

JESSICA WHITNEY

PH.D. STUDENT

CONTACT

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EDUCATION

Ph.D. in Astrophysics

University College London | 2022 - Present

Supervisor: Prof. Jason McEwen.
Research Area: Weak Lensing Mass Mapping using Deep Learning.

MPhil Theoretical Physics (1st Class Hons)

University of Liverpool | 2018 - 2022

Dissertation: 'Black Holes, Entropy, and Hawking Temperature'.
Supervisor: Prof. John Gracey.

Research Project: 'Feynman Path Integrals in Quantum Mechanics'.
Supervisor: Dr Paul Rakow.

CODING

Python

C

HTML

LANGUAGES

English

Welsh

Korean

PROFILE

I am a 2nd year Ph.D. student currently studying at Mullard Space Science Laboratory, in University College London. My research focuses on weak lensing analysis using conditional generative adversarial networks.

I am interested in cosmology and dark matter, particularly work involving machine learning methods.

I enjoy working with code, and am constantly expanding my coding knowledge, as well as bridging into other languages such as html and css. There is nothing more exciting than being at the forefront of research, and that's where I hope to stay.

CURRENT RESEARCH

I am currently researching the usefulness of regularised conditional generative adversarial networks for convergence map reconstruction - an ill-posed inverse problem. I am hoping to extend my work to explore deep learning methods suitable for spherical mass mapping in preparation of data from Stave IV weak lensing surveys.

GRANTS AND AWARDS

2024 **Moriond Financial Grant** to attend the 2024 Recontres de Moriond in La Thuile, Italy in April 2024.
2022 **UKRI/EPSCRC funded Ph.D. scholarship**, 4 years fully-funded.

CONFERENCE PRESENTATIONS & PUBLICATIONS

Conferences

COSMO21 2024
Talk: "Mass-Mapping with Conditional Generative Adversarial Networks" May 2024

58th Recontres de Moriond 2024
Poster on "Mass Mapping using Generative Adversarial Networks". April 2024

European Astronomical Society Annual Meeting 2023
Presentation on "Mapping Dark Matter with Conditional GANs". July 2023

Contributing Author Papers

Price, M. A., Polanska, A., **Whitney, Jessica.**, & McEwen, J. D. (2024). Differentiable and accelerated wavelet transforms on the sphere and ball. arXiv preprint arXiv:2402.01282.

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PERSONAL SKILLS


- Grade 8 distinction harpist
- Grade 6 distinction violinist
- 2015 Anglesey Musician's Trust Award
- 2014 Michael Swallow Award
- Rookie lifesaving Gold
- Member of Woking Symphony orchestra

REFERENCES

Prof. Jason McEwen

-  University College London
- jason.mcewen@ucl.ac.uk

Prof. John Gracey

-  University of Liverpool
- gracey@liverpool.ac.uk

WORK EXPERIENCE

Post Graduate Teaching Assistant, Department of Space and Climate Physics 2024
SPCE0038: Machine Learning with Big Data, Semester 2 2023/24, led by Prof. Jason McEwen.

Post Graduate Teaching Assistant, Department of Physics and Astronomy 2023
PHAS0002: Mathematical Methods I, Semester 1 2023/24, led by Prof. Stan Zochowsk.

- 60+ hours of tutorial/seminar delivery to class of undergraduate students

OTHER SKILLS & QUALIFICATIONS

- Student representative for my department (2022 - present)
- Currently studying Harvard's CS50 computer science course
- TES Child Protection in Education** certification

OUTREACH & VOLUNTEERING

- 2024, **Lead co-organiser of MSSL Space Science Week**
- 2023 Organised initiative where ~30 A level students visit MSSL for a week of workshops, talks, and research.
Secured funding for the initiative (£5,000); managed and organised staff to deliver projects to students; worked with UCL Widening Participation to select students for initiative; provided support for Ph.D. students leading workshops; and generally organised the event.

Volunteering

- Fundraised for many charities including the Philippine Disaster, Age Well, Cancer Research UK, and Parkinson's UK
- Attended science fairs at local schools to promote women in STEM