



4th Term - MSc Proposal

MSc title: A Study on MIMO Mobile-To-Mobile Wireless Fading Channel Models	Host University: Heriot-Watt University Supervisor: Dr Cheng-Xiang Wang
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Brief description of the project:

Mobile-to-mobile communications find increasing applications in mobile ad-hoc networks, wireless sensor networks, and intelligent transport systems, which require direct communication between a mobile transmitter and a mobile receiver over a wireless medium. Such mobile-to-mobile communication systems differ from the conventional cellular radio systems, where the Base Station is stationary and only the Mobile Station is moving.

The employment of multiple antennas at both the transmitter and receiver enables the so-called Multiple Input Multiple Output (MIMO) technologies to greatly improve the link reliability and increase the overall system capacity. This makes MIMO techniques very attractive for mobile-to-mobile communication systems. For the design and test of such MIMO mobile-to-mobile systems, we need to have a thorough understanding and an accurate modelling of the underlying channels.

In this project, the statistical properties of MIMO mobile-to-mobile wireless fading channels will be investigated in detail, such as probability density function, temporal autocorrelation function, level-crossing rate, and space-time cross-correlation function. A channel simulator will also be provided to simulate the desired statistical properties of the underlying channels.

Software/Hardware needs:

Matlab

Special remarks:

Matlab programming skills and some background knowledge in Mobile Communications and statistics are required for the successful completion of this project.

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Submit a single page proposal.

Host University: Bourgogne/Heriot-Watt/Girona

Software/Hardware needs: Detail the programming platform (matlab, C++, etc) and the lab facilities required for the project (cameras, acquisition cards, lasers, etc).