Dr Lewis Watt

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Personal Statement

After graduating with a First Class Masters degree in Physics with Astronomy from the University of Nottingham, I undertook a PhD project at the University of Bristol which I completed in March 2023. My PhD project has me working alongside an ever growing and diverse Planetary Formation and Atmospheres group, developing software in Python and C++ to simulate and analyse late-stage planetary formation. As part of the PhD, I have had the opportunity to present my work and network at international conferences, lead large classrooms of undergraduate students, and work with international partners to publish research which all show my skills in presenting, leadership, and teamwork.

Academic Experience

Ph.D. Physics - University of Bristol, UK 2018-2023

- Aim is to model peculiar behaviour seen in debris disks caused by planetary impacts.
- The project involves using already developed C software to conduct SPH simulations of planetary impacts.
- Involved building and running paralleled C and C++ N-body simulations.
- Data analysis in python, including modeling and visualisation using numpy, matplotlib, scipy and pandas.
- Received training in Git/GitHub, C++, data analysis in Python, Bash and Linux computing.
- Familiar with parallelisation methods such as MPI and OpenMP used in SPH and N-body codes.
- Part of a wider group which utilised big data and machine learning techniques.
- Wrote and published a scientific paper in the reputable journal Monthly Notices of the Royal Astronomical Society.

MSci Physics with Astronomy - University of Nottingham, UK 2014-2018

- Awarded First Class Honours.
- Masters Project focused on building a catalogue of red spiral galaxies in the Southern Hemisphere to build up a statistically robust sample with galaxies found in the northern hemisphere.

- Experience with SQL to request a specific set of data from the Pan-STARRS telescope.
- Training in image processing techniques, managing large data, and code optimisation in python.
- Training in using MATLAB in lab-based environments.
- Gave me good grounding in mathematical and statistical concepts, problem solving, and critical thinking.

Ogden Trust Internship - University of Portsmouth UK *2017*

- Awarded funding to conduct a 8 week project characterising kinematic maps of spiral galaxies.
- Project included setting up a private survey which prompted users with galaxy maps they had to classify.
- Spiral galaxies were selected from a large database of classified galaxies. The database was built from public science volunteers on Galaxy Zoo. The end goal was to compare galaxy structure to the kinematic maps.

Professional Experience

Teaching Demonstrator - University of Bristol 2019-2021

- Presented and led workshops on astronomy topics to classrooms of over 100 students.
- Quickly transitioned to an online learning space over zoom during the pandemic. I acted fast on student feedback to make sessions as smooth as possible.
- Help to students was individually tailored with me changing explanations of complex concepts to suit the student.
- I also taught a small classroom of 10 students key maths concepts they needed to study physics.

Student-Staff Liaison Committee Member 2019-2020

- Point of contact for postgraduate students for issues with the school.
- Took part in discussions and decisions to improve student well-being and happiness within the school.

Outreach

Spectrometer workshop for secondary school students 2021

- I was consulted by the Aerospace Museum in Bristol on my expertise in astronomy.
- Together, we designed a workshop to get school children interested in astronomy observations.
- Included building and testing DIY spectrometers from common household items.