

## 新型信号预处理分离系统算法及性能分析

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**摘要:** 提出了一种新的信号预处理半盲分离算法 (pre-processing second-order cyclostationary BSS algorithm, pPSoCBSS). 该算法通过对信号进行预处理, 使源信号具有可控的循环平稳特性, 利用该特性在接收端对信号进行有效分离. 此方法通过对发射端源信号进行预处理、信道识别和信号分离, 使接收端可以精确地估计信道混合矩阵, 并且具有优越的抗噪声特性, 该方法即使在欠定的条件下也同样可以进行信道识别且性能没有损失. 同时, 通过计算机仿真对分离矩阵的估计效果采用 PI 指数进行衡量, 并与 JADE 算法和 SOBI 算法进行了比较, 仿真结果表明采用算法 PI 指数性能优于两种传统算法.

**关键词:** 盲源分离; 二阶循环平稳; 预处理; 无线信道统计复用

## Pre-Processing Second-Order Cyclostationary

## BSS Algorithm and It's Performance Analysis

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**Abstract:** In this paper, a new semi blind signal preprocessing algorithm (second-order cyclostationary BSS algorithm pPSoCBSS-pre-processing) is proposed. The algorithm is used to pre process the signal, so that the source signal has a controlled cycle stable characteristic, and the signal is effectively separated at the receiving end. Love method based on the transmitter source signal preprocessing, channel identification and signal separation, so that the receiver can estimate the channel mixing matrix accurately, and has excellent anti noise characteristics, this method even in underdetermined condition also can be identified and the channel performance is not lost. At the same time, measured through the computer simulation of the separation matrix estimation effect with the PI index, and compared with the JADE algorithm and SOBI algorithm, the simulation results show that the algorithm has better performance than the PI index of two kinds of traditional algorithm.

**Key words:** blind source separation; second-order cyclostationarity; pre-processing; wireless statistical division multiplexing (WSDM)

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