

SPCOMIT Seminar Invitation

Title: The Capacity of Discrete-Time Gaussian MIMO Channels with Periodic Characteristics

Speaker: Nir Shlezinger (BGU)

Abstract

In many communications scenarios the channel exhibits periodic characteristics. Periodicity may be expressed as a periodically time-varying channel transfer function as well as an additive noise with periodically time-varying statistics. Examples for such scenarios include interference-limited communications, both wireless and wireline, and also power line communications (PLC). In this work, we characterize the capacity of discrete-time, finite-memory Gaussian multiple-input multiple-output (MIMO) channels with periodic characteristics. The derivation transforms the periodic MIMO channel into an extended time-invariant MIMO channel, for which we obtain a closed-form capacity expression. It is shown that capacity can be achieved by an appropriate waterfilling scheme. The capacity expression obtained is numerically evaluated for practical PLC scenarios, and compared to the achievable rate of an ad-hoc orthogonal frequency division multiplexing based scheme, and the gains from optimally handling the periodicity of the channel are quantified.

Nir Shlezinger is a PhD student of Dr. Ron Dabora.

The seminar will take place on **Wednesday, 6-7-2016, 11:30, in room 102 building 33.**