



Volume 19 Number 3  
March 2022

ISSN 1672-7029  
CN43-1423/U

# 铁道科学与工程学报

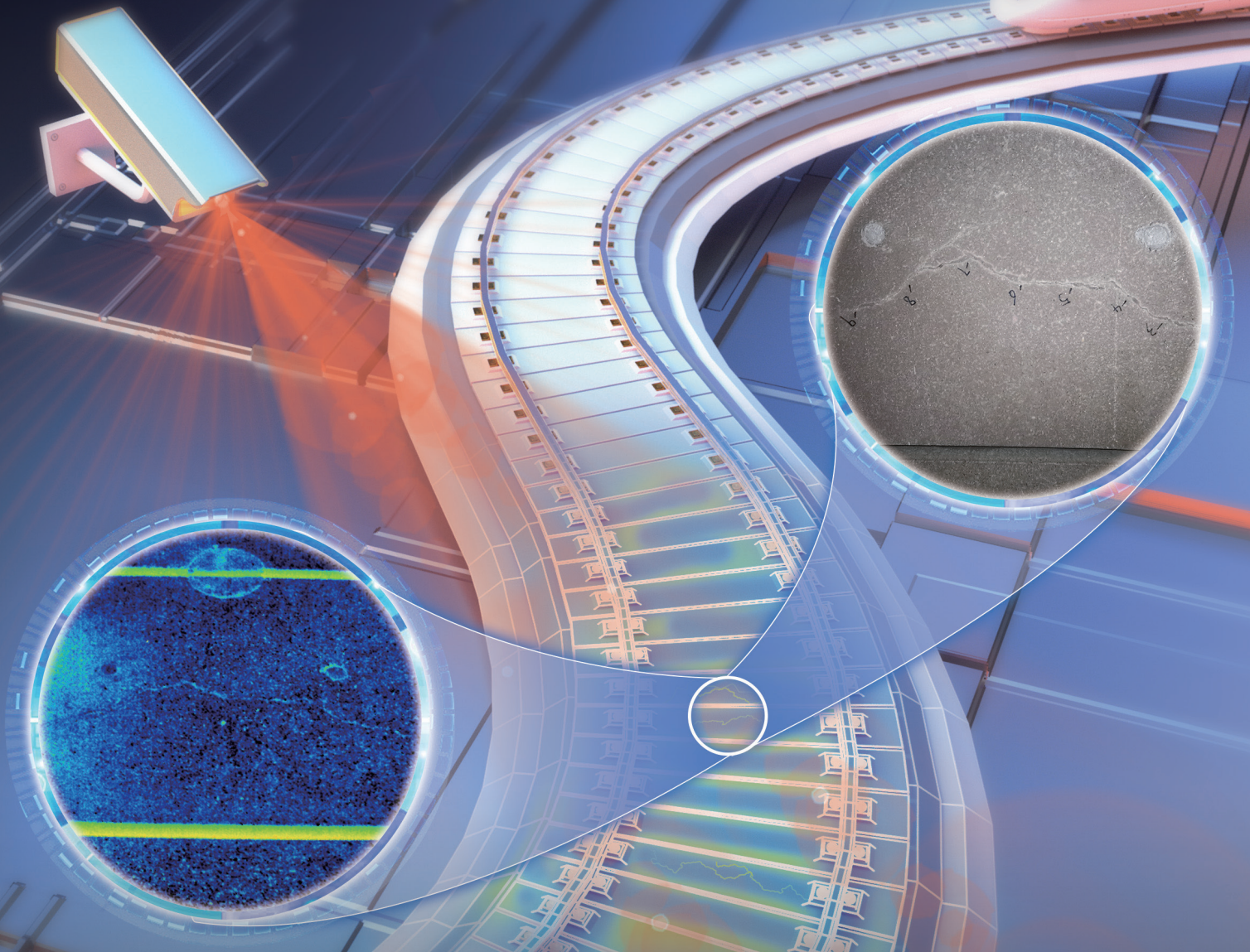
Journal of Railway Science and Engineering

铁道科学与工程学报

Volume 19 Number 3

Pages 570-848

March 2022



中南大学 主办  
中国铁道学会

万方数据

## 目次

### 高速铁路技术

- 无砟轨道板表面裂缝的红外热成像检测方法 ..... 马跃坤,李再伟,赵彦旭,路宏遥,何越磊(579)
- 横风作用下列车抖振力气动导纳风洞试验研究 ..... 张鹏,樊绍文,许洪刚,敬海泉(588)
- 不同编组位置车辆动态密封指数试验研究 ..... 孔繁冰,刘斌,霍文彪,夏玉涛(600)
- 海拔对铁路隧道内瞬变压力及车厢内乘坐舒适性的影响 ..... 黄娟,何洪,杨伟超,王昂,邓锬,曹宏凯(608)
- 动车组受电弓检测装置的气动特性分析 ..... 丁杰,尹亮(616)

### 智慧交通与物流

- 多层次多量度分级权重的枢纽能力利用率评价 ..... 邓连波,徐一鸣,许景,胡心磊,姜大元(625)
- 考虑退票情形的铁路多列车票额分配优化方法 ..... 高一涵,杨婉钰,徐光明(634)
- 铁路客车乘坐舒适性评价研究 ..... 孙效杰,顾鹏飞,李培刚(642)

### 轨道与基础

- 改进型弹性支承块式无砟轨道几何形位研究 ..... 曾志平,彭光钊,王卫东,胡籍,李世业,陈卓(649)
- 减振垫浮置板轨道减振效果评价方法研究 ..... 韦凯,成芳,赵泽明,彭操宇,王显(656)
- 地铁扣件e型弹条受载特征分析 ..... 吴浩,韦凯,郭恭兵,薄栋乾,王平(665)
- 真空预压下软土地基的固结特性和沉降计算方法 ..... 王思刘,张冬琪,陈纪胜,黄欣,王靖博,傅旭东(674)



- 土工格室加筋砂土大型动三轴试验研究 ..... 宋飞, 陈旺盛(683)
- 受柴油污染的高液限红黏土抗剪强度研究 ..... 贺泳超, 陈秋南, 曾奥, 周文兵, 吴岑佳, 龙坤(691)
- 寒区铁路含冰率对碎石集料强度及变形特性影响试验研究 ..... 黎旭, 严颖, 季顺迎(697)
- 混凝土骨料周围水泥浆收缩裂纹形成机制 ..... 蔺海晓, 邵元元, 周淼(706)
- 基于三维扫描与数值技术的粗集料形状特征与级配研究 ..... 李良, 龙广成, 谢友均, 曾晓辉, 潘自立, 东怀正(714)

## 桥梁隧道与结构

- 基于广义柔度曲率矩阵对角指标梁桥结构损伤识别研究 ..... 李杰, 庞栋元, 张军锋, 杜国鹏(722)
- CFRP 及外包钢复合加固震损双层高架桥框架墩地震易损性分析 ..... 许成祥, 吴永昂, 罗恒, 胡序辉(733)
- 胶层厚度对 CFRP 布加固 RC 梁抗弯承载力影响研究 ..... 黄俊豪, 钱永久, 杨华平, 花文文, 黎璟(743)
- 风攻角对车-桥系统气动特性及耦合振动的影响 ..... 王正军, 唐俊峰, 郭向荣, 邹云峰(752)
- 独塔对称自锚式悬索桥筒化解析解研究 ..... 周德, 张羽龙, 王宁波, 黄方林, 周天睿(760)
- 断层影响区内隧道涌水的 Goodman 解析解 ..... 成国文, 李鲇, 傅鹤林, 安鹏涛(768)
- 防水型单层衬砌的叠合面力学性能试验研究 ..... 邓一三, 李刚, 张建伟, 温书亿(776)
- 考虑锚杆加固时围岩较大屈服情况下应力应变非线性解 ..... 荣耀, 孙洋, 朱利晴(784)
- 考虑潮汐荷载作用的沉管隧道竖向位移计算 ..... 周桓竹, 王延宁, 寇晓强(790)
- 地铁列车荷载作用下砖石古塔振动响应研究 ..... 谢伟平, 刘少武, 许暮迪(798)
- 基于修正韧性耗散损伤的非线性疲劳可靠性分析 ..... 高凯, 高鑫(807)

## 智能制造与装备

- 基于频域结构应力法的牵引电机结构振动疲劳分析 ..... 申政, 方吉, 汤黎明, 杨敏, 杨健, 王耀亭(814)
- 蓄电池式装载机双电机驱动系统参数匹配优化 ..... 黄俊迪, 杨忠炯, 周立强(822)
- 基于光滑整形自抗扰的双摆起重机消摆控制 ..... 王辉堤, 肖友刚, 李蔚, 韩锬(831)
- 基于深度强化学习的车车通信智能频谱共享 ..... 赵军辉, 陈焱, 张青苗(841)

责任编辑：涂 鹏      英文编审：杨小礼

期刊基本参数：CN43-1423/U\*2004\*m\*A4\*270\*zh\*P\*¥50.00\*1500\*32\*2022-03

## CONTENTS

### High-speed Railway Technology

- Infrared thermal imaging detection method for surface cracks of ballastless track slab  
.....MA Yuekun, LI Zaiwei, ZHAO Yanxu, LU Hongyao, HE Yuelei(579)
- Wind tunnel test on aerodynamic admittances of train buffeting force under cross wind  
.....ZHANG Peng, FAN Shaowen, XU Honggang, JING Haiquan(588)
- Experimental study on dynamic airtightness index of vehicles in different marshalling positions  
.....KONG Fanbing, LIU Bin, HUO Wenbiao, XIA Yutao(600)
- Influence of altitude on transient pressure and ride comfort in railway tunnel  
.....HUANG Juan, HE Hong, YANG Weichao, WANG Ang, DENG E, CAO Hongkai(608)
- Analysis of aerodynamic characteristics of pantograph detection device of EMU..... DING Jie, YIN Liang(616)

### Intelligent Transportation and Logistics

- Evaluation method of hub capacity utilization based on multiple layers and measurements  
.....DENG Lianbo, XU Yiming, XU Jing, HU Xinlei, JIANG Dayuan(625)
- An optimization method for railway of multi-train seat allocation problem with cancellation and refund policy  
.....GAO Yihan, YANG Wanyu, XU Guangming(634)
- Riding comfort ability evaluation of railway passenger cars .....SUN Xiaojie, GU Pengfei, LI Peigang(642)

### Track and Foundation

- Geometry comparative study on the improved low vibration tracks  
.....ZENG Zhiping, PENG Guangzhao, WANG Weidong, HU Ji, LI Shiye, CHEN Zhuo(649)
- Research on the evaluation method of vibration reduction effect of damping pad floating slab track  
.....WEI Kai, CHENG Fang, ZHAO Zeming, PENG Caoyu, WANG Xian(656)
- Analysis on loading characteristics of e-type clip of rail fastener  
.....WU Hao, WEI Kai, GUO Gongbing, BO Dongqian, WANG Ping(665)
- Consolidation characteristics and settlement calculation method of soft soil foundation under vacuum preloading  
.....WANG Siliu, ZHANG Dongqi, CHEN Jisheng, HUANG Xin, WANG Jingbo, FU Xudong(674)
- Research on large-scale dynamic triaxial test of geocell-reinforced sand..... SONG Fei, CHEN Wangsheng(683)
- Shear strength of high liquid limit red clay contaminated by diesel oil  
.....HE Yongchao, CHEN Qiunan, ZENG Ao, ZHOU Wenbing, WU Cenjia, LONG Kun(691)

- Influence of ice content on strength and deformation characteristics of frozen ballast aggregate in cold region railway by experiments .....LI Xu, YAN Ying, JI Shunying(697)
- Crack formation mechanism around concrete aggregate in cement paste shrinkage .....LIN Haixiao, SHAO Yuanyuan, ZHOU Miao(706)
- Research on the shape feature and gradation of coarse aggregate based on 3D scanning and numerical technology .....LI Liang, LONG Guangcheng, XIE Youjun, ZENG Xiaohui, PAN Zili, DONG Huaizheng(714)

### **Bridge,Tunnel and Structure**

- Structural damage identification of beam bridges based on diagonal index of generalized flexibility curvature matrix .....LI Jie, PANG Dongyuan, ZHANG Junfeng, DU Guopeng(722)
- Seismic fragility analysis of seismic-damaged double-deck viaducts' frame piers strengthened with CFRP and enveloped steel .....XU Chengxiang, WU Yongang, LUO Heng, HU Xuhui(733)
- Influence of adhesive thickness on the flexural capacity of reinforced concrete beams strengthened with CFRP sheets .....HUANG Junhao, QIAN Yongjiu, YANG Huaping, HUA Wenwen, LI Jing(743)
- Influence of wind attack angle on aerodynamic characteristics and coupled vibration of vehicle-bridge system .....WANG Zhengjun, TANG Junfeng, GUO Xiangrong, ZOU Yunfeng(752)
- Simplified analytical solution of symmetrical self-anchored suspension bridge with single tower .....ZHOU De, ZHANG Yulong, WANG Ningbo, HUANG Fanglin, ZHOU Tianrui(760)
- Goodman analytical solution of tunnel inflow in fault-affected area .....CHENG Guowen, LI Jie, FU Helin, AN Pengtao(768)
- Study on composite surface of waterproof single-layer lining by tests .....DENG Yisan, LI Gang, ZHANG Jianwei, WEN Shuyi(776)
- Nonlinear solution of stress and strain for major yielding of surrounding rock considering bolt reinforcement .....RONG Yao, SUN Yang, ZHU Liqing(784)
- Calculation of vertical displacement of immersed tube tunnel under tidal load .....ZHOU Huanzhu, WANG Yanning, KOU Xiaoqiang(790)
- Vibration response of ancient masonry pagoda under metro train load ..... XIE Weiping, LIU Shaowu, XU Mudi(798)
- Nonlinear fatigue reliability analysis based on improved toughness exhaustion damage .....GAO Kai, GAO Xin(807)

### **Intelligent Manufacturing and Equipment**

- Vibration fatigue analysis of traction motor structure based on frequency domain structural stress method .....SHEN Zheng, FANG Ji, TANG Liming, YANG Min, YANG Jian, WANG Yaoting(814)
- Parameter matching optimization of double motor drive system of battery loader .....HUANG Jundi, YANG Zhongjiong, ZHOU Liqiang(822)
- Anti-swing control of double-pendulum crane based on command smoothing and active disturbance rejection control .....WANG Huidi, XIAO Yougang, LI Wei, HAN Kun(831)
- Intelligent spectrum sharing for train-to-train communication based on deep reinforcement learning .....ZHAO Junhui, CHEN Yao, ZHANG Qingmiao(841)