研究论文

一种用于单载波MIMO系统的频域迭代接收算法

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摘要：

提出了一种用于单载波MIMO系统的频域判决反馈均衡(FD-DFE)算法．该算法运用Turbo迭代原理，将FD-DFE和SCTCM译码器有机地结合，利用译码器提供的软信息来进行软干扰消除和优化FD-DFE的前馈和反馈滤波器系数，从而显著提升系统性能．理论分析和仿真结果表明，本文提出的迭代接收算法与使用频域线性均衡(FD-LE)的迭代接收算法相比，能有效利用译码器提供的软信息消除干扰，显著提升系统性能，特别是在使用分数间隔采样时，系统性能逼近理想信道条件下的检测性能．

关键词： MIMO系统 频域判决反馈均衡 Turbo接收 SCTCM译码

Frequency-domain iterative receiver for single carrier MIMO systems

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Abstract:

An iterative receiver in the frequency-domain (FD) for the single carrier multiple-input multiple-output (MIMO) system is proposed. The proposed iterative receiver, using turbo theory, jointly performs soft interference cancellation (SIC), frequency-domain (FD) decision feedback equalization (DFE) and the function of the SCTCM decoder. The proposed iterative receiver can obtain better performance by using soft information derived from the decoder to perform the SIC and update the coefficients of the forward filter and feedback filter of FD-DFE. Simulation results shown that the proposed iterative receiver can improve the system performance significantly compared with FD linear equalization (LE). Moreover, the performance of the proposed receiver using fractional rate sampling approaches the perfect detection with an ideal channel.

Keywords: MIMO system frequency-domain (FD) DFE Turbo receiver SCTCM decoder

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