**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

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| **Proposed Project Title: Wireless Power Transfer for Charging Electric Vehicles** |
| **Principal Supervisor: Dr Ahmad Elkhateb Second Supervisor: Prof D John Morrow** |
| **Project Description:**  In this project, a review of the state-of-the-art technologies in the wireless power transfer area and specifically for electric vehicle wireless charging will be carried out. The project will critically analyse and review the challenging requirements and obstacles that are related to charging time, distance, and cost. The main theme of this work will be analysis, design, simulation, and hardware implementation of wireless power transfer system for charging electric vehicle. Several cores for the converter will be explored. The outcome is envisaged to propose a new control algorithm and topology to mitigate the drawbacks of hard switching and meet the requirements of high efficiency, miniaturisation, and high power density. The methodology of the research will include converter level design and system level integration. A control method will be developed to ensure stable operation during normal and abnormal conditions. Simulation will be implemented in all device studies, design of control systems and modulation technique. Then, a laboratory scale prototype will be implemented to test the charger, and to validate its performance at system level. |
| **Contact details**  Supervisor Name: Dr Ahmad Elkhateb Tel: +44 (0)28 9097 4672  QUB Address: 8.10 Ashby Building, Stranmillis Rd, BT9 5AH Email: [a.elkhateb@qub.ac.uk](mailto:a.elkhateb@qub.ac.uk) |