

算法研究

MIMO系统中一种改进的迭代串行干扰消除算法

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摘要:

多输入多输出(MIMO)系统中, 串行干扰消除(SIC)算法复杂度相对较低, 但干扰消除时存在差错传播问题。针对独立编码的垂直分层空时(V-BLAST)系统, 提出一种联合译码的SIC算法, 将译码完成的码字反馈给解调器, 从接收信号中消除。引入一种码字排序准则, 利用软信息对码字排序, 优先对高可靠性码字译码。通过码字排序和联合译码提高检测符号的准确性, 减少差错传播。仿真结果表明, 与已存在的接收方法相比, 该算法能有效地抑制差错传播, 大幅提升误码率性能。

关键词: 多输入多输出系统; 垂直分层空时码; 串行干扰消除; 排序

An Improved Iterative SIC Algorithm for MIMO Systems

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Abstract:

In the multiple input multiple output (MIMO) system, the complexity of the successive interference cancellation (SIC) algorithm is relatively low, but there exists the error propagation problem which severely limits the performance of the system. In order to mitigate the impact of the error propagation, in this paper an algorithm that combines the detection and decoding is presented for the vertical Bell Laboratory Layered Space-Time (V-BLAST) system. The decoded signal can feed back to the MIMO detector and a module for ordering is added between the detector and decoder. The received code words are ordered by a proposed criterion using the soft information of the code words, and the most reliable one is decoded first. Then the detected symbols become more accurate and are subtracted from the received signals. The simulation results show that the proposed algorithm can prevent the error propagation efficiently and its performance is better than that of the traditional receive methods.

Keywords: multiple input multiple output vertical Bell laboratory layered space-time successive interference cancellation ordering

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