OFDM系统中一种基于LMMSE的
半盲信道估计算法

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摘要　为克服信道冲激响应长度大于导频数时出现系统性能下降，适应存在大量多径的恶劣信道环境，本文对OFDM系统基于MLE的半盲信道估计算法进行了改进。该算法采用非均匀间隔导频排列方式以获得更小的系统均方误差。通过简化导频数提高了系统频带利用率，利用奇异值分解进一步简化了算法复杂度。仿真结果表明：如充分利用信道统计信息，在导频数目很少、信道长度很大和低信噪比时，本文提出的算法能够以较低复杂度实现精确的信道估计，从而验证了该算法的有效性和优越性。

关键词　通信技术,半盲信道估计,OFDM系统,LMMSE,SVD,非均匀间隔导频

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Improved semi　blind channel estimation algorithm
based on LMMSE for OFDM system

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Abstract In order to overcome the disadvantages of system performance degradation on the condition of pilot numbers smaller than channel impulse length and bad channel environment in many paths, an improved semi　blind channel estimation algorithm based on MLE for OFDM system was presented. The proposed algorithm can reach small system mean square error with non　uninformed pilots. And by the reduction of pilot numbers, frequency resource of the system is increased. In addition, with singular value decomposition, the algorithm computational complexity can be simplified. It is known from the simulation results that when full use of channel statistical information, under the condition of small number pilots, long channel impulses and low SNR, the proposed algorithm can achieve better channel estimation with lower computational complexity, which proves the effectiveness and advantage of the algorithm.

Key words communication　semi　blind channel estimation　OFDM system　LMMSE　SVD　nonuniform space pilots

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