

Notice of dissertation defense

17.09.2018

# Transmitting and receiving radio signals at the same time and frequency

<b>Title</b>	Antenna design and channel modelling for in-band full-duplex radios Antennisuunnittelu ja kanavamallinnus samantaajuisissa kaksisuuntaisissa radiojärjestelmissä
<b>Content</b>	<p>Current wireless systems transmit and receive in different frequencies or time slots for uplink and downlink. This prevents the transmission and reception from interfering with each other, as the large transmitted power can saturate the co-located receiver. In-band full-duplex radios can potentially double the spectral efficiency by mitigating this interference, called as self-interference or loop-back interference. The thesis focuses on solutions to mitigate the self-interference in the antenna domain using decoupling circuits, which isolate the transmit and receive antennas located close to each other.</p> <p>Furthermore, the self-interference also propagates through the multipath environment, resulting in dynamic fluctuations of the interference channel. The self-interference channel is characterized in two indoor environments and modelled in a street-canyon scenario. This can be used to evaluate analog and digital cancellation techniques to suppress the self-interference to the noise floor.</p> <p>The developed decoupling circuits are strong enablers for in-band full-duplex radios and the self-interference channel model allows us to evaluate cancellation techniques, links and systems.</p>
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