

ISSN 1000-3835

CN 31-1316/TU

# 振动与冲击

JOURNAL OF VIBRATION AND SHOCK

振动与冲击

第三十九卷

第十七期

二〇二〇年九月

ZHENDONG YU CHONGJI

半月刊 | 第39卷 | **17** / 2020

ISSN 1000-3835



万方数据

中国振动工程学会  
上海交通大学 主办  
上海市振动工程学会

# 目次

基于伪标签半监督核局部 Fisher 判别分析轴承故障诊断..... 陶新民, 任超, 徐朗, 等 (1)

采用基于传感器信息组合串扰消除法的工况传递路径分析 ..... 伍先俊 (10)

支座激励下附加弹簧保护装置悬索的非线性动力分析 ..... 张鹏, 卢文胜, 吕西林 (16)

轴力对梁结构耦合损耗因子的影响研究 ..... 胡婉璐, 陈海波, 钟强 (24)

二阶段在线迭代时滞补偿方法及试验验证 ..... 李宁, 周陈, 周子豪, 等 (31)

基于优选小波包与马氏距离的滚动轴承性能退化 GRU 预测..... 郑小霞, 钱轶群, 王帅 (39)

纵向超声振动钻削 CFRP/钛合金叠层材料的动态冲击效应分析 ..... 王东, 焦锋, 张世杰, 等 (47)

基于几何指标的高速铁路桥上列车地震安全性评判方法 ..... 雷虎军, 黄炳坤, 刘伟 (57)

轴流式水轮机组振动传递路径分析 ..... 取保平, 尼玛, 秦净净, 等 (64)

黏弹性材料 Biot 模型参数确定及其在黏弹阻尼结构中的应用 ..... 黄志诚, 吴南星, 王兴国, 等 (70)

某迫击炮座钣的试验与轻量化设计研究 ..... 王锋锋, 杨国来, 王殿荣, 等 (76)

结构健康监测的传感器优化布置研究进展与展望 ..... 杨辰 (82)

爆破地震动荷载方向对边坡安全系数的影响 ..... 刘华丽, 赵跃堂, 徐迎, 等 (94)

小半径竖曲线上磁浮车辆空气弹簧动态响应分析 ..... 罗英昆, 赵春发, 梁鑫, 等 (99)

基于自编码器和门限循环单元神经网络的滚动轴承退化趋势预测..... 王鹏, 邓蕾, 汤宝平, 等 (106)

压电悬臂梁振动能量收集器研究进展..... 芮小博, 李一博, 曾周末 (112)

基于变分模态分解和天牛须搜索的磁瓦内部缺陷声振检测..... 黄沁元, 谢罗峰, 殷国富, 等 (124)

基于斜拉桥索力监测的在线车速车重识别..... 孙宗光, 陈一飞 (134)

变转速工况下液压泵故障振动信号的角域烈度特征提取方法..... 刘思远, 王志伟, 姜万录, 等 (142)

融合盲源分离的船舶耦合振源传递路径分析技术研究..... 张磊, 李彬, 杨自春, 等 (150)

冰区环境下圆柱壳声振特性的数值分析..... 陈颀, 王献忠, 姜权洲, 等 (157)

路基不均匀沉降对地铁 A 型车辆动力学特性影响研究 .....	张克平, 石广田, 和振兴 (165)
超高层建筑横风向风致响应的非高斯性及峰值因子研究 .....	全涌, 侯方超, 顾明 (171)
管道内流对海洋弹性管振动影响的数值仿真研究 .....	柳博瀚, 陈正寿, 鲍健, 等 (177)
H 型吊杆气动性能优化研究 .....	白桦, 李锐, 郭聪敏, 等 (186)
地震和波浪联合作用下斜拉桥随机动力分析方法 .....	孟思博, 丁阳 (194)
偏心桥梁断面颤振稳定性流固耦合数值模拟研究 .....	贾杰, 韩荣轩 (203)
近断层地震动下高速铁路多跨简支梁桥震致破坏特征 .....	国巍, 王阳, 葛苍瑜, 等 (210)
弹性颗粒声散射问题直接模拟的 IB-LBM 研究 .....	蔡增楠, 黎胜, 鲁建华, 等 (219)
摆动支承式汽车衡动态称重的缓冲减振研究 .....	赖朝晖, 杨晓翔, 姚进辉, 等 (226)
基于模态曲率效用信息熵的梁结构损伤识别 .....	项长生, 李凌云, 周宇, 等 (234)
墩底自复位减隔震连续梁桥地震碰撞响应研究 .....	张文学, 张红, 陈盈, 等 (245)
二阶波浪力和聚焦位置对畸形波作用下张力腿平台动力响应的影响研究 .....	常爽, 黄维平, 魏东泽, 等 (254)
基于 MEMS 惯性测量的输电导线振动损伤分析 .....	杨金显, 王蒙蒙, 刘益朋, 等 (261)
间隙非线性对惯容-橡胶复合隔振器位移响应的影响研究 .....	李阳, 温华兵, 刘伟, 等 (268)
机械振动无线传感器网络大量数据传输发射功率优化控制方法 .....	朱亮亮, 汤宝平, 黄艺, 等 (275)
考虑表面张力的机械结合面特性建模研究 .....	李玲, 王晶晶, 云强强, 等 (281)
长圆形囊式气囊隔振器垂向刚度特性分析 .....	李东方, 赵应龙 (289)

## 本期广告索引

### 彩色广告

- 封二 扬州英迈克测控技术有限公司
- 封三 江苏泰斯特电子设备制造有限公司
- 封四 北京声望声电技术有限公司
- 前插 1 无锡市厚德自动化仪表有限公司
- 前插 2 南京安正软件工程有限公司

- 前插 3 南京安正软件工程有限公司
- 前插 4 PCB 压电传感技术(北京)有限公司

### 单色、彩色广告

- 后插 1 北京东方振动和噪声技术研究所
- 后插 2 杭州锐达数字技术有限公司
- 后插 3 杭州锐达数字技术有限公司

# CONTENTS

- Bearing fault diagnosis based on semi-supervised kernel local Fisher discriminant analysis using pseudo labels  
 ..... TAO Xinmin, REN Chao, XU Lang, et al (1)
- Crosstalk elimination method in OTPA using sensors' combination  
 ..... WU Xianjun (10)
- Nonlinear dynamic analysis for suspended cables with additional spring-protection devices under support excitation  
 ..... ZHANG Peng, LU Wensheng, LÜ Xilin (16)
- Effects of axial force on coupling loss factor of beam structures  
 ..... HU Wanlu, CHEN Haibo, ZHONG Qiang (24)
- A two-stage online iteration time-delay compensation method for real time hybrid testing: simulation and test verification  
 ..... LI Ning, ZHOU Chen, ZHOU Zihao, et al (31)
- GRU prediction for performance degradation of rolling bearings based on optimal wavelet packet and Mahalanobis distance  
 ..... ZHENG Xiaoxia, QIAN Yiqun, WANG Shuai (39)
- Dynamic impact effect analysis for longitudinal ultrasonic vibration drilling of CFRP / titanium alloy laminated plate  
 ..... WANG Dong, JIAO Feng, ZHANG Shijie, et al (47)
- Evaluation method for running safety of train on a high-speed railway bridge based on geometric indexes  
 ..... LEI Hujun, HUANG Bingkun, LIU Wei (57)
- Transmission path analysis for vibration of axial flow turbine unit  
 ..... ZHI Baoping, NI Ma, QIN Jingjing, et al (64)
- Biot model parametric determination of viscoelastic material and its application in viscoelastic damping structure  
 ..... HUANG Zhicheng, WU Nanxing, WANG Xingguo, et al (70)
- Test and lightweight design for a mortar base plate  
 ..... WANG Fengfeng, YANG Guolai, WANG Dianrong, et al (76)
- Advances and prospects for optimal sensor placement of structural health monitoring  
 ..... YANG Chen (82)
- Effects of blast seismic dynamic load direction on slope safety factor  
 ..... LIU Huali, ZHAO Yuetang, XU Ying, et al (94)
- Dynamic responses of air-spring suspension of a maglev vehicle negotiating a small-radius vertical curved track  
 ..... LUO Yingkun, ZHAO Chunfa, LIANG Xin, et al (99)
- Degradation trend prediction of rolling bearing based on auto-encoder and GRU neural network  
 ..... WANG Peng, DENG Lei, TANG Baoping, et al (106)
- Research progress of piezoelectric cantilever vibration energy collector  
 ..... RUI Xiaobo, LI Yibo, ZENG Zhoumo (112)
- Acoustic-vibration detection for internal defects of magnetic tile based on VMD and BAS  
 ..... HUANG Qinyuan, XIE Luofeng, YIN Guofu, et al (124)
- Online vehicle speed and weight recognition based on cable force monitoring of cable-stayed bridge  
 ..... SUN Zongguang, CHEN Yifei (134)
- Angular domain intensity feature extraction method for fault vibration signals of hydraulic pump under variable rotating speed condition  
 ..... LIU Siyuan, WANG Zhiwei, JIANG Wanlu, et al (142)
- TPA technique for ship coupled vibration sources based on BSS  
 ..... ZHANG Lei, LI Bin, YANG Zichun, et al (150)
- Numerical Analysis for vibro-acoustic characteristics of a cylindrical Shell under ice environment  
 ..... CHEN Di, WANG Xianzhong, JIANG Quanzhou, et al (157)

---

Effects of subgrade uneven settlement on dynamic characteristics of metro type A vehicles	ZHANG Keping, SHI Guangtian, HE Zhenxing (165)
Study on the non-Gaussian characteristic and peak factor of across-wind response for super high-rise buildings	QUAN Yong, HOU Fangchao, GU Ming (171)
Numerical simulation for effects of pipeline internal flow on vibration of flexible marine pipe	LIU Bohan, CHEN Zhengshou, BAO Jian, et al (177)
Optimization of aerodynamic performance of H-section hangers	BAI Hua, LI Rui, GUO Congmin, et al (186)
Stochastic dynamic analysis method for a cable-stayed bridge under combined actions of earthquake and waves	MENG Sibao, DING Yang (194)
Numerical simulation for flutter stability of eccentric bridge section based on fluid-structure interaction	JIA Jie, HAN Rongxuan (203)
Seismic failure features of multi-span simply supported girder bridges of high-speed railway under near-fault earthquake	GUO Wei, WANG Yang, GE Cangyu, et al (210)
Direct simulation of acoustic scattering problem of elastic particles using improved IB-LBM	CAI Yunan, LI Sheng, LU Jianhua, et al (219)
Buffer and vibration reduction of dynamic weighing of truck scale with swing support	LAI Chaohui, YANG Xiaoxiang, YAO Jinhui, et al (226)
Damage identification of beam structures based on modal curvature utility information entropy	XIANG Changsheng, LI Lingyun, ZHOU Yu, et al (234)
Seismic impact response of continuous girder bridge with self-reset seismic reduction and isolation structure at pier bottom	ZHANG Wenxue, ZHANG Hong, CHEN Ying, et al (245)
Effects of second-order wave force and focusing location on dynamic response of a tension leg platform under freak wave	CHANG Shuang, HUANG Weiping, WEI Dongze, et al (254)
Vibration damage analysis of transmission line based on MEMS inertial measurement	YANG Jinxian, WANG Mengmeng, LIU Yipeng, et al (261)
Effects of gap nonlinearity on displacement response of inerter-rubber vibration isolator	LI Yang, WEN Huabing, LIU Wei, et al (268)
Transmit power optimization control method for a mechanical vibration wireless sensor network with a lot of transmission data	ZHU Liangliang, TANG Baoping, HUANG Yi, et al (275)
Modeling of mechanical interface characteristics considering surface tension	LI Ling, WANG Jingjing, YUN Qiangqiang, et al (281)
Vertical stiffness characteristics of a long round bellow type airbag isolator	LI Dongfang, ZHAO Yinglong (289)

---

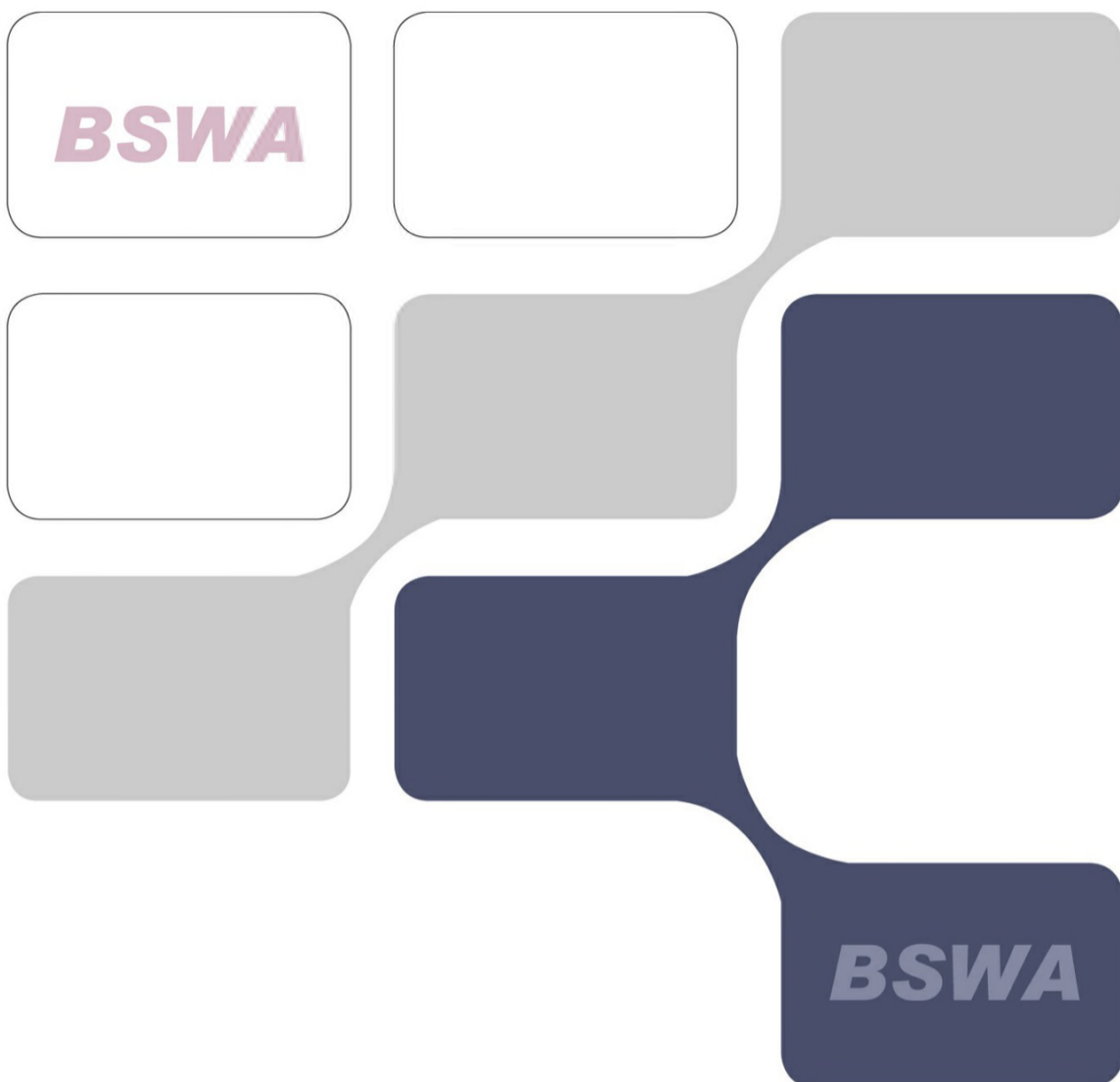
## JOURNAL OF VIBRATION AND SHOCK

Vol. 39 No. 17 SEPTEMBER 2020

Editorial Office: 1954 Huashan Rd. Shanghai, 200030, China

Issuer Abroad: China National Publishing Industry Trading Corporation  
(Post-Office Box No. 728, Beijing, China)

---



## 手持式1型及2型声级计 BSWA308/309

声望公司自主研发的全数字声级计，符合IEC 61672:2002 1级（BSWA 308）或2级（BSWA 309）标准。声级计使用高精度24位AD转换器及最新的ARM芯片作为运算和处理核心，全数字信号处理使得测量结果更加稳定，较低的功耗使得仪器可以用4节电池运行更长时间。



微信二维码

### BSWA 声望技术

#### 总部

北京声望声电技术有限公司 地址：北京市西城区裕民路18号北环中心1002-1003室 邮编：100029  
电话：400 060 3060 传真：010-82251626 Email: bswa@bswa.com.cn Website: www.bswa.com.cn

#### 广州办事处

地址：广州市海珠区广州大道南855号敦和商务公寓A栋M03室 电话/传真：020-84217929