

时变多径Rayleigh衰落信道中的匹配滤波界

韩芳明¹, 张贤达²

(1.西安电子科技大学 雷达信号处理重点实验室, 陕西 西安 710071; 2.清华大学 清华信息科学与技术国家实验室, 北京 100084)

收稿日期 修回日期 网络版发布日期 2007-3-26 接受日期

摘要 通过将时变多径Rayleigh衰落信道中传输符号的判决变量表示为高斯随机矢量的二次形式, 得出其特征函数以加权协方差矩阵之特征值为变量的解析表达式. 因而该信道下的匹配滤波界可以简洁地表示为该特征函数部分分式展开中负特征值对应的系数之和. 进一步比较了几种调制脉冲波形在时变多径Rayleigh衰落信道下的匹配滤波性能, 发现矩形脉冲可以取得最好的时频分集.

关键词 [时变多径Rayleigh衰落信道](#) [特征函数](#) [匹配滤波界](#)

分类号 [TN911.7](#)

Matched filter bound for time-varying multipath Rayleigh fading channels

HAN Fang-ming¹, ZHANG Xian-da²

(1. State Key Lab. of Radar Signal Processing, Xidian Univ., Xi'an 710071, China; 2. National Lab. of Tsinghua Information Science and Technology, Tsinghua Univ., Beijing 710071, China)

Abstract

By expressing the decision variables of transmission symbols in time-varying multipath Rayleigh fading channels as the Gaussian quadratic vector form, we derive the analytic expression for its characteristic function as a function of the eigenvalues of the weighted covariance matrix. Therefore, the matched filter bound for such channels can be expressed as the sum of the coefficients corresponding to the negative eigenvalues in the partial fraction expansion of the characteristic function. We further compare in matched filtering performance several modulation pulses in time-varying multipath Rayleigh fading channels, with the result that the rectangular pulse can achieve the best time and frequency diversity.

Key words [time-varying multipath Rayleigh fading channels](#) [characteristic function](#) [matched filter bound](#)

DOI:

通讯作者

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(163KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [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](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含 “时变多径Rayleigh衰落信道” 的相关文章](#)
- ▶ [本文作者相关文章](#)
- [韩芳明](#)
- [张贤达](#)