

数据库、信号与信息处理

## 抑制坦克强背景噪声的改进谱减法研究

刘兴涛, 王忠, 张维

四川大学 电气信息学院, 成都 610065

收稿日期 2008-8-7 修回日期 2008-10-31 网络版发布日期 2010-2-2 接受日期

**摘要** 谱减法是处理宽带噪声较为传统和有效的方法, 它运算量较小, 容易实时处理, 增强效果也较好。根据经典谱减法及其各种改进形式的基本原理, 提出一种新的改进谱减法语音增强算法。根据语音和噪声各自的特性, 对带噪语音进行时域平滑和频谱统计加权处理。对该算法进行客观和主观测试表明: 相对于传统的谱减法, 该算法能更好地抑制背景噪声和音乐噪声, 同时也较好地保持了语音的可懂度和自然度。

**关键词** [语音增强](#) [谱减法](#) [坦克噪声](#) [音乐噪声](#)

**分类号** [TP391](#)

## Improved spectral subtraction algorithm to restrain strong background noise in tank cockpit

LIU Xing-tao, WANG Zhong, ZHANG Wei

School of Electrical Engineering and Information, Sichuan University, Chengdu 610065, China

### Abstract

Spectral subtraction algorithm, with little computation, real-time processing easily, and good enhancement effects, is a very effective method to deal with broad-band noise. According to the traditional and many kinds of improved spectral subtraction speech enhancement algorithms, an improved spectral subtraction algorithm is presented. This enhancement algorithm smooths noisy speech in the time-domain and statistically weighted noisy speech in the frequency-domain based on the characteristics of speech and noise respectively. Subjective and objective tests are made on this algorithm. The results show this algorithm is very effective to reduce the background noise and music noise, moreover ensure the intelligibility and naturalness of speech.

**Key words** [speech enhancement](#) [spectral subtraction](#) [tank noise](#) [music noise](#)

DOI: 10.3778/j.issn.1002-8331.2010.04.043

通讯作者 刘兴涛 [liuxingtao110@tom.com](mailto:liuxingtao110@tom.com)

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(445KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [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“语音增强”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [刘兴涛](#)
- [王忠](#)
- [张维](#)