

中国科技论文统计源期刊  
中国中文核心期刊  
中国科学引文数据库来源期刊  
中国学术期刊综合评价数据库来源期刊  
入网《万方数据-数字化期刊群》

ISSN 1006-1355  
CN 31-1346/TB

# 噪声与振动控制

ZAOSHENG YU ZHENDONG KONGZHI

5

2018年10月

*NOISE AND VIBRATION  
CONTROL*

ISSN 1006-1355



中国声学学会主办  
第38卷第5期  
Vol.38 No.5

# 目次

## 综述

- 1 中国货车产品面临的国际噪声限值挑战 ..... 谢东明, 张志国, 陆春

## 振动理论与数值解法

- 7 瞬态发射载荷作用下含缓冲装置水下发射系统动力学建模与分析 ..... 张亚静, 黄修长, 董彦鹏, 等  
12 舰船瞬态噪声激励源传递路径识别方法研究 ..... 余桐奎, 时胜国, 刘文帅, 等  
21 基于改进傅里叶级数的矩形板薄板振动特性分析 ..... 陈林, 肖伟, 刘见华, 等  
27 基础振动下电磁换向阀换向灵敏性研究 ..... 李卫, 张怀亮, 刘瑞春  
34 流体激励下泵喷推进器声振耦合响应数值分析 ..... 高丹妮, 余海廷, 华宏星  
40 基于子结构综合法的周期支撑结构带隙分析 ..... 吴莉洁, 宋汉文  
45 不同载荷识别的结构振动传递路径分析方法研究 ..... 张磊, 李彬, 梁洁, 等  
52 饲草揉碎机转子模态分析及结构优化 ..... 王金博, 董海军, 翟之平, 等  
57 变步长CFxLMS算法及其在电梯噪声主动控制中的仿真 ..... 马英博, 吴亚锋, 杨鑫博  
62 一种限位器高速转子系统的碰摩行为 ..... 白宇杰, 姜磊, 杨璇, 等  
66 随机干扰下碰撞振动系统运动解的Chebyshev多项式逼近 ..... 刘江涛, 张艳龙, 王丽, 等  
71 矩形脉冲激励下悬挂减振系统易损件冲击特性 ..... 周园园, 陈安军

## 运载工具振动与噪声

- 75 舰船水下辐射噪声快速预报方法 ..... 王学杰, 单衍贺, 秦新华, 等  
81 参数不确定性条件下螺旋桨致舰船系统振动的自适应反演控制 ..... 公鑫, 华宏星  
89 基于BEM/FEM的船舶注水系统管路噪声分离预报 ..... 方超, 蔡标华, 马士虎, 等  
94 十字形压电振子同型模态振动驱动的平面电机 ..... 贺红林, 余九, 凌普, 等  
100 车辆通过连续减速带时的非线性振动特性分析 ..... 朱由锋, 班朋, 孔小飞, 等  
107 EMU6车外受电弓噪声源特征试验研究 ..... 吴晓龙, 杨志刚, 谭晓明, 等  
113 加强筋截面类型对轨道车辆板件结构隔声影响研究 ..... 詹雪燕, 姚丹, 张捷, 等  
119 传动系扭转刚度对变速器齿轮敲击异响影响研究 ..... 陈达亮, 顾灿松, 李洪亮  
123 上部锁紧式双层非线性减振扣件钢轨波磨的控制 ..... 王志强, 化一宁, 孟涛  
128 基于Moore响度的声品质驱动的低频结构优化设计 ..... 何智成, 许焯熨, 秦晓凯, 等  
134 螺栓连接对燃机燃烧室结构模态的影响研究 ..... 鲍俊, 荆建平, 周惠文

## 环境振动与环境声学

- 139 近轨低矮声屏障降噪效果影响因素分析 ..... 徐圣辉, 周信, 陈辉, 等  
146 高架钢弹簧浮置板轨道减振特性研究及参数优化 ..... 程珊, 刘林芽, 王少锋

## 建筑振动与建筑声学

- 151 颐和园德和园大戏楼修缮前后声场对比测试与分析 ..... 张龙, 刘芳博, 秦雷, 等  
156 探讨两种建筑隔振基础措施在地铁沿线物业开发中的应用 ..... 宋瑞祥, 张学刚, 孙国栋, 等  
162 城市户内变电站主变室墙面吸声降噪优化设计探讨 ..... 饶顺斌, 田一, 李静涛, 等

## 信号处理与故障诊断

- 167 改进经验小波变换的齿轮箱故障诊断新方法与应用 ..... 王昌明, 张征, 李峰, 等  
173 基于自适应多尺度散布熵的滚动轴承故障诊断方法 ..... 李从志, 郑近德, 潘海洋, 等  
180 基于扩展双谱的齿轮压缩采样信号特征提取方法 ..... 李飞, 秦国军, 庄圣贤  
186 基于精细复合多尺度熵特征向量相关系数在滚动轴承故障诊断中应用 ..... 叶金义, 谢小平, 梁焯焯, 等  
192 状态形态学滤波与EWT的故障特征提取方法研究 ..... 王金东, 张隆宇, 赵海洋, 等  
198 扩展卡尔曼滤波方法在转子典型故障诊断中的应用 ..... 张永强, 荆建平, 李亚伟, 等  
204 地铁PR型扣件弹条伤损分析 ..... 高晓刚, 王安斌  
208 基于深度自编码网络的轴承故障诊断 ..... 袁文军, 刘飞, 王晓峰, 等

## 减振降噪设备与器材

- 215 基于增维精细积分法非线性能量陷减振系统分析 ..... 刘涛, 张勇, 陈沛芝, 等  
220 某物联网机箱设备结构振动分析与减振研究 ..... 刘松涛, 刘营, 李鸿光, 等  
225 侧壁悬挂雷达多维隔振平台性能仿真及实验 ..... 董迎晖, 方辉, 黄宵  
230 空压机排气放空复合消声器设计与性能分析 ..... 温华兵, 李晓亮, 吴晓佳  
234 基于ADAMS与SIMULINK的Stewart主动振动控制平台联合仿真 ..... 焦健, 吴迎, 于开平

## 工程实践

- 239 工业平缝机噪声源定位与低噪声结构设计 ..... 黄彩霞, 杨振东, 曹申, 等  
244 基于LMS Virtual Lab的鼠标噪声分析与设计 ..... 曹婷婷, 冯志华, 王刚, 等

广告:

封二:上海睿深电子科技有限公司  
封三:北京声望声电技术有限公司  
插一:上海声望声学科技股份有限公司  
插二:上海君协光电科技发展有限公司

插三:杭州爱华仪器有限公司  
插四:七〇四研究所减振降噪抗冲工程中心  
插五:北京东方振动和噪声技术研究所  
插六:PCB压电传感器技术(北京)有限公司  
封底:上海君协光电科技发展有限公司

## CONTENTS

The International Challenge from Noise Limit Values for Chinese Truck Products	XIE Dongming, ZHANG Zhiguo, LU Chun (001)
Dynamic Modeling and Analysis of Underwater Launch Systems with Buffer Devices under Transient Loads	ZHANG Yajing, HUANG Xiuchang, DONG Yanpeng, et al (007)
Study on the Method of Transfer Path Recognition of Ship Transient Noise Excitation Sources	YU Tongkui, SHI Shengguo, LIU Wenshuai, et al (012)
Vibration Characteristic Analysis of Rectangular Thin Plates based on Improved Fourier Series Method	CHEN Lin, XIAO Wei, LIU Jianhua, et al (021)
Study on Commutation Sensitivity of Electromagnetic Directional Valves under Base Vibration	LI Wei, ZHANG Huailiang, LIU Ruichun (027)
Flow-induced Vibro-acoustic Coupling Response Analysis of Pump Jet Thrusters	GAO Danni, YU Haiting, HUA Hongxing (034)
Band Gap Analysis for Periodically Supported Structures based on Substructure Synthesis Method	WU Lijie, SONG Hanwen (040)
Research on Structural Vibration Transfer Path Analyses using Different Load Identification Methods	ZHANG Lei, LI Bin, LIANG Jie, et al (045)
Modal Analysis and Structure Optimization of the Rotors of Forage Rubbing and Breaking Machines	WANG Jinbo, DONG Haijun, ZHAI Zhiping, et al (052)
CFxLMS Algorithm with Variable Step Size and its Application to Simulation of Elevator Cabin Noise Active Control	MA Yingbo, WU Yafeng, YANG Xinbo (057)
Study on the Rub-impact Behaviour of a Rotor System with Stoppers	BAI Yujie, JIANG Lei, YANG Xuan, et al (062)
The Chebyshev Polynomial Approximation of Vibro-impact System Motion under Stochastic Disturbances	LIU Jiangtao, ZHANG Yanlong, WANG Li, et al (066)
Shock Characteristics of Vulnerable Components of Suspension System under Rectangular Pulse Excitation	ZHOU Yuanyuan, CHEN Anjun (071)
A Fast Prediction Method for Underwater Radiation Noise from Ships	WANG Xuejie, SHAN Yanhe, QIN Xinhua, et al (075)
Adaptive Backstepping Control of Propeller induced Vibration of Ship Systems with Parameter Uncertainties	GONG Xin, HUA Hongxing (081)
Noise Separation Prediction of Water Injection Pipeline Systems of Warships based on BEM/FEM	FANG Chao, CAI Biaohua, MA Shihu, et al (089)
A Planar Motor Driven by an X-shaped Piezoelectric Vibrator	HE Honglin, YU Jiu, LIN Pu, et al (094)
Analysis of Nonlinear Vibration Characteristics of Automobiles Passing through Deceleration Zones	ZHU Youfeng, BAN Peng, KONG Xiaofei, et al (100)
Experimental Research on Noise Source Characteristics of EMU6 Train's External Pantographs	WU Xiaolong, YANG Zhigang, TAN Xiaoming, et al (107)
Study on Effects of Stiffener Section Types on Sound Insulation of Railway Vehicle's Panel Structures	ZHAN Xueyan, YAO Dan, ZHANG Jie, et al (113)
Study on the Effect of Torsional Stiffness of Transmission Systems on the Abnormal Sound of Transmission Gears	CHEN Daliang, GU Cansong, LI Hongliang (119)
Rail Corrugation Control of the Track Sections in Nanjing Metro with GJ-32 Fasteners	WANG Zhiqiang, HUA Yining, MENG Hongtao (123)
Optimization Design of Low-frequency Structures driven by Sound Quality based on Moore Loudness	HE Zhicheng, XU Xuanjiong, QIN Xiaokai, et al (128)
Effect of Bolt Connection on Structural Vibration Modes of Combustion Chambers	BAO Jun, JING Jianping, ZHOU Huiwen (134)
Analysis of the Factors Affecting Noise Reduction of Near-rail Low-height Noise Barriers	XU Shenghui, ZHOU Xin, CHEN Hui, et al (139)
Vibration Reduction Study and Parameter Optimization of Steel Spring Floating Slab Tracks in Metro Viaducts	CHENG Shan, LIU Linya, WANG Shaofeng (146)
Acoustic Test and Analysis before and after the Reparation of the Grand Stage of the Dehe Yuan in the Summer Palace	ZHANG Long, LIU Fangbo, QIN Lei, et al (151)
Discussion on the Application of Two Foundation Isolation Measures in Buildings Receiving Excessive Vibration from Adjacent Subway Lines	SONG Ruixiang, ZHANG Xuegang, SUN Guodong, et al (156)
Discussion of Optimal Design of Noise Absorption Technology for Transformer Room Walls of Urban Indoor Substations	RAO Shunbin, TIAN Yi, LI Jingtao, et al (162)
A New Method and its Application for Fault Diagnosis of Gearboxes based on Improved Empirical Wavelet Transform	WANG Changming, ZHANG Zheng, LI Feng, et al (167)
Fault Diagnosis Method of Rolling Bearings based on Adaptive Multi-scale Dispersion Entropy	LI Congzhi, ZHENG Jinde, PAN Haiyang, et al (173)
Feature Extraction Method of Gear Compression Sampling Signals based on Extended Bispectrum	LI Fei, QIN Guojun, ZHUANG Shengxian (180)
Rolling Bearing Fault Diagnosis Method based on Refined Composite Multi-scale Entropy Eigenvector Correlation Coefficients	YE Jinyi, XIE Xiaoping, LIANG Yangyang, et al (186)
Fault Feature Extraction Method based on Mathematical Morphology Filtering and Adaptive Empirical Wavelet Transform	WANG Jindong, ZHANG Longyu, ZHAO Haiyang, et al (192)
Application of Extended Kalman Filter Method to Typical Rotor Fault Diagnosis	ZHANG Yongqiang, JING Jianping, LI Yawei, et al (198)
Damage Analysis of Clips of PR Type Fasteners of Subways	GAO Xiaogang, WANG Anbin (204)
Bearing Diagnosis based on Deep Neural Network of Auto-encoder	YUAN Wenjun, LIU Fei, WANG Xiaofeng, et al (208)
Analysis of the Vibration Attenuation System with a Nonlinear Energy Sink based on Magnified Precise Integration Method	LIU Tao, ZHANG Yong, CHEN Peizhi, et al (215)
Structural Vibration Analysis and Vibration Attenuation Study for Internet-of-things Chassis Devices	LIU Songtao, LIU Ying, LI Hongguang, et al (220)
Simulation and Experimental Study on a Multi-DOF Vibration Isolation Platform for Suspended Radars	DONG Yinghui, FANG Hui, HUANG Xiao (225)
Design and Performance Analysis of Jet-exhaust Mufflers of Air Compressors	WEN Huabing, LI Xiaoliang, WU Xiaojia (230)
Cooperative Simulation based on ADAMS and SIMULINK for a Stewart Active Vibration Control Platform	JIAO Jian, WU Ying, YU Kaiping (234)
Noise Source Identification and Low-noise Structure Design for Industrial Sewing Machines based on Partial Coherence Analysis	HUANG Caixia, YANG Zhendong, CAO Shen, et al (239)
Analysis and Design of Mouse Noise based on LMS Virtual Lab	CAO Tingting, FENG Zhihua, WANG Gang, et al (244)