LINEAR PRECODING BASED ON A STOCHASTIC MSE CRITERION (ThuAmOR4)

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Abstract :

The performance of algorithms for preprocessing the signal at the transmitter in mobile communications is severely limited by the amount of available channel state information (CSI). The channel can be modeled as random variable conditioned on a delayed and noisy observation of the channel realization. We introduce novel criteria for linear precoding based on an MMSE criterion, which is stochastic due to the transmitter's channel model. Moreover, employing an estimation theoretic perspective, a new model for the receivers' processing is incorporated into the optimization. We show that the transmitter's partial CSI can is exploited efficiently by this design method and leads to combined linear precoding and channel estimation, which contains the categories of complete and statistical CSI as asymptotic cases.

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