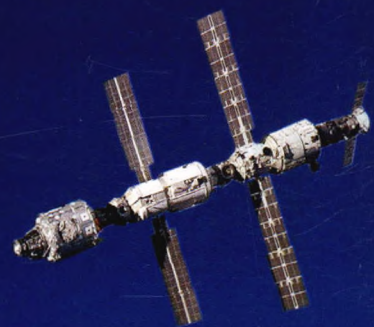


# JOURNAL OF MECHANICAL STRENGTH

ISSN 1001-9669  
CODEN JQIAEJ



## 机械强度<sup>®</sup>

JIXIE QIANGDU

第44卷 2022/1



ISSN 1001-9669



中国机械工程学会 主办  
郑州机械研究所有限公司



## 目次

### · 振动· 噪声· 监测· 诊断 ·

基于磁流变阻尼器的机床液体静压导轨主动抑振方法研究 .....	张忠奎	高峰	李艳	闫洋洋(01)
基于自适应 RCGmvMFE 和流行学习的滚动轴承故障诊断 .....	刘武强	杨小强	申金星(09)	
七桥混连油气悬架车辆振动优化与控制 .....	田文朋	夏峰	徐信芯(19)	
基于混沌理论的超大型漂浮式风力机动态响应研究 .....	王博	刘青松	李春	许子非
基于改进型 Hopfield 神经网络的潜污泵故障诊断方法 .....	王慧	李南奇	杨志鹏	赵国超
基于改进变分模态分解及多重分形的轴承信号非线性分析 .....	金江涛	许子非	李春	缪维跑
含间隙二自由度碰撞振动系统等效电路仿真 .....	刘瑞家	汪涛	罗帆(53)	

### · 实验研究· 测试技术 ·

基于切削振动的铣削表面形貌仿真与试验研究 .....	潘丽美	钱炜	刘金	叶逸	郭森现(59)
2A12 铝合金单层板对平头弹抗冲击特性研究 .....				胡静	安静丹(68)
轨道车辆 SUS304 不锈钢材料动态力学性能与本构模型修正 .....	刘高昕	朱涛	肖守訥	阳光武	杨冰
箔片式动压空气轴承试验研究 .....	龙超	张跃春	彭锐涛	胡雨浓(81)	

### · 优化· 可靠性 ·

高维 Copula 函数的动态系统可靠性模型研究 .....	冯钧	刘伟	谭龙	李颀(86)
基于改进量子进化算法的仿生机器鱼渐变可靠性优化设计 .....	李明昊	乔捷	范佳艺	王宝新(95)
基于 SIMP-MMC 结构尺寸精确控制拓扑优化方法 .....	张军峰	廖靖宇	刘恩海(102)	
基于混合基分布方法的数据融合可靠性分析 .....			张晚洁	唐家银(111)
基于近似模型的大排量摩托车悬架系统平顺性优化分析 .....	冉险生	陈凯	赵洪亮	罗领(119)
多源异构数据贝叶斯统计融合可靠性评估模型 .....	唐莉	唐家银	程世娟(126)	
基于贝叶斯方法的统计模型修正和结构概率损伤识别 .....			千露	陈辉(133)

### · 设计· 计算 ·

基于泡沫铝复合结构的汽车座椅横梁填充设计与优化 .....	张元瑞	汪高飞	张永亮	郑志军	叶坚	瞿元	虞吉林(140)
筋条形式和制造工艺对轴压载荷下钛合金加筋板力学行为模式的影响分析 .....						王昭惠	马玉斌(148)
清煤机运料螺杆的性能和仿真磨损试验分析 .....	谢苗	裴波波	刘治翔	李政	耿希望(155)		
恶劣工况下越野车用等速万向节接触应力和保持架强度分析 .....					宋有硕	马跃(162)	
特种车辆叉臂式座椅刚度-阻尼特性及舒适性研究 .....	李占龙	赵钧锋	高山铁	秦园	杨强(169)		
海上超大型风力机结构动力学响应及稳定性研究 .....	张立	闫阳天	李春	刘青松	王博	李志昊(175)	

### 焊接· 铸造· 锻压· 热材料 ·

同步器同步过程摩擦副温度场仿真研究 .....	张志刚	彭彩虹	张子阳	苏梦月(184)	
线接触热弹流润滑中材料热膨胀系数的计算 .....				路遵友(192)	
基于变形机制的 P91 钢蠕变行为分析 .....	李博	刘新宝	朱麟	权晨	王妮(198)

### · 疲劳· 损伤· 断裂· 失效分析 ·

联合收割机行走半轴频域疲劳分析方法的对比研究 .....	付景静	王晨升	才福友	牛文铁(203)			
基于响应面法传动直轴疲劳寿命优化 .....	刘龙杰	赵礼辉	史成森	郑松林	翁硕	刘向臻	代磊(215)
基于多轴理论的构架焊缝疲劳强度研究 .....				张名扬	张开林(225)		
新型转子钢 FW2 高温断裂韧性实验研究 .....				吴海利	孙林根(232)		

### · 研究简报 ·

可调平三自由度振动筛结构设计与试验分析 .....	韩猛	龚智强	王成军(239)	
干混物料运输车取力器螺栓疲劳寿命分析 .....	刘迪辉	彭浩毅	张宏亮	何安(245)
新型混沌振动筛的设计及动力学分析 .....			王成军	朱韬(250)

## 机械强度

主编 王长路(兼)

双月刊 1975年5月创刊

国际标准连续出版物号 ISSN 1001-9669

国内统一连续出版物号 CN 41-1134/TH

2022年第1期 第44卷 总第219期 2022年2月15日出版

电话: 0371-67710821

E-mail: jxqd@chinajournal.net.cn

http://jxqd.chinajournal.net.cn

主管 中国机械工业联合会  
 主办 中国机械工程学会 郑州机械研究所有限公司  
 编辑出版 《机械强度》编辑部  
 地址 郑州市嵩山南路81号 450052  
 彩印 郑州新海岸电脑彩色制印有限公司  
 印刷装订 河南新起点印务有限公司  
 发行范围 国内 外 发 行  
 国内发行 河南省信阳区地区邮局  
 国内订阅 全国各地邮局  
 国外发行 中国国际图书贸易总公司(北京399信箱)

CONTENTS

• Vibration • Noise • Monitoring • Diagnosis •

Study on the active vibration suppression method of hydrostatic slide of machine tool based on mr damper ..... ZHANG ZhongKui GAO Feng LI Yan YAN YangYang (01)

Rolling bearing fault diagnosis based on adaptive RCGmvMFE and manifold learning ..... LIU WuQiang YANG XiaoQiang SHEN JinXing (09)

Vibration optimization and control of seven-axle hybrid coupling hydro-pneumatic suspension vehicle ..... TIAN WenPeng XIA Feng XU XinXin (19)

Research on dynamic response of super large floating wind turbine based on chaos theory  
..... WANG Bo LIU QingSong LI Chun XU ZiFei DING QinWei ZHANG Li LI ShuJun (29)

Fault diagnosis method of submersible sewage pump based on improved Hopfield neural network  
..... WANG Hui LI NanQi YANG ZhiPeng ZHAO GuoChao TIAN LiYong (38)

Nonlinear analysis of bearing signal based on improved variational modal decomposition and multi fractal  
..... JIN JiangTao XU ZiFei LI Chun MIAO WeiPao ZHANG WanFu LI Gen (45)

Equivalent circuit simulation of two-degree of freedom vibro-impact system with gap ..... LIU RuiJia WANG Zheng LUO Fan (53)

• Experimental Research •

Simulation and experimental research on milling surface topography based on cutting vibration ..... PAN LiMei QIAN Wei LIU Jin YE Yi GUO MiaoXian (59)

Investigation on the resistance performance of 2A12 aluminum alloy thick targets against blunt-nosed projectiles ..... HU Jing AN JingDan (68)

Dynamic mechanical properties and constitutive model modification of SUS304 stainless steel used in carbodies of trains  
..... LIU YuXin ZHU Tao XIAO ShouNe YANG GuangWu YANG Bing WANG MingMeng (74)

Experimental research on foil hydrodynamic air bearing ..... LONG Chao ZHANG YueChun PENG RuiTao HU YuNong (81)

• Optimization • Reliability •

Research on dynamic system reliability model of high dimensional Copula function ..... FENG Jun LIU Wei TAN Long LI Yi (86)

Bionic robot fish gradient reliability optimization design based on improved quantum evolutionary algorithm ..... LI MingHao QIAO Jie FAN JiaYi WANG BaoXin (95)

Topology optimization method based on SIMP-MMC for structure size precise control ..... ZHANG JunFeng LIAO JingYu LIU EnHai (102)

Reliability analysis of data fusion based on a mixed basis distribution method ..... ZHANG XiaoJie TANG JiaYin (111)

Optimization analysis of large displacement motorcycle suspension system riding comfort based on approximate model  
..... RAN XianSheng CHEN Kai ZHAO HongLiang LUO Ling (119)

Bayesian statistical fusion reliability evaluation model of multi-source heterogeneous data ..... TANG Li TANG JiaYin CHENG ShiJuan (126)

Statistical model updating and structural probabilistic damage identification based on Bayesian method ..... GAN Lu CHEN Hui (133)

• Design • Calculation •

Filling design and optimization of automobile seat crossbeam based on aluminum foam composite structure  
..... ZHANG YuanRui WANG GaoFei ZHANG YongLiang ZHENG ZhiJun YE Jian QU Yuan YU JiLin (140)

Analysis of the influence of stiffener type and manufacturing process on mechanical behavior of titanium alloy stiffened panel under axial compression  
..... WANG ZhaoHui MA YuE (148)

Performance analysis and wear mechanism research of feeding screw of coal cleaning machine ..... XIE Miao PEI BoBo LIU ZhiXiang LI Zheng GENG XiWang (155)

Contact stress and cage strength analysis of constant velocity joint for off-road vehicle under bad working conditions ..... SONG YouShuo MA Yue (162)

Research on stiffness-damping feature and ride.comfort for cross-arm damping seat of special vehicles  
..... LI ZhanLong ZHAO JunDuo GAO ShanTie QIN Yuan YANG Qiang (169)

Study on structural dynamic response and stability of offshore super large wind turbine ... ZHANG Li YAN YangTian LI Chun LIU QingSong WANG Bo LI ZhiHao (175)

• Weld • Casting • Forge • Thermal Material •

Simulation study on temperature field of friction pair in synchronizer synchronization process ..... ZHANG ZhiGang PENG CaiHong ZHANG ZiYang SU MengYue (184)

Calculation of thermal expansion coefficient of materials in thermal elastohydrodynamic lubrication of line contact ..... LU ZunYou (192)

Deformation-mechanism-based modeling of creep behavior of P91 steel ..... LI Bo LIU XinBao ZHU Lin QUAN Chen WANG Ni (198)

• Fatigue • Damage • Fracture • Failure Analysis •

Comparative study on frequency domain fatigue analysis methods for half axle of combine harvester ..... FU JingJing WANG ChenSheng CAI FuYou NIU WenTie (203)

Optimization of fatigue life of transmission shaft based on response surface method  
..... LIU LongJie ZHAO LiHui SHI ChengMiao ZHENG SongLin WENG Shuo LIU XiangZhen DAI Lei (215)

Research on the weld fatigue strength of frame based on multi-axis theory ..... ZHANG MingYang ZHANG KaiLin (225)

Experimental research of fracture toughness on new rotor steel FW2 at elevated temperature ..... WU HaiLi SUN LinGen (232)

• Research Notes •

Structural design and experimental analysis of adjustable 3-DOF vibrating screen ..... HAN Meng GONG ZhiQiang WANG ChengJun (239)

Fatigue life analysis of power take-off box bolts of dry-mixed mortar transport truck ..... LIU DiHui PEN HaoYi ZHANG HongLiang HE An (245)

Design and dynamic analysis of a new chaotic vibrating screen ..... WANG ChengJun ZHU Tao (250)

JOURNAL OF MECHANICAL STRENGTH

Vol.44 No.1 2022 Bimonthly Started publication in 1975

Sponsored by: Chinese Mechanical Engineering Society Zhengzhou Research Institute of Mechanical Engineering Co., Ltd.

Edited and Published by: Editorial Department of JOURNAL OF MECHANICAL STRENGTH

Address of Editorial Department: No.81, Songshan South Rd., Zhengzhou, Henan, China (Post code: 4 5 0 0 5 2)

Distributed Abroad by: China International Book Trading Corporation (Guoji Shudian) P.O.Box 399, Beijing, China

Journal No.: ISSN 1001—9669 Q4443 (abroad) E-mail: jxqd@ chinajournal.net.cn Editor in Chief: WANG ChangLu  
CN 41—1134/TH



