



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

**Research Fellow in Fluid Dynamics,
Faculty of Engineering & Physical Sciences**



Salary: Grade 7 (£33,797 – £40,322 p.a.) Due to funding restrictions an appointment will not be made higher than £33,797

Reference: EPSMA1023

Closing date: 20 August 2020

Fixed-term for 3 years

We will consider job share / flexible working arrangements

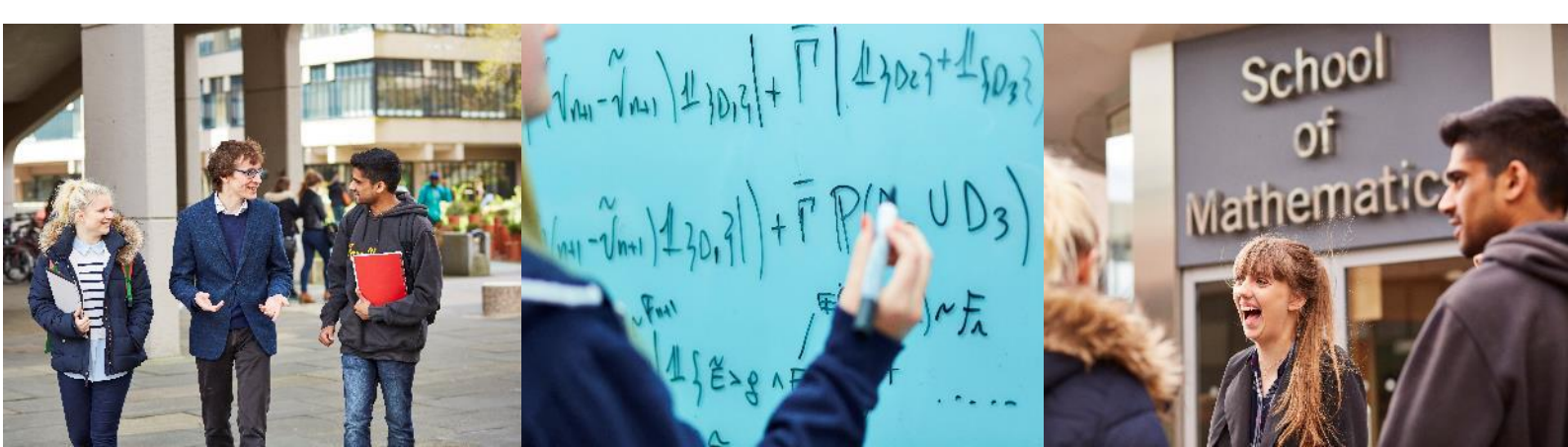
Research Fellow in Statistical and Computational Fluid Dynamics, School of Mathematics.

Are you an ambitious researcher looking for your next challenge? Do you have an established background in computational methods and/or fluid dynamics? Do you want to further your career in one of the UK's leading research-intensive universities?

We are looking for a Research Fellow to join our project, working on performing Direct Statistical Simulation (DSS) of partial differential equations (PDEs) and Machine Learning for turbulent flows. The project, which combines several new areas in statistics, PDEs and automated computational science, is funded by an award of a targeted grant from the Simons Foundation. The project is funded as part of the project [“Revisiting the turbulence problem using statistical mechanics”](#).

You will work with Investigator [Professor Steven Tobias](#) and his Co-Investigators to conduct research into the interaction of inhomogeneous and anisotropic turbulent flows with mean flows. The aim of the project is to understand factors that contribute to transition to turbulence and the generation of mean flows in geophysical and astrophysical contexts. As part of this, you will learn different mathematical and computational techniques, and apply them to diverse physical applications.

You will have a PhD in Applied Mathematics, Physics, Engineering or a closely allied discipline, with a strong background in Fluid Dynamics and experience in designing, implementing and analysing algorithms for fluid problems on parallel architectures. An understanding of statistical mechanics may also be useful. You will have the ability to conduct independent research and a developing track record of publications in international journals. In addition, you will have excellent communication, planning and team working skills.



What does the role entail?

As a Research Fellow, your main duties will include:

- Developing methods for understanding and modelling the nonlinear interactions that lead to turbulent transport in rotating and non-rotating systems;
- Analysing the interaction of turbulence with mean flows and magnetic fields for both shear flow and convective situations;
- Utilizing machine learning applications for parameter estimation and prediction of turbulent evolution;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.



What will you bring to the role?

As a Research Fellow, you will have:

- A PhD (or close to completion) in Applied Mathematics, Physics, Engineering, or a closely allied discipline;
- A strong background in Fluid Dynamics; in particular in turbulence theory;
- A good understanding of the modelling of turbulent transport mechanism;
- A strong background in the numerical solution of partial differential equations;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A proven track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience of pursuing external funding to support research;
- Experience of Machine Learning;
- Experience of parameter estimation, prediction or Data Assimilation.

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised [closing date](#).

Contact information

To explore the post further or for any queries you may have, please contact:

[Professor Steven Tobias](#), Professor of Applied Mathematics

Tel: +44 (0)113 343 5172

Email: S.M.Tobias@leeds.ac.uk



Additional information

Faculty and School Information

Find out more about the [Faculty of Engineering and Physical Sciences](#), [School of Mathematics plus](#) our [Research](#) and associated facilities.

A diverse workforce

The Schools in the Faculty of Engineering & Physical Sciences are proud to have been awarded the Athena SWAN [Bronze](#) or [Silver](#) Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our [equality and inclusion webpage](#) provides more information.

Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

