

美国《工程索引》(EI Compendex)刊源

CODEN JDXGAH ISSN 1671-5497  
CN 22-1341/T



# 吉林大学学报

## 工学版

Journal of Jilin University  
Engineering and Technology Edition



**2/2020**  
第50卷 第2期  
Vol.50 No.2

# 吉林大学学报(工学版)

第50卷第2期

2020年3月

## 目次

### 车辆工程·机械工程

- 各向异性刚度对轮胎力学特性及车辆操纵性的影响·····李小雨, 许男, 仇韬, 等 (389)
- 静气动弹性影响下带小翼汽车尾翼的设计与优化·····赖晨光, 王擎宇, 胡博, 等 (399)
- 基于排气热管理的柴油机氧化催化器升温特性·····王建, 许鑫, 顾晗, 等 (408)
- 纤维增强复合材料在汽车覆盖件中的应用·····叶辉, 刘畅, 闫康康 (417)
- 后视镜造型对前侧窗气动噪声的影响·····陈鑫, 王宁, 沈传亮, 等 (426)
- 基于克里金和粒子群算法的装载机铲掘轨迹规划·····于向军, 槐元辉, 李学飞, 等 (437)
- 基于双向长短期记忆模型的起重机智能操控方法·····倪涛, 刘海强, 王林林, 等 (445)
- 纯电动铲运机弓网续能系统设计与动态特性仿真·····李银平, 靳添絮, 刘立 (454)
- 基于快速非奇异终端滑模的机械臂轨迹跟踪方法·····王伟, 赵健廷, 胡宽荣, 等 (464)
- 气动柔性六足机器人定半径转弯实现方法与稳定性·····赵云伟, 耿德旭, 刘晓敏, 等 (472)
- 椭圆齿轮传动系统非线性动态特性分析·····董长斌, 刘永平, 魏永峭, 等 (483)
- 混合润滑状态下齿轮接触刚度·····程功, 肖科, 王家序, 等 (494)

### 材料科学与工程

- 轨道车辆窗下补强板冲压成形模拟·····谷净巍, 陈琳, 赵立辉, 等 (504)
- 6082铝合金超厚板搅拌摩擦焊接头组织与性能·····宫文彪, 朱芮, 郝新哲, 等 (512)
- 等温热处理温度对超级贝氏体组织与性能的影响·····修文翠, 吴化, 韩英, 等 (520)

### 交通运输工程·土木工程

- 变覆盖半径下城市轨道交通维护保障网络设计模型·····孙宝凤, 姜源, 郑黎黎, 等 (526)
- 城市潮汐车道优化设计的双层规划模型·····贾洪飞, 丁心茹, 杨丽丽 (535)
- 考虑空间异质性的建成环境对通勤方式选择的影响·····尹超英, 邵春福, 王晓全, 等 (543)
- 考虑行人差异性的人群疏散最优决策理论模型·····张大伟, 祝海涛 (549)
- 基于生存分析的城市桥梁使用性能衰变模型·····方宇, 孙立军 (557)
- 基于数据挖掘技术的桥梁结构健康状态检测·····武立群, 张亮亮 (565)
- 应用新数据同化算法的桥梁极值应力预测·····樊学平, 屈广, 刘月飞 (572)
- 钢-混凝土组合梁的固有频率及其振型·····张云龙, 郭阳阳, 王静, 等 (581)
- 剑麻纤维水泥加固土的路用性能试验·····戴文亭, 司泽华, 王振, 等 (589)
- 基于分形理论的沥青路面层间机械摩阻强度行为·····毛昱, 李萍, 念腾飞, 等 (594)
- 高性能树脂混凝土加固混凝土偏压柱承载力理论分析·····蒲黔辉, 刘静文, 赵刚云, 等 (606)
- 湿度有限波动下非饱和黏土路基动态回弹模量·····凌建明, 陈卉, 钱劲松, 等 (613)



高铁站场宽路基复合地基二维模型适用性分析 .....	李 阳, 王连俊	(621)
高预紧力后张法全长锚固支护力学分析 .....	陶文斌, 侯俊领, 陈铁林, 等	(631)
微生物矿化作用下混凝土裂缝修复与性能补偿 .....	袁 杰, 陈 歆, 何虹霖, 等	(641)
湿热养护时掺合料对玻纤增强水泥性能的影响 .....	何 娟, 程从密, 杨毅男, 等	(648)
单向带抗剪键叠合板的受力性能试验 .....	李 明, 王浩然, 赵唯坚	(654)
<b>计算机科学与技术</b>		
水下视频图像清晰化方法 .....	程艳芬, 姚丽娟, 袁 巧, 等	(668)
基于深度学习的CT影像脑卒中精准分割 .....	郜峰利, 陶 敏, 李雪妍, 等	(678)
知识图谱嵌入中的自适应筛选 .....	欧阳丹彤, 马 骢, 雷景佩, 等	(685)
基于离散优化算法和机器学习的传感云入侵检测 .....	刘洲洲, 尹文晓, 张倩昀, 等	(692)
<b>通信与控制工程</b>		
基于托普利兹矩阵集重构的相干信源波达方向估计 .....	张 薇, 韩 勇, 金 铭, 等	(703)
基于车间通信的车辆编队控制方法设计 .....	马 彦, 黄健飞, 赵海艳	(711)
基于分布式二维激光测距仪的室内行人检测与跟踪 .....	胡钊政, 李招康, 陶倩文	(719)
<b>农业工程·仿生工程</b>		
刚柔耦合式小麦脱粒弓齿设计及试验 .....	付 君, 张屹晨, 程 超, 等	(730)
青饲玉米收获机械切碎装置参数优化试验 .....	薛 钊, 付 君, 陈 志, 等	(739)
覆草冬种马铃薯收获机稻草分离机构设计与试验 .....	陈学深, 陈 涛, 武 涛, 等	(749)
仿生张拉机械腿及其抗冲击性能仿真分析 .....	钱志辉, 吴思杰, 王 强, 等	(758)

# Journal of Jilin University (Engineering and Technology Edition)

Vol. 50 No. 2

Mar. 2020

## Contents

- Influence of anisotropic stiffness on tire mechanical properties and vehicle handling characteristics under combined slip situations .....LI Xiao-yu, XU Nan, QIU Tao, et al. (389)
- Design and optimization of a car empennage with winglet under effect of static aeroelasticity .....LAI Chen-guang, WANG Qing-yu, HU Bo, et al. (399)
- Heating characteristics of DOC based on exhaust thermal management of diesel engine .....WANG Jian, XU Xin, GU Han, et al. (408)
- Application of fiber reinforced composite in auto-body panel .....YE Hui, LIU Chang, YAN Kang-kang(417)
- Effect of rearview mirror modeling on aerodynamic noise of front window .....CHEN Xin, WANG Ning, SHEN Chuan-liang, et al. (426)
- Shoveling trajectory planning method for wheel loader based on kriging and particle swarm optimization .....YU Xiang-jun, HUAI Yuan-hui, LI Xue-fei, et al. (437)
- Intelligent manipulation method of crane based on BiLSTM model .....NI Tao, LIU Hai-qiang, WANG Lin-lin, et al. (445)
- Design and dynamic characteristic simulation of pantograph-catenary continuous energy system for pure electric LHD .....LI Yin-ping, JIN Tian-xu, LIU Li(454)
- Trajectory tracking of robotic manipulators based on fast nonsingular terminal sliding mode .....WANG Wei, ZHAO Jian-ting, HU Kuan-rong, et al. (464)
- Implementation and stability on turning with constant radius of pneumatic flexible hexapod robot .....ZHAO Yun-wei, GENG De-xu, LIU Xiao-min, et al. (472)
- Analysis of nonlinear dynamic characteristic of elliptic gear transmission system .....DONG Chang-bin, LIU Yong-ping, WEI Yong-qiao, et al. (483)
- Gear contact stiffness under mixed lubrication status .....CHENG Gong, XIAO Ke, WANG Jia-xu, et al. (494)
- Simulation of stamping process of some reinforcement plate below windows of railway vehicles .....GU Zheng-wei, CHEN Lin, ZHAO Li-hui, et al. (504)
- Microstructure and properties of 6082 aluminum alloy ultra-thick plate prepared by friction stir weld .....GONG Wen-biao, ZHU Rui, QIE Xin-zhe, et al. (512)
- Effect of isothermal heat treatment temperature on microstructure and mechanical properties of super bainite .....XIU Wen-cui, WU Hua, HAN Ying, et al. (520)
- Modified design model of maintenance network for urban rail transit system with variable radius covering .....SUN Bao-feng, JIANG Yuan, ZHENG Li-li, et al. (526)
- Bi-level programming model for optimization design of tidal lane .....JIA Hong-fei, DING Xin-ru, YANG Li-li(535)
- Influence of built environment on commuting mode choice considering spatial heterogeneity .....YIN Chao-ying, SHAO Chun-fu, WANG Xiao-quan, et al. (543)
- An optimization-based evacuation model considering pedestrian heterogeneity .....ZHANG Da-wei, ZHU Hai-tao(549)
- Urban bridge performance decay model based on survival analysis .....FANG Yu, SUN Li-jun(557)
- Health detection of bridge structures based on data mining technology .....WU Li-qun, ZHANG Liang-liang(565)
- Bridge extreme stress prediction based on new data assimilation algorithm .....FAN Xue-ping, QU Guang, LIU Yue-fei(572)
- Natural frequency and mode of vibration of steel-concrete composite beam .....ZHANG Yun-long, GUO Yang-yang, WANG Jing, et al. (581)
- Test on road performance of soils stabilized by sisal fiber and ionic soil stabilizer with cement .....DAI Wen-ting, SI Ze-hua, WANG Zhen, et al. (589)

- Mechanical friction intensity behavior of asphalt pavement based on fractal theory  
 .....MAO Yu, LI Ping, NIAN Teng-fei, et al. (594)
- Theoretical analysis of bearing capacity of concrete eccentric compressive column reinforced by HTRCS  
 .....PU Qian-hui, LIU Jing-wen, ZHAO Gang-yun, et al. (606)
- Dynamic resilient modulus for unsaturated clay soils considering effect of limited moisture content fluctuation  
 .....LING Jian-ming, CHEN Hui, QIAN Jin-song, et al. (613)
- Applicability analysis of two dimensional modeling methods for wide embankment composite foundation in  
 high speed railway stations .....LI Yang, WANG Lian-jun(621)
- Mechanical analysis of full-length anchorage with high pretension post-tensioning method  
 .....TAO Wen-bin, HOU Jun-ling, CHEN Tie-lin, et al. (631)
- Repair and rejuvenation of cracked concrete by microbologically-induced calcite-precipitation  
 .....YUAN Jie, CHEN Xin, HE Hong-lin, et al. (641)
- Effect of admixture on properties of GRC under hydrothermal curing conditions  
 .....HE Juan, CHENG Cong-mi, YANG Yi-nan, et al. (648)
- Experimental of loading-bearing capacity of one-way laminated slab with shear keys  
 .....LI Ming, WANG Hao-ran, ZHAO Wei-jian(654)
- Clearing strategy of underwater video image .....CHENG Yan-fen, YAO Li-juan, YUAN Qiao, et al. (668)
- Accurate segmentation of stroke in CT image based on deep learning  
 .....GAO Feng-li, TAO Min, LI Xue-yan, et al. (678)
- Knowledge graph embedding with adaptive sampling .....OUYANG Dan-tong, MA Cong, LEI Jing-pei, et al. (685)
- Sensor cloud intrusion detection based on discrete optimization algorithm and machine learning  
 .....LIU Zhou-zhou, YIN Wen-xiao, ZHANG Qian-yun, et al. (692)
- Toeplitz matrices reconstruction based DOA estimation for coherent signals  
 .....ZHANG Wei, HAN Yong, JIN Ming, et al. (703)
- Method of vehicle formation control based on vehicle to vehicle communication  
 .....MA Yan, HUANG Jian-fei, ZHAO Hai-yan(711)
- Indoor pedestrian detection and tracking from distributed two-dimensional laser range finders  
 .....HU Zhao-zheng, LI Zhao-kang, TAO Qian-wen(719)
- Design and experiment of bow tooth of rigid flexible coupling for wheat threshing  
 .....FU Jun, ZHANG Yi-chen, CHENG Chao, et al. (730)
- Optimization experiment on parameters of chopping device of forage maize harvester  
 .....XUE Zhao, FU Jun, CHEN Zhi, et al. (739)
- Design and experiment on harvester for winter planting potato of straw coverage  
 .....CHEN Xue-shen, CHEN Tao, WU Tao, et al. (749)
- Design of bionic tensegrity leg and simulation analysis of its impact resistance  
 .....QIAN Zhi-hui, WU Si-jie, WANG Qiang, et al. (758)

- ☆《中文核心期刊要目总览》收录期刊
- ☆中国科技核心期刊
- ☆中国科学引文数据库 (CSCD) 核心期刊
- ★美国《工程索引》(EI Compendex) 收录期刊
- ★美国《化学文摘》(CA) 收录期刊
- ★俄罗斯《文摘杂志》(AJ) 收录期刊
- ★美国《剑桥科学文摘》(CSA) 收录期刊
- ☆中国知网收录期刊
- ☆中国科技论文在线收录期刊
- ☆《中国学术期刊文摘》等国内十多种文摘收录期刊

# 吉林大学学报 (工学版)

JILIN DAXUE XUEBAO (GONGXUE BAN)

JOURNAL OF JILIN UNIVERSITY  
(Engineering and Technology Edition)

双月刊 1957年创刊

Bimonthly, Started in 1957

第50卷 第2期 (总第208期) 2020年3月

Vol.50 No.2(Sum 208) Mar. 2020

主管单位 中华人民共和国教育部

Responsible Institution Ministry of Education, the  
People's Republic of China

主办单位 吉林大学

Sponsored by Jilin University

主 编 任露泉

Editor-in-Chief Ren Lu-quan

常务副主编 陈永杰

Standing Associate Chief Editor Chen Yong-jie

编辑出版 吉林大学学报(工学版)编辑部  
(长春市人民大街5988号130022)

Edited by Editorial Board of Journal of Jilin  
University(Engineering and Technology Edition)  
(5988 Renmin Street, Changchun 130022, China)

电话: 0431-85095297

Tel: 86-0431-85095297

E-mail: xbgxb@jlu.edu.cn

E-mail: xbgxb@jlu.edu.cn

http://xuebao.jlu.edu.cn/gxb

http://xuebao.jlu.edu.cn/gxb

印 刷 吉林省保隆冠彩印刷有限公司

Printed by Jilin Baolong Guancai Printing Co., Ltd.

发行范围 公开发行

Issue Scope Public issue

国内发行 吉林省邮政报刊发行公司

Domestic Distributor Distribution Company for Newspaper and  
Journals of Jilin Province

国外发行 中国国际图书贸易总公司

Overseas Distributor China International Book Trading Corporation  
(P.O.Box 399, Beijing 100044, China)

(北京399信箱邮编 100044)

中国标准连续出版物号 ISSN 1671-5497  
CN 22-1341/T

发行代号 国内 12-46  
国际 BM4549

国内定价 60.00元/期  
360.00元/年

