

## SPCOMIT Seminar Invitation

Title: Interference Management Based On Node Cooperation in Multi-User Wireless Networks

Speaker: Daniel Zahavi (BGU)

### Abstract

We focus on cooperative communications and we study its applications for interference management in multi-user wireless communications networks in which handling interference is major challenge. We consider the general framework of the fading interference channel with a relay (ICR) in the weak, strong and very strong interference regimes, and we propose tools and techniques to achieve optimal performance in each scenario. The talk has three main parts: First we study the ICR in the strong and very strong interference regimes and we obtain exact characterization of the capacity regions for Rayleigh fading and phase fading interference channels with a relay and with feedback links. Next, we consider the Z-ICR in the weak interference regime and we characterize the sum-rate capacity of this channel, and its generalized degrees-of-freedom (GDoF) when the channel is subject to phase-fading. Finally, we study the diversity-multiplexing tradeoff (DMT) in a single-input single-output (SISO) ICR scenario and characterize the optimal DMT of the channel. We also show that in some scenarios, the relay node transforms the channel into a virtual multiple-input multiple-output (MIMO) channel.

Daniel Zahavi is a PhD student of Dr. Ron Dabora.

The seminar will take place on **Wednesday, 23-12-2015, 12:10, in room 102 building 33.**