

百种中国杰出学术期刊

ISSN1002-0268

GJKEER

# 公路交通科技

JOURNAL OF HIGHWAY AND TRANSPORTATION  
RESEARCH AND DEVELOPMENT

2020年12月 第37卷 第12期  
Vol. 37 No. 12

ISSN 1002-0268



9 771002 026206

中华人民共和国交通运输部主管  
交通运输部公路科学研究所主办

## 目 次

## • 道路工程 •

- 不同活化温度橡胶沥青微观结构特性与宏观性能联系研究 ..... 张广泰 易 宝 张晓旭 章金鹏 (1)  
基于温度影响的水泥混凝土路面层间接触状态研究 ..... 李思李 田 波 (9)  
基于 MEPDG 的组合式基层沥青路面车辙预估 ..... 陈岳峰 (15)  
加筋土界面特性拉拔试验仪的研发进展 ..... 杨和平 万 亮 肖 杰 (24)  
砂土静动力液化特性的数值模拟 ..... 谢亦红 尹祖超 李 亮 蔡 鹏 (33)  
基于离散元法的煤系土剪切带演化宏细观分析 ..... 张 榜 丰浩然 习明星 吴 灿 张 鸿 (40)  
地震作用下土质边坡稳定性图表 ..... 朱剑宏 (47)

## • 桥梁工程 •

- 钢筋混凝土 T 形柱在压 - 弯 - 剪 - 扭复合作用下的抗压试验研究 ..... 喻志刚 单德山 (52)  
张弦桥结构静力分析方法与受力特点研究 ..... 周光伟 钱长照 (63)  
基于混合萤火虫 - 模拟退火算法的斜拉桥纵向振动控制与黏滞阻尼器优化设计  
..... 龙关旭 辛公锋 徐兴伟 任士朴 苏文明 (70)

- 基于深度学习的复杂场景下混凝土表面裂缝识别研究 ..... 雷斯达 曹鸿猷 康俊涛 (80)

## • 隧道工程 •

- 隧道穿越断层破碎带突水突泥机理模拟试验研究 ..... 李玉生 翁贤杰 王人杰 张龙生 张连震 (89)  
不同覆跨比下洞桩法导洞开挖引发地表变形规律研究 ..... 刘运思 牟天光 郭 磊 杨玉平 杜宪武 (100)  
考虑岩体自重的下伏溶洞岩石地基冲切分析 ..... 刘泽宇 雷 勇 邓加政 刘一新 谭 豪 (108)

## • 智能交通 •

- 基于自编码器与 k-means 聚类的视频交通状态自动识别 ..... 彭 博 张媛媛 唐 聚 谢济铭 王玉婷 (117)  
带有丢失数据补偿的高速公路入口匝道 MFAC 方案 ..... 闫帅明 卜旭辉 朱盼盼 许漂漂 (124)

## • 汽车工程 •

- 基于自适应奇异值分解无迹卡尔曼滤波算法的车辆质心侧偏角估计 ..... 王 姝 赵 轩 余 强 (133)  
车身点焊、抽芯铆接及胶铆接头的拉剪强度对比分析 ..... 高剑峰 黄忠水 张 浩 胡青平 (142)  
基于实际行驶工况的纯电动汽车续驶里程在线估算方法研究 ..... 魏 恒 何 超 李加强 赵龙庆 (149)

## CONTENTS

Study on Relationship between Microstructure Properties and Macro-mechanical Characteristics of Rubber Asphalt at Different Activation Temperatures .....	ZHANG Guang-tai, YI Bao, ZHANG Xiao-xu, ZHANG Jin-peng (1)
Study on Interlayer Contact State of Cement Concrete Pavement Based on Temperature Influence .....	LI Si-li, TIAN Bo (9)
Predicting Rut of Composite Base Asphalt Pavement Based on MEPDG .....	CHEN Yue-feng (15)
Study Progress of Pull-out Test Apparatus for Interface Characteristics of Reinforced Soil .....	YANG He-ping, WAN Liang, XIAO Jie (24)
Numerical Simulation of Static and Dynamic Liquefaction of Sand .....	XIE Yi-hong, YIN Zu-chao, LI Liang, CAI Peng (33)
Macro-meso Analysis on Coal Measure Soil Shear Band Evolution Based on Discrete Element Method .....	ZHANG Bang, FENG Hao-ran, XI Ming-xing, WU Can, ZHANG Hong (40)
Stability Charts for Soil Slopes under Seismic Excitation .....	ZHU Jian-hong (47)
Experimental Study on Compression Behaviour of RC T-shaped Columns under Combined Loads of Compression-bending-shear-torsion .....	YU Zhi-gang, SHAN De-shan (52)
Study on Static Structural Analysis Method and Mechanical Characteristics of String-tensioned Bridge .....	ZHOU Guang-wei, QIAN Chang-zhao (63)
Longitudinal Vibration Control and Optimization Design of Viscous Dampers for Cable-stayed Bridges Based on Hybrid Firefly Simulated Annealing Algorithm .....	LONG Guan-xu, XIN Gong-feng, XU Xing-wei, REN Shi-pu, SU Wen-ming (70)
Study on Concrete Surface Crack Recognition in Complex Scenario Based on Deep Learning .....	LEI Si-da, CAO Hong-you, KANG Jun-tao (80)
Experimental Study on Simulating Mechanism of Water and Mud Inrush in Tunnel Crossing Fault Fracture Zone .....	LI Yu-sheng, WENG Xian-jie, WANG Ren-jie, ZHANG Long-sheng, ZHANG Lian-zhen (89)
Study on Rule of Surface Deformation Caused by Excavation of Pilot Tunnel under Different Thickness-span Ratio Using Hole Pile Method .....	LIU Yun-si, MOU Tian-guang, GUO Lei, YANG Yu-ping, DU Xian-wu (100)
Analysis on Punching of Underlying Rock Foundation with Karst Cave Considering Self-weight of Rock Mass .....	LIU Ze-yu, LEI Yong, DENG Jia-zheng, LIU Yi-xin, TAN Hao (108)
Automatic Traffic State Recognition from Videos Based on Autoencoder and $k$ -means Clustering .....	PENG Bo, ZHANG Yuan-yuan, TANG Ju, XIE Ji-ming, WANG Yu-ting (117)
A MFAC Scheme with Dropout Data Compensation for Expressway On-ramp .....	YAN Shuai-ming, BU Xu-hui, ZHU Pan-pan, XU Piao-piao (124)
Estimation of Vehicle Centroid Sideslip Angle Based on ASVD-UKF Algorithm .....	WANG Shu, ZHAO Xuan, YU Qiang (133)
Comparative Analysis on Tensile-shear Strength among Spot Welded, Blind Riveted and Bond Riveted Joints on Auto Body .....	GAO Jian-feng, HUANG Zhong-shui, ZHANG Hao, HU Qing-ping (142)
Study on Method for Online Estimating Driving Range of Battery Electric Vehicle Based on Actual Driving Cycle .....	WEI Heng, HE Chao, LI Jia-qiang, ZHAO Long-qing (149)