Abstract

The mitigation of interference is an ubiquitous problem in wireless communication systems for which a number of signal processing techniques have been developed. This problem is made more critical in the presence of an increased numbers of interfering cells, interfering users and antennas, as it is the case in massive MIMO systems. As a consequence, the conventional methods see their performance degrades. In this paper, we propose to incorporate Oblique Projection (OP) with conventional ZF beamforming in the downlink of a massive MIMO communication system and investigate the achievable data rate at the reception. Resulting beamformer uses oblique projection spaces to separate the received signal into two subspaces: the one pertaining to the desired user signal and the other to interference signals, thus achieving a high degree of interference suppression. It is shown that the OP beamforming performs better than Maximum Ratio Transmitting (MRT) and the transmit MMSE beamforming counterparts.