

Distributed Interference Alignment based on Local CSI in Mobile MIMO Systems

Author(s) - Institution(s):

Geoffrey Colman, CRC

Siva Muruganathan, Blackberry

Tricia Willink, CRC

Corresponding author email: Geoff.Colman@crc.gc.ca

Corresponding WG group: WG2

Abstract:

The requirement for global channel state information (CSI) throughout the network is a significant hurdle to overcome in interference alignment (IA) technologies for mobile applications. In this work, a distributed IA algorithm is proposed that uses local CSI at the receivers to determine desirable precoding matrices for all interfering transmitters. These matrices are fed back to the transmitters where they are combined, using scalar weighting, to determine the next set of transmit precoding matrices. It is shown herein that the proposed algorithm provides better SINR performance when quantized than an IA algorithm with full CSI-based feedback, due to the smaller dimensions of the precoding matrices compared with those of the full CSI matrices.