中国电机工程学报 2008, 28(16) 103-107 DOI: ISSN: 0258-8013 CN: 11-2107/TM

动力经济

应用核独立分量分析的电力用户负荷曲线估计

韦琦 魏新劳

哈尔滨理工大学电气与电子工程学院 哈尔滨理工大学电气与电子工程学院

摘要： 提出了核独立分量分析算法，即白化的核主分量分析加上独立分量分析算法。该算法在电网信息不足时，利用电网部分支路的潮流作为观测值，就可以完成对用户负荷曲线的估计。经过IEEE 9节点系统的仿真验证，结果表明，观测值在经过白化的核主分量分析算法处理后，非高斯性增强。应用独立分量分析算法对处理后的观测值进行盲源分离后，所得用户负荷需求曲线的估计值逼近实际值。与仅用独立分量分析方法的仿真结果相比，估计误差降低，相关系数增加。

关键词： 盲源分离 核独立分量分析 负荷曲线估计 核主分量分析 独立分量分析

Electric Power Load Profile Estimation Applying Kernel Independent Component Analysis

WEI Qi WEI Xin-lao

Abstract: Kernel independent component analysis algorithm, i.e. whitened kernel primary component and independent component analysis algorithm, was proposed. It can be applied for estimating the load profile by means of power flow as the observing data from some branches of power grid. Further simulation results on IEEE 9 bus system show that whitened kernel primary component analysis algorithm can improve the non-Gaussian distribution of the observing data and the load estimation profile approximates the real value of load after the process of blind source separation realized by independent component analysis algorithm. The results from kernel independent component analysis algorithm have lowered estimation errors and larger correlation coefficient compared with those only from independent component analysis algorithm.

Keywords: blind source separation kernel independent component analysis load profile estimation kernel primary component analysis independent component analysis

收稿日期 2007-04-13 修回日期 1900-01-01 网络版发布日期

DOI:

基金项目:

通讯作者: 韦琦

作者简介:

作者Email: weiqieric@sohu.com;weiqieric2000@163.com

参考文献：

本刊中的类似文章