 2024: NSTC - International Internship Pilot Program, Taiwan

Skills

Programming Languages: *Basic:* Java, R *Intermediate:*, C++, Fortran, MATLAB, *Proficient:* Python

Softwares: CARTA, CASA, Tomviz and Paraview

Miscellaneous: Proficient in LaTeX and MSOffice; can work on Windows and Linux systems

Master's thesis

Studying the molecular outflows and bipolar jets of YSOs — **ASIAA, Taipei**
Astronomy and Astrophysics — *June 2024 -*

- For my master's thesis in Physics, I am currently working with Dr Hsien Shang at the Institute of Astronomy and Astrophysics, Academia Sinica.
- My project started with looking at DG Tau B in different wavelength regimes using ALMA, JWST's NIRSpec-IFUs and VLT's MUSE.
- Through the course of this project, other sources that exhibit rotational outflows, cavities and bipolar jets will be considered, as part of an ongoing research problem to construct and verify a unified jet-outflow launch model for YSOs.

Projects

Protostellar outflows — **ASIAA, Taipei**
Astronomy and Astrophysics — *Aug 2023 - Feb 2024*

- I worked with Dr Hsien Shang's group at the Institute of Astronomy and Astrophysics, Academia Sinica remotely.
- Primarily worked to understand protostellar outflows by reading Bally (2016) and star formation theory from Shu et al. (1987). Presented the contents learnt in group meetings.
- Used Paraview and Tomviz to visualize the position-position-velocity (PPV) plots of HH 30 and DG Tau B, which in turn were generated by Python scripts that I wrote to process the corresponding FITS cubes.

Radiative transfer interface in Python **IISER Pune**
Earth and Planetary Sciences *Dec 2022 - May 2024*

- I worked with Dr Joy Monteiro, IISER Pune, to build an interface between the Fortran90 based radiative transfer code SOCRATES-RF and the Python climate modelling toolkit climt.
- The libraries of SOCRATES-RF can be used in simulations of planetary atmospheres. This allows for more flexibility in the models used - which is facilitated by SOCRATES - and easier accessibility of code with climt.
- Checked its veracity and compared it with climt's own radiative transfer models. Tidally locked simulations using the THAI protocol are currently being developed using this interface by a labmate of mine.

Understanding transmission spectroscopy **NISER, Bhubaneshwar**
Earth and Planetary Sciences *May 2022 - August 2022*

- I undertook this project under Dr Jayesh Goyal, Faculty at the School of Earth and Planetary Sciences.
- I worked to understand the idea behind transmission spectroscopy used in detecting exoplanets, inverse theory and parameter estimation techniques employed to characterize exoplanetary atmospheres.
- I also dabbled with petitRADTRANS to run atmospheric retrievals on synthetic NIRSpec data of WASP-39b.

Conferences/Workshops

Strange New Worlds: The Exploration of Exoplanets
IISER Pune *August 2023*
Helped in maintaining emails and iron out the schedule of the program.

Mathematical Modeling of Climate, Ocean, and Atmosphere processes
International Centre for Theoretical Sciences (ICTS) *June 2023*
Attended a 5-day workshop on how climate and oceanic sciences utilize mathematical modeling to understand problems.

Exoplanets: A short course
Pune Knowledge Cluster *February 2023*
Attended a month-long introductory course on exoplanets.

Other experiences

Quiz Club **IISER Pune**
Coordinator *2021-22*
Coordinator of the IISER Pune Quiz Club. Involved in making question sets for the weekly quizzes dubbed MNQs (Monday Night Quizzes).

Kalpa, IISER Pune Students' Media Body **IISER Pune**
Editor *2021-22*
Worked in the editorial team of Kalpa, the independent media body of students of IISER Pune.

Artha **IISER Pune**
Writer *2021-22*
Worked as a writer-cum-editor for Artha, the finance club of IISER Pune, and formed the core team of the same.

Relevant Coursework

Earth Sciences
ECS
Geophysical Fluid Dynamics, The Solid Earth, Principles of Planetary Climate, Physics of the Atmosphere

Physics
PHY
Electrodynamics, Statistical Mechanics, Astronomy and Astrophysics, Classical Mechanics, Advanced Quantum Mechanics, Atomic and Molecular Physics

Mathematics
MTH
Graph Theory, Advanced Linear Algebra, Real Analysis, Multivariable Calculus, Bayesian Theory and Practice

Data Science
DS
Numerical Computation

Languages

English, Tamil: Bilingual proficiency

Hindi: Intermediate proficiency

Interests

- Quizzing
- Films
- Anime and manga