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OFDM系统中时变信道参数的估计

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摘要 无线信道中的时变衰落对通信系统的性能会产生极其恶劣的影响，必须精确的估计出时变信道的参数以便更好的设计通信系统以及在接收端进行有效地均衡。提出了一种基于单分量线性调频（LFM）信号的时变信道参数估计方法。该方法通过发射单分量LFM信号作为正交频分复用（OFDM）系统的导频信号来探测时变信道，在接收端用最小描述长度（MDL）标准来检测信道的多径数目，并用Wigner－Hough变换（WHT）联合FFT进行时变信道参数估计。仿真结果表明该算法有良好的估计性能。

关键词 时变衰落 线性调频 最小描述长度 Wigner－Hough变换 正交频分复用

分类号

Parameters estimation of time-varying channel in OFDM system

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Abstract

The wireless channel with time-varying distortion deteriorates the performance of communication systems seriously.So the parameters of time-varying channel have to be estimated exactly for the best design of system and equalization in the receiver.This paper proposes an algorithm to estimate the parameters of time-varying channel based on Wigner—Hough Transform（WHT） and parametric channel model，with a single-component Linear-Frequency Modulated （LFM） signal inserted into the symbols sending to detect the channel in the Orthogonal Frequency-Division Multiplexing （OFDM） system.In the algorithm，we employ the Minimum Description Length（MDL） criterion to detect the number of paths in the channel.Then WHT and FFT can detect and estimate the parameters of time-varying channel from the received pilot signals.The simulation results show that the proposed algorithm exhibits good performances.

Key words time-varying distortion LFM MDL criterion WHT OFDM

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