

Postdoctoral Research Associate in RF System Development

Job Ref: REQ251053

School/Department summary:

We are looking for a Postdoctoral Research Associate (PDRA) on a full-time basis, to support a European Space Agency and Industry-funded project focused on developing a phased array beam-steering ground-station antenna operating at S-band. This position will be based in the Wolfson School of Mechanical, Electrical and Manufacturing Engineering.

The successful applicant will work on different aspects of the project that span EM simulations, circuit design, algorithm design, programming, fabrication, measurement of the antenna, real-life tests, writing high quality journal papers and contributing to future research grant proposal writing.

Job Description

Job Family and Grade: Specialist and Supporting Academic Research Grade 6

Job Purpose: The role is responsible for carrying out the RF system design for a beam-steering antenna and it will include simulating antenna, designing control circuit, algorithm development, programming, fabrication, measurements within lab setting and real-life measurements.

Job Duties

Specific and Technical:

- To conduct detailed literature survey.
- To design and simulate a dual circularly polarised electronic beam-steering antenna.
- To fabricate the antenna in-house using PCB fabrication and additive manufacturing.
- To measure the antenna within the anechoic chamber.
- To develop an algorithm to enable beam steering.
- To programme the antenna and implement the algorithm.
- To test the antenna algorithm in real-life setting.
- To collaborate with colleagues.
- To write high-quality journal papers and produce technical reports.
- To contribute to funding applications.

General Technical:

- To formulate a detailed plan for the project based on broad guidance from the team and funder.
- To work closely with colleagues and collaborating partners from academia and industry.
- To prepare and carry out experimental work and develop experimental demonstrators.

- To provide a professional point of contact for suppliers and external partners to liaise effectively with colleagues throughout the School and collaborators.
- To produce and present technical reports at project meetings as required.

Teaching

- To supervise/co-supervise UG and MSc student projects.
- As required, to assist research students in their use of the lab spaces and equipment.
- To assist with software and hardware labs in taught classes.

Other

- To make a practical contribution to discussions on the future technical activities in the Group.
- To collaborate with colleagues in the creation of new knowledge and experimental data collection techniques.
- To share responsibility for the daily maintenance and upkeep of equipment and laboratory space.
- To ensure that a safe working environment is maintained at all times through compliance with Health and Safety at Work Regulation and the University's Operational Procedures.
- To take responsibility as requested for the sourcing and procurement of stock and specialist items.
- To write and assist in writing conference and journal papers. To actively participate in appropriate conferences.
- To participate in training as required.
- To carry out specific duties as may be reasonably requested by the project leader and that are commensurate with the nature and grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility outlined in the document.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equity, Diversity and Inclusion procedures at all times. Duties must be carried out in accordance with relevant Equity & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Belonging and Inclusion.

Organisational Responsibility

Reports to Dr Aakash Bansal

Person Specification

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria that will be measured at application stage in their supporting statement of their application form. Stages of assessment are as follows:

- 1 – Criteria measured at Application
- 2 – Criteria measured at Test/Assessment Centre/Presentation
- 3 – Criteria measured at Interview

Essential Criteria

Area	Criteria	Stage
Experience	Previous experience of working within a University Engineering department, facility or an equivalent research environment	1, 3
	Significant postgraduate research experience of antennas and RF circuits	1, 3
	Postgraduate research experience of conducting measurements at microwave frequencies using VNAs and anechoic chamber	1, 3
	Authoring original work for academic journal papers and conference presentations	1, 3
	Developing a full prototype system and conduct real-life experiments.	1, 3
Skills and abilities	Proven ability to plan and execute additive manufacturing processes using 3D-printing	1, 3
	Applied experience in the use of CAD software	1, 3
	Proven ability to develop and implement mathematical models	1, 3
	Proven ability to perform electromagnetic simulations using CST or Ansys HFSS	1, 3
	Proven ability to carry out measurement of dielectric properties	1, 3
	Ability to write research reports	1, 3
	Demonstrable ability to work with efficiency and accuracy to deadlines	1, 3
	Professional manner with excellent interpersonal and communication skills	1, 3
	Ability to show initiative and work independently but also make a full contribution as a team player	1, 3
Training	Be prepared to undertake further training both internally and externally	3
Qualifications	PhD (or near completion) in Engineering with a topic related to microwave/RF/antenna engineering	1
Other	To observe the University's equal opportunities policy at all times	3
	To comply with Health and Safety regulations	3
	To comply and successfully pass Personnel Background Check	3
	Commitment to maintain confidentiality at all times	3

Desirable Criteria:

Area	Criteria	Stage
Experience	Current relevant work experience at a postdoctoral level in an academic or industrial environment	1, 3
	Evidence of publishing in high quality journals, such as IEEE Transactions	1, 3
Skills and abilities	Understanding of current Health and Safety legislation, risk management and COSHH regulations	1, 3
	Willingness to travel	3

Conditions of Service

We have one position full time and fixed term of 15 months. The applicants must start at Loughborough as early as possible. The job is to conduct work from the office. Salary will be on Specialist and Supporting Academic Grade 6, £35,608 to £46,049 per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for STAFF GRADES 6 AND ABOVE, details of which can be found [here](#).

Our Purpose, Vision, and Values

Our purpose, Vision, Values underpin all that we do and the way we work at Loughborough. The University promotes the values of being **Adventurous**, **Collaborative**, **Creative**, **Authentic** and being **Responsible**. All employers are expected to demonstrate these values in the workplace.

For more information, please refer to our [vision and values](#).

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.