# Analog Transmission of Correlated Sources Over Fading SIMO Multiple Access Channels


## Abstract:

Joint source-channel coding for discrete-time analog sources is an appealing transmission approach because of its extremely low delay and complexity. When the users access the channel orthogonally, analog transmission of correlated information over fading multiple access channels (MACs) using modulo-like mappings provides better performance than uncoded transmission. In this paper, we propose a simplified decoder for modulo mappings in possibly non-orthogonal MAC scenarios with a single-antenna users and a multiple-antenna receiver. Sphere decoding is investigated to reduce the computational complexity when the number of users is large. In addition, affordable strategies are proposed to optimize the mapping parameters according to the channel conditions and the source correlation. The obtained results show that the use of modulo mappings is suitable when the number of antennas at the receiver is larger than the number of users and for high correlation between user data.