无线扩频通信系统的调制信号无损传输优化技术

贺秀玲，苏渤力
（防灾科技学院，河北 廊坊 065201）

摘 要： 在无线扩频通信中，调制信号传输容易受到多径信道的多途效应影响而产生码间干扰，导致误码增大、信号传输失真，对此提出一种基于被动时间反转镜技术的无线扩频通信系统的调制信号传输干扰抑制方法，实现通信信号的无损传输.首先构建无线扩频通信的多径信道模型，采用分数间隔均衡技术进行信道均衡设计，采用被动时间反转镜方法进行码间干扰抑制和盲源分离，提高了无线扩频通信系统的调制信号的无损传输能力.最后通过仿真实验进行性能测试，结果表明，采用该方法进行无线扩频通信系统设计，信道的均衡性能较好，码间干扰得到有效抑制，通信误码率低于传统方法.

关键词： 无线扩频通信；调制信号；码间干扰；信道均衡；盲源分离

Optimization of Modulation Signal Lossless Transmission in Wireless Spread Spectrum Communication System

HE Xiu-ling,SU Bo-li（Insitute of Disaster Prevention, Langfang 065201, China）

Abstract： In wireless spread spectrum communication in the modulation signal transmission is easily affected by the multi-path effect of multipath channel generated intersymbol interference, the error increases, the signal transmission distortion, a modulation signal transmission wireless spread spectrum communication system passive time reversal technique stem interference suppression method based on lossless transmission of communication signals, the first building the multipath channel model of wireless spread spectrum communication, channel equalization design using fractionally spaced equalization technology, the passive time reversal mirror method to suppress intersymbol interference and blind source separation, improve the ability of modulation signal lossless transmission wireless spread spectrum communication system. Finally, through the simulation experiment of performance test results show that by using this method in the design of wireless spread spectrum communication system, channel equalization performance better, intersymbol interference can be effectively suppressed, the communication error rate is lower than the traditional method.

Key words： wireless spread spectrum communication; modulation signal; inter symbol interference; channel equalization; blind source separation

作者简介：
贺秀玲 女，(1975-)，副教授.研究方向为通信技术与信息处理.E-mail:licewhet@163.com.
苏渤力 女，(1989-)，满族，硕士，助教.研究方向为振动检测，信号处理.