

基于MIMO-OFDM系统自适应交织方案及性能分析

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收稿日期 2007-3-12 修回日期 2007-5-20 网络版发布日期 2008-4-23 接受日期 2007-5-20

摘要 提出了基于多入多出正交频分复用 (Multiple-input and multiple-output orthogonal frequency division multiplexing, MIMO-OFDM) 的自适应交织模型。该模型根据OFDM一帧内准瞬时信道SNR值, 利用瞬时信道的可变性, 重新排列发送信号的顺序, 其目的是打破长的信道突发错误, 以便降低系统位错误概率。分析了MIMO-OFDM系统成对错误概率的上限, 给出了本文提出算法的编码增益和分集增益。结果表明, 影响本文方案的主要因素是SNR、信道阶数和接收天线个数。仿真实验结果表明, 本文所提出的模型可以获得较好的信噪比, 与单天线相比MIMO-OFDM系统性能明显提高。对于2发2收系统, 当BER为 10^{-2} 时, 自适应交织方案比块交织性能提高5 dB。

关键词 [信息处理技术](#) [MIMO-OFDM](#) [自适应交织](#) [块交织](#)

分类号 [TN914](#)

Performance analysis of adaptive interleaving for MIMO-OFDM systems

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Abstract An adaptive interleaving model for MIMO-OFDM systems was proposed. This model can better exploit instantaneous channel variation through rearranging transmitted symbols according to quasi-instantaneous channel SNR of the OFDM frame, which was to break up long burst channel error so that overall bit error probability could be reduced. An upper bound of pairwise error probability (PEP) of the systems was investigated. The code gain and diversity gain of the proposed arithmetic were given. Theoretical results show that the major factor affecting the performance of the proposed scheme is SNR, channel order and the number of receive antenna. Simulations indicate that significant SNR can be obtained and the system performance is better than that of single antenna case. Compared with block interleaving in the case of 2Tx 2Rx at a 10^{-2} BER, this adaptive interleaving scheme offers 5dB increase.

Key words [information processing technology](#) [MIMO-OFDM](#) [adaptive interleaving](#) [block interleaving](#)

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