

Abstract:

In this paper we consider massive multiple input multiple output (MIMO) systems that employ linear precoding techniques and are impaired by transmitter-side nonlinearities and channel estimation errors. We present an analytical method for the statistical characterization of the transmitted signals and develop a general framework to obtain analytically the performance of different precoding techniques under the assumption of imperfect channel state information (CSI) and for different types of nonlinearities. Regardless of the particular nonlinear transmission scenario, it is shown that the performance penalty associated to the nonlinear distortion can be tolerable if the number of transmit antennas is greater than the number of independent data streams.