DOMINIC TAYLOR | CV

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PERSONAL PROFILE STATEMENT

Ph.D. student in the Centre for Extragalactic Astronomy at Durham University with strong programming expertise in Python and MATLAB for data analysis and problem-solving. Skilled in developing efficient, maintainable code to process large datasets. Proficient in applying Bayesian statistics to analyse complex data, and deeply passionate about advancing this foundation to explore and implement machine learning techniques in real-world applications. Highly collaborative, working with cross-functional teams to tackle complex problems, and comfortable communicating technical concepts to both technical and non-technical audiences. Experienced with version control (Git) for managing code in team environments and skilled in organizing, cleaning, and ensuring the integrity of data. Strong focus on delivering actionable insights and driving results from complex datasets.

EDUCATION

Durham University, UK (10/2022 – 06/2026)
Astrophysics Ph.D., STFC funded
Title: Studies of the dynamics and kinematics of young galaxies using observational data and theoretical comparisons
Supervisor: Prof. Mark Swinbank

University of Liverpool, UK (09/2017 – 06/2021)
Master of Physics Astrophysics (MPhys) with Honours, Class I

SKILLS

Programming
Python: Extensive experience in statistical analysis, modeling, and visualization of observational and simulation data, using libraries such as Pandas, Matplotlib, NumPy, SciPy, and Astropy.
C/Bash: Skilled in navigating the Linux operating system and executing scripts via the Ubuntu terminal.
JavaScript: Proficient in integrating functionality into websites alongside HTML.
HTML: Experienced in designing and developing personal and industry-focused websites.
MATLAB: Used for data-driven modeling and analytics.
Git: For version control in collaborative and shared projects.
LaTeX: Applied for producing journal articles, academic documentation, and formatting research results.
Microsoft Teams/Word/Excel/Powerpoint: Proficient in hosting virtual meetings, preparing reports, analyzing data, and delivering project presentations.

Languages
English (Native), Spanish (Conversational), Italian (Conversational), French (Beginner)

Organisational
Public speaking: Comfortable presenting research work clearly and articulating ideas to large international audiences, including those without expertise in the subject.
Independent learning: Proactively explore methods to achieve objectives, applying intuition to improve in areas such as health, relationships, and career development.
Group work: Effectively communicate and collaborate within research groups, offering support and guidance while benefiting from peer input.

ACHIEVEMENTS

Two first-author peer-reviewed journal publications.

Engineered scalable data pipelines to handle terabytes of astronomical data, optimising performance and ensuring reproducibility.

eso_download: Development of a user-friendly public Python programming script for automated downloading of data from the European Southern Observatory (ESO) science archive, which I maintain using version control through the use of Git.

kmos_specfit: Development of a public Python spectral fitting code, to model multi-component Gaussian emission lines in astronomical data, maintained using Git.

DATA TRAINING COURSES

AI Alignment and Engineering, Durham University, UK (10/2024 – Now)
Alignment Research Engineering Accelerator (ARENA) course for upskilling in machine learning, with topics including an introduction to PyTorch and Deep Learning, building transformers, attention mechanism, mechanistic interpretability with Sparse Auto-Encoders, and applying SAEs to Large Language Models.

Data Analysis Workshop, Imperial Centre for Inference and Cosmology (ICIC), London, UK (10/2023)
Course on Bayesian statistics with specific applications to astrophysics.

PUBLIC SPEAKING

Decades of EXtragalactic (DEX)-XXI Workshop, Newcastle, UK (01/2025)
ALMABO24 conference, Bologna, Italy (09/2024)
National Astronomical Meeting (NAM) Modelling Astrochemical Processes Session, Hull, UK (07/2024)
National Astronomical Meeting (NAM) The Mm/Submm Sky Session, Hull, UK (07/2024)
Decades of EXtragalactic (DEX)-XX Workshop, Durham, UK (01/2024)
Decades of EXtragalactic (DEX)-XIX Workshop, Edinburgh, UK (01/2023)
Leibniz-Institut für Astrophysik Potsdam (AIP), Virtual (06/2022)
SDSS Collaboration Meeting, Virtual (09/2021)

ROLES

Ustinov College Mens Football Captain, Durham University (09/2023 – Now)
Responsible for organisation of training sessions, matches, and managing treasury duties, while captaining in the University college football league.

Ph.D. Journal Club Chair, Centre for Extragalactic Astronomy, Durham University (09/2023 – 09/2024)
Organised and chaired a journal club for Ph.D. students, facilitating discussions on recently published articles through presentations by two members at each session.

HOBBIES AND INTERESTS

Passionate about staying active through regular gym workouts and enthusiastic about playing football, enjoying the challenge of a competitive environment and the opportunity to socialise, especially in new settings. These activities not only enhance physical fitness and mental resilience but also foster teamwork, adaptability, and a well-rounded, balanced lifestyle. I also value rest, recognizing its importance for recharging and maintaining consistency, enabling me to approach both work and personal commitments with sustained focus and energy. Additionally, I am actively involved in voluntary outreach events, believing it is important to inspire the wider community and share my knowledge and enthusiasm for science to engage and motivate others.