

Performance Analysis of Receive Space Modulation in the Shadowing MIMO Broadcast Channel

Abstract:

In this paper, the performance analysis of Receive Space Modulation (RSM) in the shadowing Multiple-Input Multiple-Output (MIMO) broadcast channel is presented. This is undertaken by considering Zero Forcing (ZF) precoding and both small and large scale fading. In particular, a closed form and accurate framework for the evaluation of the Symbol Error Rate (SER) is derived. In addition, the diversity order and the coding gain of the new architecture are also obtained. The derived framework can be directly extended to the conventional spatially multiplexed shadowing MIMO broadcast channel. It is shown that RSM achieves the same diversity order and, in certain scenarios which are well defined, higher coding gain than spatially multiplexing (SMX). Also, the performance difference between RSM and SMX in the shadowing broadcast channel is mathematically quantified. Finally, numerical results that verify the new framework and conclusions are provided.