Generalized Inverse Aided PAPR-Aware Linear Precoder Design for MIMO-OFDM System

We propose a linear precoding scheme for a single user multiple-input-multiple-output orthogonal frequency division multiplexing (OFDM) system to minimize peak to average power ratio (PAPR) by using redundant spatial resources at the transmitter through a singular-value-decomposition-based generalized inverse. The proposed precoder based on the generalized inverse is composed of two parts. One is for minimizing PAPR, and the other is for obtaining the multiplexing gain. Moreover, the proposed precoder contains a scalar parameter $\alpha$ that quantifies the received signal-to-noise power ratio (SNR) loss at the cost of PAPR reduction. Even in cases of small SNR loss, the proposed scheme dramatically reduces PAPR. Furthermore, simulation results show that we can obtain a PAPR close to 1 by using dozens of transmission antennas with small SNR loss.