Abinash Das

(520) 440 9093 abinashdas@arizona.edu linkedin.com/in/abinashphys github.com/abinashphys

Aspiring astrophysicist committed to advancing theoretical cosmology.Eager to contribute to the scientific community through innovative research and teaching.

Education

University of Arizona **Tucson, AZ**

Bachelor of Science in Physics & Astronomy; GPA: 3.514 *Aug 2020 – May 2024*

Technical Skills

Languages: Python, Matlab, C++, Java

Developer Tools: AWS, VS Code, Jupyter Notebooks, Google Collab, Git, Spyder

Operating Systems: Mac OS, Windows, Linux

Other Technical Skills: LaTeX, Office 365, Google Suite, WordPress, Soldering

Research Experience

Arizona Cosmology Lab, *Advisor: Tim Eifler* **Tucson, AZ**

Undergraduate Researcher *Aug 2022 - Present*

- Conducted a study on galaxy intrinsic alignment using the TATT model.
- Developed algorithms for assessing galaxy intrinsic alignments.
- Employed Python-based visualizations to explore correlations between galaxy characteristics and their intrinsic alignment.
- Examined the impact of TATT model parameters on shear and galaxy-galaxy lensing signals.

Theoretical Cosmology Research, *Dr. Fulvio Melia* **Tucson, AZ**

Undergraduate Research Assistant *Jan 2023 - Present*

- investigated the feasibility of using gamma-ray bursts (GRBs) for extending the Hubble Diagram's to higher redshift
- Analyzed the 'Platinum' GRB dataset with 50 long-duration GRBs in redshifts 0.5 to 5, and the 'LGRB95' dataset with 95 long GRBs in redshifts 0.3 to 9.4.

Asteroids Lab, *Advisor: Jekan Thanga* **Tucson, AZ**

Summer Intern *June - July 2021*

- Authored an analytical report on designing a project to investigate a sample of meteorite
- Spearheaded the conceptual design of a CubeSat mission aimed at the atmospheric study of Venus, encompassing detailed instrumentation selection and comprehensive feasibility assessment based on current aerospace technology.
- Engineered a power system architecture for a hypothetical scientific base on Deimos, one of Mars' moons, focusing on sustainable energy utilization and long-term operational efficiency in extraterrestrial environments.

Experience

Delta Thermal Inc, **Tucson, AZ**

Summer Intern *May 2023 - Now*

- Developed a Python code for temperature estimation using MLX90640 thermal camera images, focusing on angular separations analysis.
- Engineered an algorithm for automated image translation calculation
- Conducted a time series analysis of temperature data for the Asarco Ray Site, utilizing AWS for data management.

- Applied machine learning models like linear regression and decision tree regressor to identify temperature trends, aiding in substation maintenance for efficiency and safety.

CATS Academics, University of Arizona **Tucson, AZ**
Subject Tutor *Aug 2022 - Oct 2022*

- Tutored College Algebra, Calculus 1 and 2, and Introductory Mechanics.
- Checked in with the students regularly to monitor their progress in the subjects.
- Collaborated with the Maths and Science coordinator to ensure that the students were receiving a comprehensive learning experience.

Jeevan Rekha Parishad, Bhubaneswar **Odisha, India**
Volunteer, Teacher *2019-Present*

- Delivered online science and mathematics classes to the students at Jeevan Rekha Parishad (JRP), a prominent NGO in Bhubaneswar.
- Prepared students for competitive examinations in India, including JEE Mains and Advanced.
- Created a comprehensive educational plan for students for multi-faceted development of students.

Relevant Coursework

- Scientific Computing
- Computational Physics
- Vector Calculus
- Differential Equations
- Mathematical Methods
- Classical Mechanics
- Electricity & Magnetism
- Radiative Transfer

Awards and Distinctions

Global Wildcat Scholarship: Awarded for academic excellence as an International Student

Dean's List with Distinction (2020-2021): Recognized for top academic performance and excellence in studies.

Dean's List with Distinction (2021-2022): Continued recognition for outstanding academic achievements.

Publications

- Das, A. (2023). "Intrinsic Shear and Galaxy Alignments: A Quantitative Study Using the TATT model." Preprint submitted to Orissa Journal of Physics. Available at: https://www.researchgate.net/publication/376828678_Intrinsic_Shear_and_Galaxy_Alignments_A_Quantitative_Study_Using_the_TATT_model/citations

Presentations

- "Investigating the eclipsing binary GALEX J19444+5459," ASTR 302 Final Project Presentation, Steward Observatory, December 2022.
- "Academia to Industry, my journey as an Intern at Delta Thermal Inc." TIMESTEP Summer Tech Internship Symposium, Hosted by Arizona Space Institute, The University of Arizona, August 2023.