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论文

一种IR-UWB系统FS-DFME均衡接收机

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摘要
该文针对在密集多径室内环境中超宽带(UWB)信道的延迟扩展时间长，脉冲超宽带(IR-UWB)系统在高速数据传输时码间干扰(ISI)严重致使误码率(BER)增加以至于系统无法工作的问题，基于ISI的成因，提出了一种分数间隔判决反馈居中均衡(FS-DFME)均衡接收机，该均衡接收机能够联合实现匹配滤波和信道均衡，从而能够有效地收集多径信号能量和抑制ISI影响。研究结果表明均衡接收机的观察窗口长度是影响ISI消除效果的重要参数；与线性均衡(LE)和分数间隔判决反馈非居中均衡(FS-DFNME)均衡接收机相比，FS-DFME均衡接收机能够更加有效地消除ISI，提高系统的BER性能。

关键词 超宽带 码间干扰 分数间隔判决反馈居中均衡(FS-DFME) 观察窗口长度

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FS-DFME Equalization Receiver for IR-UWB Systems

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Abstract
Inter Symbol Interference (ISI) will increase when transmission rate of an Impulse Radio-Ultra Wide Band (IR-UWB) system is getting larger, which will worsen Bit Error Rate (BER), restrict the highest realizable transmission rate. In order to suppress ISI and realize high transmission rate, based on the causation of ISI, a Fractionally Spaced-Decision Feedback Middle Equalization (FS-DFME) equalization receiver is proposed. The receiver can realize jointly Matched Filter (MF) and channel equalization so as to collect multipath signal energy and suppress ISI. Simulation results show that the observation window length is important parameter in mitigation of ISI. Compared with Linear Equalization (LE) and Fractionally Spaced-Decision Feedback Non-Middle Equalization (FS-DFNME) equalization receiver, ISI is mitigated more effectively by FS-DFME equalization receiver and BER performance is improved obviously.

Key words Ultra Wide Band (UWB) Inter Symbol Interference (ISI) Fractionally Spaced-Decision Feedback Middle Equalization (FS-DFME) Observation window length

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