Gaussian Codes and the Scaled Nearest Neighbor Decoding in Fading Multi-Antenna Channels, Part 2: Optimal Training Sequences for the Piece-Wise Constant Channel

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ABSTRACT

We investigate training schemes that are used for block fading multi-antenna channels. The Generalized Mutual Information is used as a criterion for optimizing the training sequence and information symbol structure. We give new results concerning the training sequences and optimal antenna usage for the block fading channel. We show that the number of antennas which should be used for training and information sequences depends on the SNR and the energy allotted for training. We also show that an optimal training scheme is one where a "pilot" is sent through each of the antennas, one antenna at a time.

Index Terms: Block fading, Fading channels, Gaussian codebooks, Multi-antenna,
Generalized Mutual Information, Piece-wise constant channels,
Scaled nearest neighbor decoder, Training.