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论文

V-BLAST系统中采用发射功率分配的MMSE迭代软干扰抵消算法

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摘要
作为一种软输入软输出的MIMO检测算法，MMSE迭代软干扰抵消算法在MIMO Turbo接收机中得到广泛的关注。为了进一步改善系统性能，采用链路自适应方案是很好的选择。该文给出变发射功率的MMSE迭代软干扰抵消算法，并采用了一种有效的发射功率分配方案，只需要很少的控制信令，就可以获得较大的误码率性能改善。通过没有信道编译码的链路仿真，在4发4收QPSK调制的V-BLAST系统中，如果误码率要求为BER=10-3，MMSE迭代软干扰抵消检测算法迭代次数为2时，采用推荐的发射功率分配方案比不采用发射功率分配方案的系统性能提高了约2dB，如果调制方式为16QAM，系统性能提高了约6dB。

关键词 V-BLAST 发射功率分配 MMSE 软入软出

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MMSE Iterative Soft Interference Cancellation Algorithm Using Transmit Power Allocation Scheme in V-BLAST System

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Abstract
In an achieving near-capacity V-BLAST turbo receiver, Soft-In/Soft-Out (SISO) signal detector is needed. Minimum Mean Square Error (MMSE) iterative soft interference canceller is a popular SISO detector in such system. Link adaptation is a good scheme to improve performance in wireless system. In the paper, a modification of MMSE iterative soft interference cancellation detector is presented for variable transmission power, and an effective transmit power scheme is proposed to decrease Bit Error Rate (BER). This scheme requires small feedback overhead. By simulation of uncoded V-BLAST system with 4 transmit antennas and 4 receive antennas, it is proved that if the performance requirement of BER=10−3, the modified V-BLAST system with transmit power allocation outperforms the conventional V-BLAST system about 2dB when QPSK modulation is used and iterative number of detection equals 2. When 16QAM is used, the proposed scheme outperforms the conventional scheme about 6dB.

Key words V-BLAST Transmit power allocation MMSE SISO

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