

Correlated Channel Measurements & Models

Background

It is well known that wireless measurements are correlated in different time and distance scales, e.g. shadow fading is correlated in lower RF-frequency bands. Similarly also channel state information (CSI) has clear, although often complex, correlations. In this work you would work on measuring and/or simulating correlated channels, and then develop new methods to characterize or exploit these correlations for novel applications.

Tasks

Ideally you would be interested in to work both with experimental research topics and model development, but as we have a rather large research program in this domain there is possible to tailor topics for different students. In the experimental part of your thesis you would use the laboratory quality spectrum measurement devices to measure CSI and received power with high spatial resolutions.

In the theoretical part of your thesis you will take your measurement results and calculate different time- and space-correlation statistics to develop models for correlations in real-world. The numerical tools for this work would be developed, e.g. using Matlab or R. There would be also possibility to study how to exploit these correlations for novel applications.

Other Information

This thesis is a fundamental topic that belongs into our self-organized networks and future cellular networks research programs. It is an excellent opportunity to student who wants to work with a leading edge research question and/or is highly interested in to understand how to conduct theory driven high precision experimental work



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