

## Candidate Information

<b>Position:</b>	Research Fellow
<b>School/Department:</b>	Centre for Wireless Innovation
<b>Reference:</b>	22/109992
<b>Closing Date:</b>	Monday 22 August 2022
<b>Salary:</b>	£34,304 per annum
<b>Anticipated Interview Date:</b>	Tuesday 6 September 2022
<b>Duration:</b>	2 years

### JOB PURPOSE:

To contribute to the ERC Consolidator Grant BEATRICE: Beyond Massive MIMO: Living at the Interface of Electromagnetics and Information Theory, led by Professor Michalis Matthaiou. The candidate will amalgamate communication theory with electromagnetic theory to develop new array solutions for advanced massive MIMO architectures. These new architectures should offer super-directivity and extremely sharp beamforming. The candidate will also become an active member of the Centre for Wireless Innovation and the School of EECS at QUB, assisting in the production of world leading research output and the teaching activities.

### MAJOR DUTIES:

1. Develop a holistic communication theoretic framework using knowledge of the electromagnetic characteristics for super-directive.
2. Topological design of super-directive antenna arrays through new matching and decoupling networks.
3. Hardware-informed characterisation of super-directive antenna arrays, e.g. mutual coupling, intra-array coupling.
4. Evaluate the performance of the proposed solutions in MATLAB.
5. Develop and plan an area of personal research and expertise, and/or undertake research under supervision within a specific research project or as a member of a research team.
6. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to experimental computing systems research.
7. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
8. Prepare, often in consultation with the supervisor, material for publication in national and international journals and presentations at international conferences.
9. Assist grant holder in the preparation of funding proposals and applications to external bodies.
10. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget.
11. Carry out occasional undergraduate (final year, MEng) project supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.
12. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.

### ESSENTIAL CRITERIA:

1. Have, or be about to obtain, a PhD in Electronics, Electrical Engineering, or closely related discipline.
2. At least 2:1 honours degree in Electronics, Electrical Engineering, or closely related discipline.
3. At least 3 years research experience in communication theory and electromagnetic theory for future wireless networks.
4. Experience of contributing to research management and administrative processes.
5. Developing effective internal and external relationships that are beneficial from a research and outreach perspectives.
6. Excellent interpersonal skills, with the ability to communicate complex information to a range of audiences.
7. Ability to assess and organise resources.
8. Ability to travel and present at project meetings, and international conferences.

**DESIRABLE CRITERIA:**

1. Demonstrable experience of communication theory and electromagnetism. Massive MIMO array design.
2. Experience in producing timely technical documentation on research projects (deliverables, reports).
3. Experience in EU or RCUK projects, in particular in project task management and reporting through periodic deliverables.
4. Experience with presentations of research outputs in conferences, workshops, or seminars.
5. Teaching experience.