



# Electromagnetic Systems Engineering

Electromagnetic systems are key enabling technologies for many platforms. Their role in radar, navigation and communications involves a complex understanding from systems application to component design and interaction. Manchester has one of the largest research groups in the UK working on these issues. Our approach is multi-disciplinary where, within one research group, systems analysis, digital/analogue design and microwave component research is carried out in a complimentary manner.

To illustrate the multi-disciplinary nature of some of our work, current projects include:

- Defect detection in carbon fibre structures using microwave techniques
- Effect of wind turbines on radar performance
- Practical performance of low mass microwave filters using left handed materials
- Compact 3-D MMICs
- Minimisation of the impact of lightning protection on RCS performance
- Ad-hoc sensor networks for industrial application
- Ultra-wide band antennas and devices
- Large scale electromagnetic modeling
- Interference mitigation in wireless networks

- The Electromagnetics Centre for Microwave and Millimetre-wave Design and Applications funded by a Joint Infrastructure (JIF) Award of £1.9 million by EPSRC and OST
- Participation in FCC, ARINC, EUROCAE and OFCOM standards committees

# Research areas

The Microwave and Communication Systems Research Group investigates a wide range of advanced topics applicable to communications and radar; from highly mobile wireless networks, electro-magnetic compatibility, propagation, microwave and milli-metric components, through to digital

signal processing, coding and signal analysis. The research in the group covers radio frequencies from HF to 200GHz and allows a wide range of cross disciplinary issues to be studied whilst retaining a strong focus on fundamental communication system and microwave component research.

# Research facilities

## Laboratory facilities and services

- The Electromagnetics Centre for Microwave and Millimetre-wave Design and Applications including the Agilent Microwave & MM-Wave Laboratory instrumented from 100MHz to 200GHz
- Electromagnetic computation laboratory
- Wireless network simulation
- Propagation measurement
- Access to large scale parallel computation facilities via Manchester Computing

# Relevant postgraduate study

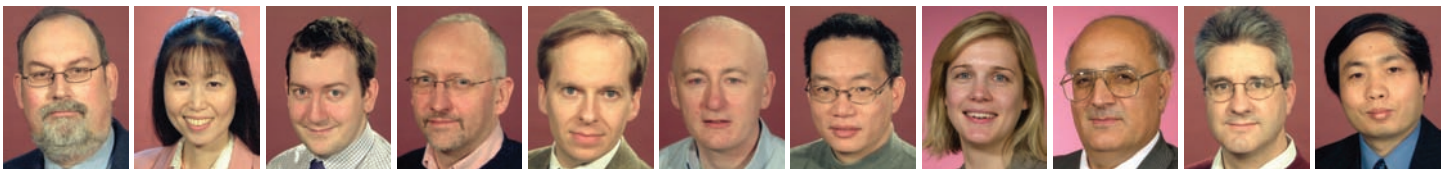
## MSc in Communication Engineering

This taught MSc course is a full time 12-month programme of study commencing in September of each year. The programme provides an up to date view of communication and microwave engineering from a systems level through to implementation using microwave, optical and semi-conductor devices.

## Research degrees (MPhil & PhD)

The research group has a wide range of interests in microwave and communication systems. You are advised to view the web profile of the individual group members and contact them directly.

# Academic staff



Professor A Brown

Dr F Costen

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# Contact details

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