UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Instrument Development and Integration Engineer

National Centre for Atmospheric Science

Salary: Grade 7 (£39,105 - £46,485 (p.a. depending on experience)

Reporting to: Dr Phil Rosenberg, NCAS Instrument Scientist

Reference: ENVNC1025

Interview date: 22 October 2024

Contract 100% FTE, fixed term for 24 months - to complete specific time limited work

Overview of the Role

Do you have experience working on engineering or instrument systems projects? Are you keen to develop your skills and experience in a collaborative and supportive environment? Would you like a once-in-a-lifetime opportunity to develop unique scientific systems for an internationally leading Airborne Laboratory? If so, we want to hear from you!

The FAAM Airborne Laboratory (FAAM) is a world-class research facility dedicated to the advancement of atmospheric science. FAAM operates a specially adapted BAe-146 4-engine research aircraft managed by a unique team of scientists, engineers, flight technicians and project managers providing a complete package of support for the scientific community. The capabilities are extensively reliant on state-of-the-art scientific instrumentation, often uniquely customised for use on the aircraft, which is deployed throughout the world. FAAM is supported by the National Centre for Atmospheric Science (NCAS) and funded by the Natural Environment Research Council (NERC) and is an environmental research infrastructure of national and international importance.

The exciting FAAM Mid-Life Upgrade (MLU) project aims to deliver a range of upgrades and enhancements to the scientific capabilities of the aircraft, its measurement capabilities and its research impact, extending its useful life by at least 20 years.

As an Instrument Development and Integration Engineer, you will develop a new instrument, which will measure the concentration and sizes of airborne aerosol particles, along with the data logging and display software for this instrument. The new instrument will form a replacement for an existing, but ageing instrument – a Passive Cavity Aerosol Spectrometer Probe – and will utilise similar technology, with more up-to-date components. The instrument will shine a laser onto individual aerosol particles and collect the scattered light in order to count them and determine their sizes. The intention is to produce a best-in-class instrument for research work. The design will be released under an open-source licence and will be based, as much as possible, upon off-the-shelf components. This is to encourage other research groups to replicate the instrument and build a community of expertise.

You will be involved in the testing and integration of this instrument with the aircraft. This will require time spent at Cranfield University and will likely involve flying on the aircraft either in the UK or on overseas fieldwork deployments. With support from the wider team, you will be responsible for providing design specifications to British

Aerospace to allow installation on the aircraft and you will publish the design blueprints on an open source repository. You will provide progress updates internally and externally and may present your outcomes internally and at national or international conferences and meetings.

This is a unique and exciting role and will be ideal for a collaborative and innovative person who is able to work across disciplines and keen to make a valuable contribution to an internationally significant project. We accept that there will be many skill sets involved in this role and expect that the successful applicant may need to learn new skills and engage in training during the course of the role. The successful candidate will join a team committed to providing a working environment that is collegiate and inclusive, one where all staff are supported and developed in all aspects of their work.

The post will be employed by and based at the University of Leeds with periods based within the FAAM team on the campus at Cranfield University.

This position is funded through a £49 million investment by UK Research and Innovation to fund a six-year programme known as the Mid-Life Upgrade and as such is fixed term for 24 months. The instrument forms part of a wider suite of instruments that will be at the heart of the overall science capability of FAAM going forward.

Main duties and responsibilities

- Designing and building a new laser-based aerosol sizing and counting instrument;
- Setting up safe laser working systems;
- Designing and developing the data acquisition and real-time visualisation software;
- Working with FAAM to integrate the instrument onto the FAAM aircraft. Including producing the required technical documents;
- Publishing design specifications and/or blueprints on an open source repository for use by other research organisations;
- Producing user guidance and support documentation;
- Designing calibration systems and protocols;
- Providing supporting documentation;
- Working with scientists on the field deployments to develop and deliver final quality-controlled data products and to beta-test user operations.

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.

Qualifications and skills

Essential

- Ability to design a data logging system for instrumentation;
- Ability to design, develop and build instrumentation or be able to show relevant experience with instruments, sensors or sensor networks;
- Working understanding of lasers and optics;
- Ability to use high level programming languages, such as Python, C++ or other languages;
- A working understanding of computer networking and remote access;
- An innovative approach to problem solving;
- A collaborative and collegiate working approach;
- A degree in maths, engineering or physical sciences or equivalent experience.

Desirable

- Ability to work in aviation or another safety-critical environment;
- Ability to work with Linux environments;
- A good understanding of digital electronics;
- Ability to use CAD, 3D printing and open source publishing;
- An understanding of measuring airborne particles or aerosols;
- Ability to deliver presentations to internal and external colleagues for example at scientific conferences.

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.

Additional information

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information please visit: www.gov.uk/skilled-worker-visa.

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: https://www.gov.uk/global-talent

Find out more about the National Centre for Atmospheric Science and its relationship with the School of Earth and Environment

Find out more about the FAAM Airborne Laboratory

Find out more about the Atmospheric Measurement and Observation Facility

Find out more about the School of Earth and Environment

Find out more about the Faculty of Environment

Find out more about our Research and associated facilities.

Find out more about Equality in the Faculty.

Our University
At the University of Leeds, we are committed to providing a culture of inclusion, respect and equity of opportunity that attracts, supports, and retains the best students and staff from all backgrounds. Whatever role we recruit for we are always striving to increase the diversity of our community, which each individual helps enrich and cultivate. We particularly encourage applications from, but not limited to Black, Asian, people who belong to a minority ethnic community; people who identify as LGBT+; and disabled people. Candidates will always be selected based on merit and ability.

The Faculty of Environment has received a prestigious Athena SWAN silver award from Advance HE, the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

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.

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.