Research Article

DRIVEN BY doi®

Training-Based Channel Estimation in MIMO Rician Fading Channels

Patteti Krishna[1], Tipparti Anil Kumar[2], Kalithkar Kishan Rao[3] and Ajendra Kumar Rathod[4]

Corresponding Author:
kpatteti@gmail.com

ABSTRACT

In this paper, least squares and linear minimum mean squared error estimators for channel matrix estimation in Rician fading multi-antenna systems is analyzed. The design of mean squared error minimizing training sequences is investigated in Multiple-Input Multiple-Output Rician fading channels. The problem of Multiple-Input Multiple-Output channel estimation has mostly been treated within the context of minimizing the mean squared error of the channel estimate subject to various constraints, such as an upper bound on the available training energy. A more general framework for the task of training sequence design in Multiple-Input Multiple-Output systems is introduced, which can also treat the minimization of channel estimators. It is shown that the proposed framework can be used to minimize the training energy budget subject to a quality constraint on the mean squared error of the channel estimator, a weighted channel estimation mean squared error and the mean squared error of the equalization error due to the use of an equalizer at the receiver (or an appropriate linear precoder at the transmitter).

[1] ECE Department, SVS Group of Institutions, Warangal, Telangana, India – 506 015.
[2] ECE Department, SR Engineering College, Warangal, Telangana, India – 506 371.
[3] Vaagdevi College of Engineering, Warangal, Telangana, India – 506 005
[4] SVS Group of Institutions, Warangal, Telangana, India – 506 015