**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

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| **Proposed Project Title: Super-directive antennas for massive MIMO** |
| **Principal Supervisor: Dr Michalis Matthaiou Second Supervisor: Dr Hien Quoc Ngo** |
| **Project Description:** Massive multiple-input multiple-output (MIMO) is becoming the core technology for 5G wireless communications systems. Yet, wireless experts are becoming sceptical if we can offer a 10x throughput improvement over conventional massive MIMO topologies after 2020. In this project, we will re-examine the old concept of super-directive antennas which can become very suitable for massive MIMO systems operating at higher frequencies (e.g. >30GHz). These type of antennas offer super-high directivity but suffer from high ohmic losses and therefore low efficiency. The project will develop theory and algorithmic solutions for super-directive antennas in future massive MIMO networks, which will be validated using the unique test and measurement facilities at the Centre for Wireless Innovation. |
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