Candidate Information

Position:	Research Fellow - Metasurface Antennas for Microwave Beamforming
School/Department:	Centre for Wireless Innovation
Reference:	21/108768
Closing Date:	Thursday 13 May 2021
Salary:	£33,797 to £35,845 per annum
Anticipated Interview Date:	Monday 24 May 2021
Duration:	Until 31 March 2023 in the first instance.

JOB PURPOSE:

The Centre for Wireless Innovation (CWI) at Queen's University Belfast is seeking to appoint a Research Fellow to join their existing team. The Research Fellow will work on a multi-national research project and will design and implement cutting-edge reconfigurable holographic metasurface antennas for microwave wireless communications systems. This will be carried out as part of a research team, within an exciting project funded by Huawei Sweden aiming to develop innovative metasurface antenna technologies for mobile communications.

MAJOR DUTIES:

1. Undertake research under supervision within the research project to develop a mathematical model for reconfigurable holographic beam-forming at microwave frequencies.
2. Design and optimize flat-panel metasurface antennas using full-wave electromagnetic (EM) simulation software, CST Microwave Studio.
3. Fabricate and measure the developed metasurface antennas for wireless mobile communication systems at microwave frequencies.
4. Present regular progress reports to members of the research team and the industry partner.
5. Prepare, in consultation with line manager, material for publication in prestigious leading journals and presentations at major international conferences to disseminate and publicise research findings.
6. Assist in the preparation of funding proposals and applications to external bodies.
7. Carry out administrative tasks associated with the research project to ensure that project is completed on time and within budget, including organisation of project meetings and documentation, risk assessment of research activities, etc.
8. Read academic papers, journals and textbooks to keep abreast of new developments in own specialism and related research areas/disciplines.

Planning and Organising:

1. Plan details of research programme and carefully align them with the work packages of the project in order to achieve an effective and productive synergy.
2. Plan for the use of research resources, laboratories and workshops where appropriate.
3. Plan own day-to day activity within framework of the agreed research programme.
4. Plan in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
5. Coordinate and liaise with other project partners over work progress.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise on a regular basis with colleagues and students, industry partner, the School of EEECS and faculties in Queen's University Belfast to build research collaborations.
2. Establish professional and good working relationships with technical and other support staff as well as the industry partner.
3. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
4. Join external networks to share information and ideas.

ESSENTIAL CRITERIA:

1. Hold or be about to obtain a PhD in a relevant subject.
2. At least a 2.1 undergraduate's degree or higher in electrical/electronic engineering or physics (or closely related subject).
3. At least 3 years relevant research experience in RF/Microwave metasurface based antennas.
4. Demonstration of a sufficient breadth and depth of specialist knowledge and experience in reconfigurable beam-forming using metasurface antennas.
5. Demonstrable previous experience with using EM full-wave simulation software such as CST Microwave Studio.
6. Demonstrable previous experience in conducting S-parameter measurements and characterisation of RF/Microwave devices and antennas using vector network analysers.
7. Demonstrable previous experience in near-field / far-field antenna pattern measurements.
8. A strong publication record commensurate with stage of career in prestigious leading journals (e.g. IEEE TAP, IEEE TMTT, IEEE AWPL, IET MAP, etc) and presentations at major international conferences.
9. Ability to contribute to research management and administrative processes.
10. Contribute to the School's outreach programme by links with industry, community groups etc.
11. Knowledge of a range of RF components for dynamic reconfiguration, such as varactors and PIN diodes.
12. Ability to communicate complex information clearly.
13. Ability to build contacts and participate in internal and external networks.
14. Demonstrable intellectual ability.
15. Ability to assess and organise resources.
16. Ability to meet the mobility requirements of the post.

DESIRABLE CRITERIA:

1. A PhD in a reconfigurable metasurface antennas or a relevant subject.
2. Experience in using Python for mathematical modelling.
3. Experience of phased array and leaky-wave based antennas.
4. Demonstrable experience relevant to base station antennas for mobile communications.
5. Component level RF/microwave PCB circuit design and layout.
6. Experience in EU or RCUK projects, in particular in project task management and reporting through periodic deliverables.