UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Summer Research Internship – Future Fluid Dynamics CDT, Faculty of Engineering and Physical Sciences

Salary: Grade 4 (£26,707 - £28,778 p.a.)

Reporting to: Dr Declan Finney, School of Earth and Environment

Reference: EPSMA1134

Closing date: Monday 01 June 2026

Fixed term (between 6-12 weeks, available from 01 June 2026 - to complete specific time limited work)

Location: Leeds Main Campus

We are open to discussing flexible working arrangements

Summer Research Internship - Future Fluid Dynamics CDT, Faculty of Engineering and Physical Sciences.

Are you interested in gaining first-hand experience of the research environment in fluid dynamics at the University of Leeds? Would you like to explore this opportunity to help you make an informed decision about progressing to postgraduate research? Would you like to develop knowledge, skills and experience to strengthen your application for research degree opportunities?

The EPSRC Centre for Doctoral Training (CDT) in Future Fluid Dynamics, hosts an annual internship programme throughout summer. This opportunity is designed to enhance access to postgraduate research for individuals from underrepresented groups, supporting a more diverse and inclusive research community.

The programme allows prospective postgraduate researchers to gain first-hand experience of the research environment in fluid dynamics at the University of Leeds. This experience will assist them to help informed decisions around progression to PGR and to develop relevant knowledge, skills and experience that can strengthen their applications to research degree opportunities. The centre provides advanced training and research opportunities in the field of fluid dynamics, with the aim of equipping future academics and industry practitioners with the interdisciplinary skills required to tackle complex fluid-related challenges across a range of industrial and scientific sectors. Research areas are Engineering and Physical Sciences, Environment, Biological Sciences, or Medicine and Health.

Widening participation

Applications are open to those who have *not* undertaken a research internship previously, and meet one or more of the following criteria:

- The first in their family to go to university;
- From Black, Asian or other minoritised ethnic groups;
- Neurodivergent (e.g. ASD, ADHD) and/or Disability (e.g. physical impairments, mental health condition, learning difficulties, chronic illness);
- Are female;
- Have caring responsibilities;
- Have been outside of education for 5 or more years;
- Studying/studied at a university that is not a member of the Russell Group.

About the project

Title: Developing a custom drone wind estimator based on drone kinematics

Drones are increasingly being used to study atmospheric wind. There are examples of how wind speed and direction can be estimated directly from the drone kinematic data (i.e. motion and rotor power data) [https://ardupilot.org/copter/docs/airspeed-estimation.html]. This project will review published approaches to developing a wind estimator and apply the most suitable approach to an existing modified drone which is used for the purposes of atmospheric measurement. Initial evaluation of the developed wind estimator will be carried out against a tower mounted anemometer. This project will be part of a close collaboration between the University of Leeds and Leeds-based drone company, Menapia. The student will get some experience flying drones under supervision of Menapia.

By delivering a custom wind estimator for the drone, each drone flight can provide valuable measurements of wind speed and direction for meteorological prediction. These measurements are achieved without the need for any additional instrumentation on the drone. The wind measurements are also valuable for better understanding of sampling biases of instrumentation mounted on the drone. Given the rapid growth of drone use, this project feeds into the wider research team's assessment of wind estimator algorithms that could be applicable much more widely across drones (even those not built for atmospheric measurement purposes).

Overview of the role

To undertake independent research project supervised by an academic at the University of Leeds. This project will take place over 210 hours worked over a period of 6 weeks to 3 months during summer.

Main duties and responsibilities

- Conduct an initial literature review, building on work already done on this task, to identify suitable wind estimation approaches for multirotor drones;
- Collect data from the custom drone, including logging of kinematic and rotor power data, synchronised with a tower mounted anemometer;
- Select an appropriate algorithm to calculate wind estimator parameters;

- Construct a code to implement and calibrate these calculations using identified methods;
- Work with Menapia to evaluate the outputs of the new wind estimator and interpret its performance.

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.

Developmental benefits

The intern will gain experience of undertaking cutting edge research as part of an experienced research group. They will get experience working with industry and applying published methods to a real-world problem. They will be exposed to the field of drone development for the novel application of atmospheric measurement – this is a fast-growing industry.

Qualifications and skills

Qualifications

- Open to graduates or current second- or third-year undergraduates eligible for the Home (UK) fee-rate at postgraduate research (PGR).

Essential

- Curiosity and willingness to learn skills and techniques;
- Critical thinking;
- Good verbal and written communication skills;
- Ability to work both independently and as part of a team;
- Project specific:
    - Experience of reviewing literature;
    - Experience applying scientific/engineering methods;
    - Good mathematical abilities;
    - Coding experience.

Desirable

- Project specific:
    - Knowledge of atmospheric fluid flows;
    - An interest in drones or aviation engineering;
    - Experience in evaluating a product against a reference dataset;
    - Ability to develop new codes for data processing.

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.

Please upload a supporting statement (Word or PDF) with the following details:

- An **introduction** to yourself and a **brief overview** of why you are applying for your chosen project and the internship;
- An outline demonstrating how you meet all **essential** and **desirable criteria** in the job description. Please address each criterion separately, clearly referencing the specific criterion;
- A description of which **widening participation criteria** mentioned in the job description you satisfy.

Contact information

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

Dr Declan Finney, Senior Research Fellow in Cloud Physics
Email: D.L.Finney@leeds.ac.uk

OR

Patricia Grant, Centre Manager
Email: P.Grant@leeds.ac.uk

Additional information

Faculty and School Information
Further information is available on the research and teaching activities of the Faculty of Engineering & Physical Sciences, and the School of Mathematics.

Working at Leeds
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

A diverse workforce
As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

We have identified that women are currently underrepresented in this role and particularly welcome applications. Candidates will always be selected based on merit and ability.

The Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena SWAN 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.

Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our How to Apply information page or by getting in touch by emailing HR via hr@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.