



Project Proposal

Pilot Contamination Mitigation for Multi Antenna Users

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The first step in every communication scheme is to estimate the channel between the user and the base station that serves him. This can be done by letting the user send a known sequence to the base station, called "pilot sequence", and then let the base station estimate the channel from the received signal. Pilot contamination is a phenomenon in multi-user multi-cell wireless communication systems, where users from different cells interfere with each other channel estimation. The result is that the estimated channel is contaminated by interfering channels. To mitigate this problem, one can design the pilot sequences of the different users to minimize the MMSE of the channel estimation. Prior work solved this problem for a single antenna users. It is now of interest to generalize this method for multi antenna users.

The goal of the project is to develop the theoretical solution for the above problem in the multi antenna case, and back the results with numerical simulations.

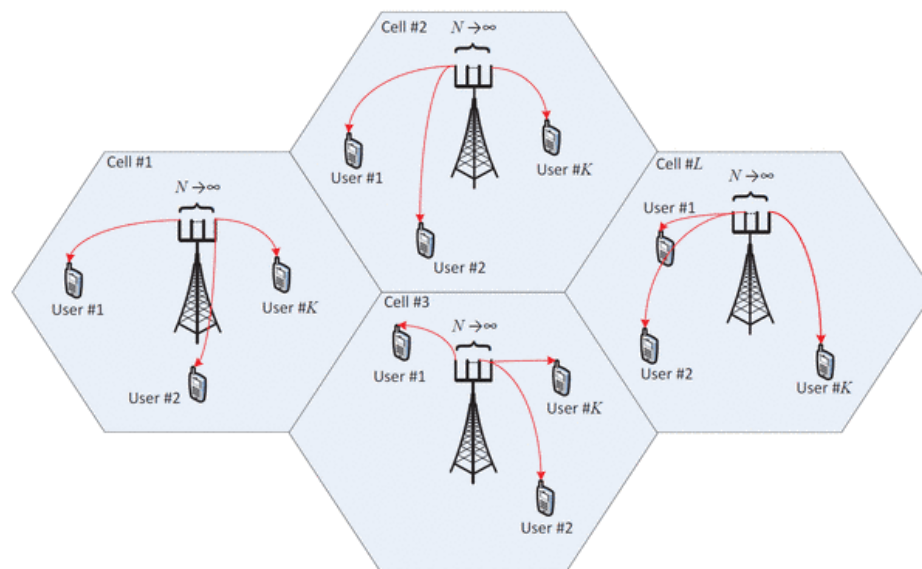
The project will include research next to Matlab implementation

The student will acquire advanced tools in signal processing and be exposed to new application in communication wireless networks.

Required

background:

Introduction to
Signal
(044198)



Digital
Processing