



Performance Comparison of Linear Precoders for TDD Large Scale MIMO System with Imperfect Reciprocity and Channel Estimations

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Abstract

Channel estimation is an essential component, in which channel state information playing very important role in wireless communications. But acquiring CSI in practice is a challenging issue for massive MIMO systems. To reduce the over burden for obtaining channel impulse response of huge Multi input multi output system channel reciprocity in TDD domain is suggested, because the forward link channel data can be derived from the reverse link signal without any feedback involvement. Because of mismatches at uplink, downlink channels maintaining reciprocity in TDD systems is impractical. We study the impact of multiplicative reciprocity error for precoders (Zero forcing, MMSE and MRT) performance along with channel estimation error. In this paper effect of RF mismatches impact on linear precoders is analyzed and simulated in terms of SINR versus SNR under additive white Gaussian noise.

Keywords Large scale multi input multi output · Precoders · TDD · Reciprocity error · MRC · Radio frequency mismatch · Minimum mean square error

1 Introduction

Among 5th generation wireless communication systems, extensive Multi Input Multi Output antenna system is an established trend. As the channel state information with uncertain degree of CSI imply that multiple antennas are acceptable [1–3]. The research work so far is primarily

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