Séminaire ICI : Michele Wigger

09 Décembre 2010, 14:30 – 16:00

Salle

ENSEA, salle 384.

Abstract

In this talk we analyze the benefits in capacity that feedback can afford for memoryless broadcast channels (BC). In a first part of the talk we focus on discrete memoryless broadcast channels (DMBC). We present a new single-letter achievable region with noise-free or noisy feedback, and we evaluate the region for two specific DMBCs: a generalized version of Dueck's DMBC and a noisy version of the Blackwell channel. For the first channel our scheme achieves the noise-free feedback capacity. For the second channel it strictly improves on the no-feedback capacity, even in some cases of noisy feedback.

In the second part of the talk we focus on the memoryless Gaussian BC with single antennas at the transmitter and the receivers. We show that at high signal-to-noise ratio (SNR) and when the noise sequences experienced by the two receivers are almost anti-correlated, then noise-free feedback approximately doubles the sum-rate capacity. In particular, we show that with noise-free feedback and perfectly anti-correlated noises the degrees of freedom is 2. This result proves that the degrees of freedom can exceed the number of transmit antennas. However, we also show that the presented feedback gains collapse when the feedback is noisy.