

短文与研究通讯

压缩感知时频双选信道估计

彭钰, 侯晓赟, 魏浩

南京邮电大学信号处理与传输研究院

摘要: 高速移动下的无线宽带通信要经历时间和频率的双选择性衰落, 为了使发送的数据经过衰落的信道后在接收端被正确地接收, 必须要对信道状态信息进行估计。本文根据双选信道在时延-多普勒域具有稀疏性, 研究了OFDM系统中基于压缩感知的双选信道估计。为了克服信道的双选特性对信道估计造成的不稳定性, 采用了正则正交匹配追踪 (Regularized Orthogonal Matching Pursuit, ROMP) 算法对信道进行估计。理论分析和仿真结果表明, 与传统的最小二乘算法比较, 在获得同样估计性能的前提下, 采用ROMP算法和OMP算法需要的导频数大大减小; 而且采用ROMP算法的信道估计要比OMP算法更加稳定, 在同等条件下信道估计性能更好。

关键词: 信道估计; 压缩感知; 双选信道; 正则正交匹配追踪

Domain - Doppler Doubly Selective Channel Estimation Based On Compressed Sensing

PENG Yu, HOU Xiao-yun, WEI Hao

Institute of Signal Processing and Transmission, Nanjing University of Posts and Telecommunications

Abstract: High data rates and high mobility introduce time and frequency selectivity in wideband wireless communication. We need to estimate the channel state information so that the data through fading channel can be received correctly. Exploiting the sparsity of doubly selective wireless channel in both delay domain and Doppler domain, we study the doubly selective channel estimation based on compressed sensing. In order to overcome the instability of the channel estimation caused by the multipath delay spread and Doppler shift, the channel estimation based on ROMP algorithm is studied in this paper. Theoretical analysis and simulation show that the compressive sensing estimation has better performance but with fewer pilots than conventional least square estimation, furthermore, ROMP has better estimation performance than OMP with higher robustness.

Keywords: Channel Estimation; Compressive sensing; Doubly Selective Channel; Regularized Orthogonal Matching Pursuit

收稿日期 2012-04-24 修回日期 2013-08-20 网络版发布日期 2014-01-25

DOI:

基金项目:

国家自然科学基金项目 (61201270)

通讯作者:

作者简介:

作者Email: pengyub06020406@163.com

参考文献:

本刊中的类似文章

文章评论

扩展功能

本文信息

- Supporting info
- PDF (888KB)
- [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

- 信道估计; 压缩感知; 双选信道; 正则正交匹配追踪

本文作者相关文章

- 彭钰
- 侯晓赟
- 魏浩

PubMed

- Article by Peng,y
- Article by Hou,X.B
- Article by Wei,g

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反			

反馈  
标题

验证码

6421

Copyright by 信号处理