Title :   Iterative Receivers: Too Complex for High Data Rates?

Abstract:

Iterative processing has made its way into receivers in particular with Turbo codes and LDPC codes. However, the concept can be extended to iterations between MIMO demapping and decoding or even between channel estimation/equalization, MIMO demapping and decoding.   Near optimum MIMO demapping and the decoding are already computationally quite complex. Iterative processing requires repeated execution of these steps. This makes implementation of iterative receivers for high data rates a challenge. The talk will study the tradeoffs between near-optimal demapping algorithms, computational complexity, throughput and performance (BER).   A particular focus will be on soft-input-soft-output MIMO demapping within the iterative receiver. Finally, the applicability of iterative receiver processing for high data rates will be demonstrated by an ASIC implementation achieving more than 1 Gb/s. Finally, architecture and performance data of an ASIC implementation of MIMO Iterative Demapping and Decoding (MIMO-IDD) will be presented. The ASIC was the first MIMO-IDD receiver and achieves more than 1 Gb/s.