Kiran Jhass

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Reliable and adaptable MPHYS astronomy student at the University of Sheffield with particular interests and experience in close binary systems and observational astronomy. Previous work experience with the Isaac Newton group of Telescopes at the Observatorio de Roque de los Muchachos in La Palma. Eager to establish myself in a challenging, dynamic workplace which offers opportunity for professional growth.

Research interests: close binary systems • white dwarf binaries • cataclysmic variables • star & binary evolution

Education and Projects

Education

MPHYS Physics and Astrophysics with a Year in Industry **2018 – 2024**
Department of physics and astronomy - University of Sheffield **Grade: 2:1**

- Relevant modules include: dark matter, observational astronomy, spectroscopy, star formation & evolution, cosmology, nuclear astrophysics.
- Completed a variety of projects in this time, working individually, with a partner, and in groups.

Projects

Mass determination of CV components from radial velocity measurements **2023 – 2024**
University of Sheffield - Masters project

- Proposal for observing time on the 2.5-m Isaac Newton Telescope (INT) on La Palma accepted in June 2023.
- Spectra obtained with the Intermediate Dispersion Spectrograph over three nights.
- Determination of component masses of a cataclysmic variable using radial velocity measurements.
- Data reduction, velocity measurements and analysis all completed using `PYTHON`.

skyWATCH & EURONEAR **2023**
Isaac Newton Group of Telescopes

- Collaborator for the EUROpean Near Earth Asteroid Research (EURONEAR) project, systematically searching for NEAs with the INT over a 5-night run.
- Performed observations which led to the discovery of the NEA 2023 DZ_2.
- Worked on the skyWATCH all-sky camera developed by Dr Richard Ashley.
- Provided code to predict star positions on heavily distorted fish-eye images.

Determining the inclination and radius of the accretion disc in a cataclysmic variable **2022 – 2023**
University of Sheffield - Year three astronomy research project

- Produced a proposal for observations on the 0.5-m pt5m telescope in La Palma.
- Performed photometric observations in two filters of the cataclysmic variable V1315 Aql.
- Determined accretion disc properties from the analysis of light curves from both filters.

Tremor analysis and its uses in the detection of Parkinson's disease **2022 – 2023**
University of Sheffield - Year three core physics research project

- Tested and improved a simple device which was built to detect Parkinsonian tremors before they become significantly inhibiting to the patient.
- Tested and changed circuit components to improve signal from faintly oscillating objects.
- Performed Fourier analyses to isolate significant signals from noisy sources.

Relevant employment experience

Support astronomer **2023**
Isaac Newton Group of Telescopes **La Palma**

- Over 25 nights observing experience on the 2.5-m Isaac Newton Telescope.
- Responsible for supporting visiting astronomers, as well as observing autonomously on service or discretionary nights.
- Responsible for setting up the Wide-Field Camera and Intermediate Dispersion Spectrograph instruments before observing nights.

Student roles **2020 – 2022**
Sheffield physics society & Sheffield Mentors **Sheffield**

- Equality, diversity & inclusions officer for the Sheffield Physics Society in my third year.
- Responsible for inclusivity within the society, and organising informal talks from professors.
- Student mentor in my second year for a first-year physics student.
- Provided support in both an academic and personal capacity.

Non-academic work **2016 – 2022**
Service/hospitality/coaching roles **Birmingham**

- Experience working in retail, hospitality, customer service and sports coaching.
- I have worked flexible shifts, taken on responsibilities such as night-shifts, lone working, team working and presenting information to a group.

Technical skills

Python: Majority of data analysis completed in python, for example, in the university research projects. I have a good understanding of the language and am comfortable using the language to manipulate astronomical data.

Observing proposals: I have written and submitted successful observing proposals for the 2.5-m Isaac Newton Telescope and 0.5-m pt5m in La Palma.

Linux & IRAF: I have experience using linux machines from my time in La Palma. Furthermore, I have a grasp on the basics of IRAF reduction software.

Telescope operation: I have operated the 2.5-m Isaac Newton Telescope and 0.5-m pt5m telescope in La Palma. I also have experience with the 16" and 10" telescopes in Sheffield.

Publications (co-authorship)

Upcoming publication: Viswanathan et al. "The very metal-poor Galaxy: Chemodynamics through the follow-up of the Pristine-Gaia synthetic catalogue".

Popescu et al., 2023. Discovery and physical characterization as the first response to a potential asteroid collision: The case of 2023 DZ2. Astronomy & Astrophysics, 676, p.A126.

Bostroem et al., 2023. Early spectroscopy and dense circumstellar medium interaction in SN 2023ixf. The Astrophysical Journal Letters, 956(1), p.L5.

Personal interests

Sport: I have competed since I was young in football, cricket and long-distance running, and have competed in several half- to ultra-marathon races. I also hold an open-water scuba diving certification.

Music: I enjoy playing music, having played the French Horn throughout my school years as a member of an orchestra. Currently I am learning to play the saxophone in my free time, to play songs by the band Madness.

Languages: I enjoy learning new languages, having learned Spanish in La Palma. I am currently also learning Punjabi and Polish.

References

Prof. Vikram Dhillon: vik.dhillon@sheffield.ac.uk

Dr Stuart Littlefair: s.littlefair@sheffield.ac.uk