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论文

OFDM/OQAM系统中联合迭代信道估计和信号检测

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摘要
与基于复数域空间正交条件的传统正交频分复用系统(OFDM with Cyclic Prefix, CP-OFDM)有所不同，基于交错正交调制的正交频分复用系统(OFDM/Offset QAM, OFDM/OQAM)满足实数域空间严格正交条件。因此在多径衰落信道条件下，CP-OFDM系统中的信道估计方法会导致OFDM/OQAM系统严重的字符间干扰和载波间干扰。该文结合OFDM/OQAM系统结构特点，提出了一种基于迭代信道估计和信号检测算法。该算法通过信道估计器和接收到的信号互相交换信息，消除导频序列中的字符间干扰和载波间干扰，提高信道估计和信号检测的准确度。仿真分析结果表明，经过一定次数迭代处理后，OFDM/OQAM迭代信道估计性能趋近于理想信道估计性能。

关键词 正交频分复用 交错正交幅度调制 脉冲成形滤波器 迭代信道估计

分类号 TN92

Joint Iterative Channel Estimation and Detection for OFDM/OQAM System

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Abstract
Compared with OFDM system with Cyclic Prefix (CP-OFDM) which satisfies strictly complex field orthogonality, OFDM/Offset QAM system (OFDM/OQAM) only satisfies the real field orthogonality. Therefore, in present of multipath fading channel, the Inter Symbol Interference (ISI) and Inter Carrier Interference (ICI) always exist in the OFDM/OQAM system if utilizing the conventional preamble based channel estimation method for CP-OFDM system. In this paper, a joint iterative channel estimation and detection is proposed for OFDM/OQAM system. The proposed method exchanges the information between channel estimator and demodulator to remove the ISI and ICI effectively. Simulation results demonstrate that as the number of iterative time increasing, BER performance of the joint iterative channel estimation and detection method is approximately close to perfect channel estimation.

Key words Orthogonal Frequency Division Multiplex (OFDM) Offset QAM Pulse shaping filter Iterative channel estimation

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