

MARK CUNNINGHAM

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University College London
Department of Physics and Astronomy

EDUCATION

PhD	University College London Department of Physics and Astronomy Thesis: “Integrating the 4MOST Corrector and Probing the Early Universe” Supervisor: Prof Peter Doel, Prof Richard Ellis	2020-Present
MSci	Queens University Belfast <i>1st Class Hons.</i> Physics (Integrated Masters) Thesis: “High-quality Positron Beams from Laser-driven Particle Accelerators” Supervisor: Prof Gianluca Sarri	2015-2019

SCHOLARSHIPS, GRANTS AND AWARDS

AMP-UP (Formerly NHFP Fellow-Graduate Student Mentorship Program), Heising-Simons Foundation	2023
UCL Astro Small Grant Award, UCL, (£1k)	2023
EDI Grant ORBYTS, UCL, (~£3k)	2022
Research as Art, Doctoral School, UCL	2022
UCL Postgraduate Travel Award, (£500)	2022
SPIE Travel Scholarship, (\$1000)	2022
UK Science & Technology Facilities Council Studentship, UKRI	2020
Degree Plus, Queen’s University of Belfast	2019
Study China Scholarship, British Council	2018

PUBLICATIONS

Journals

Cunningham, M.H., Saxena, A., Ellis, R. et al., 2024. *CIII] as an alternative tracer to Ly α in the Reionisation Era: Correlations at $2 < z < 4$ from the VANDELS (in review, **MNRAS**)*

Cunningham, M.H. et al., 2022. *Assembly and alignment of the 4MOST wide field corrector (SPIE: JATIS)*.

Audet, T. et al.(incl. **Cunningham, M.H.**), 2021 . *Ultra-short, MeV-scale laser-plasma positron source for positron annihilation lifetime spectroscopy (Phys. Rev. Accel. Beams, vol. 24, 73402)*

Conference papers

Cunningham, M.H. et al., 2022. Ground-based and Airborne Instrumentation for Astronomy IX, 2022-08-29. *The assembly and alignment of the 4MOST Wide Field Corrector (Proceedings of SPIE)*

RESEARCH EXPERIENCE

Leibniz Institute for Astrophysics (AIP) , Potsdam, Germany	2022-
Optical Science Laboratory , University College London	2020-
First Light Group , University College London	2020-

RESEARCH SUPERVISING

Emily Mottram, UCL (Masters student) 2022-2023

Joint supervision with Prof Peter Doel

Project: 4MOST Wide Field Corrector Performance

2 Secondary School students, Banbridge Academy Grammar School Jan-May 2022

Project: *Spectroscopic Identification of CIII and Ly-alpha in z=2-4 Galaxies in the VANDELS survey*
(Orbyts Programme)**TEACHING EXPERIENCE**

University College London, London 2020-**Post Graduate Teaching Assistant**, Department of Physics and Astronomy*PHAS0047 (Astronomical Spectroscopy) ~ 50 students* 2023-Present*PHAS0005 (Waves, Optics and Acoustics) ~ 100 students* 2021-Present*PHAS0007 (Physics and Computational Labs 1) ~ 200 students* 2020-22*PHAS0008 (Physics and Computational Labs 2) ~ 200 students* 2020-22**PRESENTATIONS AND INVITED TALKS**

Invited talksDurham University, weekly seminar (*Durham, UK*) March 2024UCLA, weekly seminar (*California, USA*) Sept 2023Lawrence Berkeley National Laboratory, weekly seminar, (*California, USA*) Sept 2023Imperial College London, Pint of Science (*London, England*) May 2022Cambridge University Physics Society (*Virtual*) Sept 2020**Paper presentations**“The assembly and alignment of the 4MOST wide field corrector”,
SPIE, *Montreal, Canada* July 2022**Poster presentations**“Can CIII] help solve Reionisation?”, EAS 2023, *Krakow, Poland* July 2023“An update of 4MOST Instrumentation, RAS, NAM 2023, *Cardiff, Wales* July 2023“4MOST wide field corrector” UKRI STFC Astronomy,
Armagh Observatory, Ireland Sept 2020**Oral presentations**“Can CIII] help solve Reionisation?”, EAS 2023, *Krakow, Poland* July 2023“Can CIII] help solve Reionisation?”, NAM 2023, *Cardiff, Wales* July 2023

“An update of 4MOST Instrumentation, RAS, NAM 2023 July 2023

INTERNATIONAL SCIENCE

4-meter Multi-Object Spectroscopic Telescope (4MOST): WFC Instrumentation Team &
AGN Survey Science Team**PROFESSIONAL TRAINING**

COMSOL software training, *London* June 2023**Introduction to Visible and NIR Spectrograph Design
and Development for Astronomy**, SPIE, *Montreal, Canada* July 2022**Mandarin language, Chinese business and cultural course**, *Distinction* Aug-Sep 2018

International College, Zhejiang University, Hangzhou, China

PROFESSIONAL AFFILIATIONS

Member, SPIE	2021-
Fellow, Royal Astronomical Society (RAS), FRAS	2020-
Member, Institute of Physics (IOP), MInstP	2016-

UNIVERSITY LEADERSHIP & ACADEMIC SERVICES

Astro Instrumentation Journal Club, organizer, <i>UCL</i>	2023-
Extragalactic Journal Club, organizer, <i>UCL</i>	2023-
EDI Committee, <i>Department of Astronomy and Physics, UCL</i>	2021-
Astrophysics Welfare Committee, <i>UCL</i>	2021-
Staff Student Consultative Committee, <i>UCL</i>	2022-
Student representative for Northern Ireland, <i>IOP</i>	2016-19
Student Committee, <i>IOP</i>	2016-19
Physics Year Representative, <i>QUB</i>	2015-17

SELECTED OUTREACH

Science Museum/Silver Sunday, Presenter, London	Oct 2023
Science Museum Lates, Presenter, London	Sept 2023
AstroDiversity, <i>UCL</i> Organiser/Co-founder	2022-
Astronomy on Tap Organiser, London	2022-
ORBYTS, <i>UCL</i> Tutor/Fellow, London/Belfast	2021-2022
Pint of Science Invited Speaker, Imperial College London	May 2022
PAMSOC President (2018) Vice President (2019) QUB Maths and Physics Society	2015-2019

LANGUAGES

English (Native), **French** (Intermediate), **Mandarin** (Novice)

COMPUTATIONAL SKILLS

Programming: Python, Jupyter, LaTeX, C+, Astropy, shell, Pandas
Applications: Excel, Word, PowerPoint, Zemax Optic Studio, Pandora, FLAIR, FLUKA, MATLAB

OTHER INTERESTS AND NOTABLE ACHIEVEMENTS

Painting/Drawing, Football, Hurling GAA, Skiing, Golf, F1, Basketball, Sustainability, Ulster Champion Irish Dancing (x3), Running (Marathons, x3)

REFERENCES

Prof Peter Doel, Department of Physics & Astronomy, University College London, Gower Street, London WC1E 6BT, Phone: 020 3549 5818, Email: apd@star.ucl.ac.uk
Prof Richard Ellis, Department of Physics & Astronomy, University College London, Gower Street, London WC1E 6BT, Phone: +44-7885-403334, Email: richard.ellis@ucl.ac.uk