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WORK EXPERIENCE

INDIAN INSTITUTE OF ASTROPHYSICS – BENGALURU, INDIA

RESEARCH INTERN – 1 NOV 2024 – CURRENT

- Conducted a comprehensive study of solar radio bursts, analyzing their association with solar flares, coronal mass ejections (CMEs), and jets using e-CALLISTO spectrograph datasets using the pyCallisto module under the guidance of Dr. K. Sasikumar Raja.
- Integrated multiwavelength data from space-based instruments, including GOES X-ray observatory and LASCO corona graphs, to uncover physical processes and establish spatial and temporal relationships.
- Provided insights into the mechanisms of solar radio bursts, contributing to enhanced understanding of solar activity and its impact on space weather events.

ASSOCIATION OF INDIAN PHYSICISTS – BARNALA, INDIA

TECHNICAL MEMBER – 4 APR 2024 – CURRENT

- Managed 5 social media platforms, increasing engagement through custom-designed posters and regular physics outreach campaigns.
- Supported outreach campaigns, webinars, and event coordination to promote physics education.

EDUCATION AND TRAINING

1 DEC 2022 – CURRENT Bengaluru, India

BACHELOR'S OF ENGINEERING IN COMPUTER SCIENCE AND ENGINEERING Visvesvaraya Technological University

11 JUL 2019 – 30 JUL 2021 Cuttack, India

SENIOR SECONDARY SCHOOL DAV Public School

18 JUN 2010 – 9 JUL 2019 Cuttack, India

HIGH SCHOOL/MATRICULATION DAV Public School

PROJECTS

Exoplanet Detection Simulator using Radial Velocity Method

- Designed a scientific simulator using Python and Plotly-Dash to visualize radial velocity curves of stars influenced by orbiting exoplanets.
- Enabled users to interactively adjust planetary parameters (mass, semi-major axis, eccentricity) and observe their effect on stellar wobble, helping to intuitively understand the Doppler method of exoplanet detection.

Link https://exoplanet-detection-sim.streamlit.app/

Exoplanet Mass Predictor & Similarity Explorer

- Built a machine learning-based web tool to predict exoplanet mass using Random Forest regression trained on 600 entries from NASA's Exoplanet Archive dataset.
- Integrated a Euclidean distance-based similarity model to find and compare planets with similar orbital characteristics. Deployed via Streamlit for interactive exploration of predictions and scientific insights.

Link https://exoplanetsml.streamlit.app/

JWST Image Visualization (Python)

- This standalone Python script downloads calibrated FITS images of JWST targets (such as SMACS J0723, Carina Nebula, Cartwheel Galaxy, Orion Nebula), applies logarithmic or false-color ('inferno') visualization with WCS overlays and scale bars, and performs automated source detection via photutils (using sigma-clipping and segmentation).
- It caches large (100MB) datasets, manages memory via garbage collection, parallelizes detection routines, and handles NaN/Inf values to deliver mission-quality astronomical image outputs with embedded source identification.

Link https://github.com/studentofstars/jwst-image-visualization

Modelling Neutron Star with Python

Developed numerical models using Newton-Raphson and Runge-Kutta methods to simulate neutron star properties.

Link https://github.com/studentofstars/My-Projects/blob/main/Modelling Neutron Star.ipynb

SKILLS

Microsoft Office | GIT version control, Linux Command | Python (computer programming) | machine learning

HONOURS AND AWARDS

26 JUN 2023

Gold Honour – International Astronomy and Astrophysics Competition

- Competition: International Astronomy Competition (Headquartered in Germany) Structure: Three-stage competition
- Stage 1: Qualifying round – Five research-based astronomy problems
- Stage 2: Pre-final round – Eight astronomy problems & two research paper-based questions (with sub-questions), four-day deadline
- Stage 3: Final round – 30 general astronomy questions in a 20-minute rapid-fire format.

31 DEC 2024

Best Young Talent – Institute for Advanced Research in Sciences

Course on Satellite Design for Space Sciences

WORKSHOPS AND SCHOOLS

5 MAY 2025 – 1 AUG 2025

IDIA/BRICS Astronomy Data Analytics Training Program

Completed an intensive 8-week virtual training program integrating data science and machine learning with astronomical research. Gained hands-on experience in Python programming, data analysis, statistical methods, and time series analysis, with a focus on managing and interpreting large astronomical datasets. Collaborated with peers across BRICS nations and developed a capstone project demonstrating real-world application of analytical techniques in Astronomy.

1 JUL 2024 – 19 AUG 2024

Introduction to Astronomy Research (Intro2Astro)

The 8-week online program targeted aspiring students, researchers, and enthusiasts, aiming to prepare them for research projects by developing skills in coding, web development, scientific paper reading, and CV creation, under the guidance of instructors Fei Dai (University of Hawaii), Howard Isaacson (UC Berkeley), and Chetan Chawla.

22 JUL 2024 – 26 JUL 2024

2024 Sagan Exoplanet Summer Hybrid Workshop on Advances in Direct Imaging: From Young Jupiters to Habitable Earths

The workshop was held as a hybrid workshop with both in-person and remote attendance via a Zoom webinar hosted by NASA Exoplanet Science Institute, Caltech. The workshop included lecture presentations, hands-on sessions, in-person and virtual poster sessions, and the opportunity to meet with the speakers.

29 NOV 2023 – 31 JAN 2024

Observational Astrophysics: A 30 Day Winter-School

Organised by Naxxatra Sciences and Collaborative Research. This workshop focused on multi-messenger astronomy and hands on activity using NASA HEASoft for X-Ray astronomy and python programming for optical and radio astronomy and cosmology.

3 SEP 2023

One Day National Symposium on Advancements on Various Fields of Physics

Attended the One Day National Symposium on Advancement on The Various Fields of Physics organized by Association of Indian Physicists (AIP). Got an opportunity to give a flash talk on the topic "The Cosmic Enigma: A Comprehensive Analysis of the Question Mark Galaxy discovered by JWST."...

18 MAR 2023 – 19 MAR 2023

Workshop on Astrophysics

The two-day astrophysics workshop was organized by Ethical Edufabrica in collaboration with Pravega in Indian Institute of Science, Bengaluru. The workshop contained brief astronomy lectures followed by a solar and radio observation session.

NETWORKS AND MEMBERSHIPS

31 JAN 2024 – CURRENT India

Association of Indian Physicists

Association of Indian Physicists (AIP) is a non-profit organization that strives to strengthen scientific education in every corner of India, empowering young minds to excel in field of physics.

13 FEB 2024 – CURRENT India

Bengaluru Astronomy Club

10 JUN 2023 – CURRENT USA

Space Generation Advisory Council

The Space Generation Advisory Council is a global non-governmental, non-profit (US 501(c)3) organization and network which aims to represent university students and young space professionals to the United Nations, space agencies, industry, and academia.

VOLUNTEERING

4 MAR 2024 Bengaluru, India

Astronomy Camp Volunteer

The astronomy camp was organized by Bengaluru Astronomy Club which is a subset of the India Astronomy Club at Gulapura, Karnataka. As a volunteer I enjoyed ensuring the smooth overall conduction of the camp activities.

6 MAR 2024 Bengaluru, India

Contributed to Swachh Bharat Mission a National Level Initiative by the Government of India

Was a part of the Swachh Bharat Mission a national cleaning initiative in a Government School in Bengaluru.