算法研究

LFM信号的分数阶傅里叶域自适应滤波算法研究

安澄全,郝冬艳

哈尔滨工程大学，通信与信息工程学院

摘要：

对于线性调频信号(LFM)的滤波，采用处理平稳信号的方法对其滤波往往得不到很好的效果。本文利用了线性调频信号在分数傅里叶变换域上具有很好的时频聚焦性的特点，来实现信号在分数阶傅里叶域的自适应滤波，自适应滤波算法采用改进的步长LMS方法，对传统的LMS算法做出了改进，算法中步长处理中引入了一个限制因子，可以较好地解决算法收敛速度和稳态失调量之间的矛盾。仿真结果表明，此算法在处理分数阶域的LFM信号滤波比传统的LMS算法有较好的滤波效果。

关键词： 线性调频信号；分数阶傅里叶变换域；自适应滤波算法；改进步长；限制因子

Adaptive Filtering Algorithm for LFM Signal in fraction Fourier domain

AN Cheng-Quan, HAO Dong-Yan

College of Information and Communication Engineering, Harbin Engineering University, Harbin

Abstract:

It is not very good results to achieve the filter of the LFM (linear frequency modulation signal) signal by the method of deal with stationary signal. In this paper, an adaptive method for filtering the LFM signal is proposed, using the characteristic of good energy concentration on LFM signal in fraction Fourier transform domain. Adaptive filter algorithm adopted improve step-size LMS algorithm, it made improvements to the traditional LMS algorithm, the algorithm added to a limiting factor, in order to resolve conflicts between Convergence speed and steady-state mis-adjustment, and to improve filtering performance in fraction Fourier transform domain.LMS algorithm was used well, because its Robustness was very good and its structure was simple, it was seen to be easy in computation and simple in implementation, Simulation results represent that the proposed LMS algorithm has good performance than the traditional LMS algorithm in fraction Fourier transform domain.

Keywords: linear frequency modulation signal   the fractional Fourier transform   adaptive filtering algorithm   improved step   limiting factor

通讯作者：

作者简介：

作者Email: anchengquan@hrberu.edu.cn

参考文献：

本刊中的类似文章

文章评论

反馈		邮箱地址	

扩展功能

本文信息

▶ Supporting info
▶ PDF(971KB)
▶ [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

线性调频信号；分数阶傅里叶变换域；自适应滤波算法；改进步长；限制因子

本文作者相关文章

▶ 安澄全
▶ 郝冬艳

PubMed

▶ Article by An, C. Q.
▶ Article by Hao, D. Y.

人				
反馈标题		验证码		9461