

本期目录 | 下期目录 | 过刊浏览 | 高级检索
页] [关闭]

[打印本

论文

编码MIMO系统中一种低复杂度次优软检测算法

李庆坤, 马红光, 李正生, 李庆会

第二炮兵工程学院, 陕西

摘要:

提出了一种低复杂度次优编码MIMO系统软检测算法。在编码MIMO系统的迭代译码中, 信道译码需要MIMO检测输出每一比特的软信息, 而软信息的计算需要巨大的计算量。本文在不同的迭代次数中分别利用球形译码的硬判决信息和编码比特先验信息得到发射向量的估计值。在这个估计值的基础上计算MIMO检测中每一比特的软信息, 从而避免了常规的穷尽搜索检测算法, 减少了复杂度。通过分析和仿真, 本算法在有限性能损失的前提下使复杂度得到了极大减少。在相同设置下, 本算法的一帧数据仿真时间不到原算法的1/20, 并且对于不同的调制方式复杂度基本不变, 达到了性能和复杂度的较好折中。

关键词: 低复杂度 次优 软检测 球形译码 迭代译码

A Low Complexity Sub-optimal Soft-detection Algorithm for Coded MIMO System

LI Qing-Kun, MA Hong-Guang, LI Zheng-Sheng, LI Qing-Hui

The Second Artillery Engineering College, Xian

Abstract:

A low complexity sub-optimal soft-detection algorithm for MIMO system is presented. Usually, the channel decoding needs every bit's soft-information outputted from the MIMO detection in the iteration decoding for the coded MIMO system, but the calculation of the soft-information causes great complexity. The estimation of transmitted vector is obtained by using the hard decision of sphere decoding for the first iteration and using the sign of the priori information of the coded bits in other iterations in this paper. And then the soft-information is calculated for every bit of MIMO detection based on the estimation of transmitted vector. Therefore, the proposed algorithm avoids the conventional detection algorithm which is the exhaustive search, and decreases the computing complexity. The analysis and the simulation show that this algorithm reduces the complexity greatly at the cost of limited deterioration on performance. As for a frame data, the simulation's time of the proposed algorithm is less than 1/20 of that of the conventional detection algorithm in the same setting and the complexity of the algorithm is constant on the whole for different modulations, it gets the better tradeoff between the performance and the complexity.

Keywords: low complexity sub-optimal soft-detection sphere decoding iteration decoding

收稿日期 2009-12-10 修回日期 2010-03-12 网络版发布日期 2010-09-25

DOI:

基金项目:

通讯作者:

作者简介:

作者Email: lqkmail@tom.com

扩展功能

本文信息

- Supporting info
- PDF(1113KB)
- [HTML全文]
- 参考文献[PDF]
- 参考文献

服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

本文关键词相关文章

- 低复杂度
- 次优
- 软检测
- 球形译码
- 迭代译码

本文作者相关文章

- 李庆坤
- 马红光
- 李正生
- 李庆会

PubMed

- Article by Li, Q. K.
- Article by Ma, H. G.
- Article by Li, Z. S.
- Article by Li, Q. H.

参考文献:

