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Matthew Doyle

Education

2020–Present **PhD, Physics**, *The University of Manchester*, Quantum Fluids Group
Thesis Title: "Numerical Simulation and Experimental Visualisation of Quantum Turbulence in the Zero-Temperature Limit"

Planning experiments, development of research skills working with cryogenic liquids, laser-induced fluorescence imaging techniques, large-scale rotating platforms, gas handling systems, building and expanding numerical simulations with code, data storage management, creation of data processing and analysis pipelines, signal processing techniques, calibration and software writing for custom sensor equipment, animating physics simulations for visualisation, technical writing, preparing research for journal articles, conference talks and posters, and collaboration within the group and externally.

Achievements: First Author Publication in a Spring-Nature Journal, Quantum Fluids and Solids Conference 2023 Best Poster Award.

2016–2020 **MSci, Physics**, *The University of Bristol*, First-class honours
Thesis Title: "Particle Track Reconstruction in a Proposed CERN Linear Collider"

Evaluated efficiencies of track reconstruction algorithms for tracing particle motion immediately after high-energy electron-positron collisions within a simulated CERN detector geometry to inform on detector design.

Achievements: Awarded a Final Year Project Commendation.
Outstanding transcript grades: Cosmology (93/100), Particle Physics (95/100), The Physics of Phase Transitions (94/100).

2014–2016 **A-Levels**, *South Nottinghamshire Academy Sixth Form*
A*AA in Maths, Further Maths and Physics
respectively. House captain responsibilities.

Experience

Vocational

2024–Now **Private Maths, Physics, and Coding Tutor**
Designs personalised lesson plans tailored to each student's strengths and weaknesses, ensuring targeted support in challenging areas with a strong focus on exam technique and problem-solving strategies. Use of educational software such as Google classroom and Kami.

2021–2024 **Graduate Teaching Assistant**, *The University of Manchester*

- ⇒ *Foundations of Physics*: Delivered tutorials to foundation level physics students in class-sizes of around 20.
- ⇒ *Foundations of ICT:* Assessment of student EXCEL assignments.
- ⇒ *Programming in Python*: Demonstrated Python workshops to assist 2nd year students in learning to code and develop their projects. Assessment and feedback on coding assignments.
- ⇒ *Laboratory Physics*: Demonstrated physics experiments to 2nd year students and assisted them with their own experiments. Assessment of students via interview and observation with detailed feedback. Additional responsibility: Graduate Teaching Assistant Mentor for the Physics Labs, assisted in organisation, training and development of colleagues.

2023 **International Research Placement**, *Aalto University, Helsinki*
Performed statistical analysis of extensive prior data sets, using MATLAB, to gain insights for guiding experimental activity over a month-long visiting researcher placement.

2019 **Research Intern**, *University of Bristol*
Summer internship in the theoretical physics group. FORTRAN-based programming project which enhanced the resolution of electronic structure calculations and produced visualisations of 3D Fermi-surfaces.

Additional Experience

2023 **Conference Organiser**, *International Conference on Quantum Fluids and Solids*
Assisted in organisation of QFS2023 in Manchester: preparation of conference information booklets, organisation of photography, inviting speakers and greeting delegates.

2017–2018 **Cafe Waiter**, *Blue Diamond Garden Centres*, Nottinghamshire

2015–2016 **Crew Member**, *McDonalds*, West Bridgeford, Nottinghamshire

Skills

Programming	Python, FORTRAN, MATLAB, SQL, HTML + CSS, JavaScript, XML, bashscript, various API's and libraries.
Software	Git, VS code, LaTeX, Notion, OriginLab, MS Office, VNC services, Blender, DaVinci Resolve, AWS hosting, Zapier, Make.
Teamwork	Successful collaborations, both internally and external, has led to the completion of several research projects, which have been well received during conference presentations and are awaiting publication in academic journals.

References

References available upon request.