**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

|  |
| --- |
| **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.  |
| **Contact details**Supervisor Name: Dr Michalis Matthaiou Tel: +44 (0)28 9097 1789QUB Address: Email: m.matthaiou@qub.ac.ukECIT Institute, Queen's University BelfastQueen's Road, Queen's Island, Catalyst IncBelfast, BT3 9DT, |