



Ei Compendex核心期刊  
RCCSE中国权威学术期刊

ISSN 1005-3026  
CN 21-1344/T  
CODEN DDXKEZ

东北大学学报

# 东北大学学报

## 自然科学版

Vol.42 No.4

自然科学版

Vol.42 No.4



JOURNAL OF  
NORTHEASTERN UNIVERSITY  
NATURAL SCIENCE

2021-04-15



中国·沈阳  
Shenyang China

4  
2021

# 东北大学学报(自然科学版)

Dongbei Daxue Xuebao (Ziran Kexue Ban)

第 42 卷 第 4 期 (总第 367 期) 2021 年 4 月

## 目 次

### 信 息 与 控 制

- 基于事件触发的 TCP 网络滑模控制 ..... 井元伟, 白云(457)
- 基于 LMI 的离散广义系统的容许性和鲁棒镇定性 ..... 张雪峰, 靳凯净(463)
- 基于动态温度调制的氧化锌纳米气体传感器敏感特性分析 ..... 苑振宇, 类延峰, 董 慧, 孟凡利(469)
- 基于强化学习的三维游戏控制算法 ..... 孟 球, 沈 凝, 祁殷俏, 张昊园(478)
- 基于特征空间变换与 LSTM 的中短期电煤价格预测 ..... 廖志伟, 陈琳韬, 黄杰栋, 庄 竞(483)
- 状态空间下列车区段晚点预测误差控制 ..... 张路凯, 冯雪松(494)
- 基于 OS - SASP 算法的欠定盲源分离 ..... 季 策, 张 欢, 耿 蓉, 李伯群(501)
- 基于迁移学习的贝叶斯网络参数学习方法 ..... 王 姝, 关展旭, 王 晶, 孙晓辉(509)
- 基于分布式压缩感知的自适应距离选通三维成像 ..... 张 娜, 王 璐, 程军娜, 田济荣(516)
- 基于改进遗传算法的空间信息网恢复策略 ..... 刘 军, 杨青文, 王金涛, 刘华伟(524)
- 基于模拟退火粒子群算法的 MIT 图像重建方法 ..... 杨 丹, 芦 甜, 郭文欣, 王 旭(531)

### 机 械 工 程

- 原位生成 NbC 增强 YCF102 熔覆层热力学与耐磨性研究 ..... 郝文超, 宋博学, 梁赢东, 于天彪(538)
- 基于 Copula 的车轮 Gamma 退化过程 ..... 吕 昊, 金雄程, 林录祥(544)

### 资 源 与 土 木 工 程

- 右江盆地都安组白云岩成因及其地质意义 ..... 张永利, 苗卓伟, 巩恩普, 张 倩(550)
- 波速赋值范围对 PSO 定位算法精度的影响 ..... 李元辉, 陈治洋, 徐世达(561)
- 包含岩石临界状态的 Mohr - Wedge 准则适用性研究 ..... 张 晶, 任凤玉, 何荣兴, 欧阳治华(567)
- 高温熔融金属作业安全完整性评价 ..... 吴雅菊, 许开立, 王若茵, 徐晓虎(576)

### 管 理 科 学

- 基于 Copula 函数的中国房地产业与银行业风险传染研究 ..... 苑 莹, 刘 睿, 许 波(582)
- OFDI 逆向技术溢出对中国出口竞争力的影响——基于技术差距视角的实证分析 ..... 宁 焯, 崔欣欣, 王金婷(589)
- 基于分形理论的辽宁城市群人地关系特征时空演变 ..... 王雨枫, 曹洪军(598)

### 生 物 工 程

- 木茼蒿 *SOC1* 同源基因的克隆及表达分析 ..... 马月萍, 胡 静(604)

# JOURNAL OF NORTHEASTERN UNIVERSITY

## ( NATURAL SCIENCE )

Volume 42 Number 4 ( Sum 367 ) April 2021

### CONTENTS

#### Information & Control

- Sliding Mode Control of TCP Network Based on Event-Triggered ..... JING Yuan-wei, BAI Yun(457)
- Admissibility and Robust Stabilization of Discrete Singular Systems Based on LMI ..... ZHANG Xue-feng, JIN Kai-jing(463)
- Sensitivity Analysis of ZnO Nanometer Gas Sensor Based on Dynamic Temperature Modulation .....  
..... YUAN Zhen-yu, LEI Yan-feng, DONG Hui, MENG Fan-li(469)
- Control Algorithm of Three-Dimensional Game Based on Reinforcement Learning .....  
..... MENG Lu, SHEN Ning, QI Yin-qiao, ZHANG Hao-yuan(478)
- Medium and Short-Term Electricity Coal Price Forecast Based on Feature Space Transformation and LSTM .....  
..... LIAO Zhi-wei, CHEN Lin-tao, HUANG Jie-dong, ZHUANG Jing(483)
- Error Control of Delay Prediction in Railway Sections Under State Space ..... ZHANG Lu-kai, FENG Xue-song(494)
- Underdetermined Blind Source Separation Based on OS-SASP Algorithm ..... JI Ce, ZHANG Huan, GENG Rong, LI Bo-qun(501)
- Bayesian Network Parameter Learning Method Based on Transfer Learning .....  
..... WANG Shu, GUAN Zhan-xu, WANG Jing, SUN Xiao-hui(509)
- Adaptive Range-Gated 3D Imaging Based on Distributed Compressed Sensing .....  
..... ZHANG Na, WANG Lu, CHENG Jun-na, TIAN Ji-rong(516)
- Spatial Information Network Restoration Strategy Based on Improved Genetic Algorithm .....  
..... LIU Jun, YANG Qing-wen, WANG Jin-tao, LIU Hua-wei(524)
- MIT Image Reconstruction Method Based on Simulated Annealing Particle Swarm Algorithm .....  
..... YANG Dan, LU Tian, GUO Wen-xin, WANG Xu(531)

#### Mechanical Engineering

- Research on Thermodynamics and Wear Resistance of In-situ NbC Reinforced YCF102 Cladding Layer .....  
..... XI Wen-chao, SONG Bo-xue, LIANG Ying-dong, YU Tian-biao(538)
- Wheel Gamma Degradation Process Based on Copula Function ..... LYU Hao, JIN Xiong-cheng, LIN Lu-yang(544)

#### Resources & Civil Engineering

- Genesis of Dolostone in Du'an Formation of Youjiang Basin and Its Geological Significance .....  
..... ZHANG Yong-li, MIAO Zhuo-wei, GONG En-pu, ZHANG Qian(550)
- Influence of Wave Velocity Range on Accuracy of PSO Location Algorithm ..... LI Yuan-hui, CHEN Zhi-yang, XU Shi-da(561)
- Research on Applicability of the Mohr-Wedge Criterion Including Rock Critical State .....  
..... ZHANG Jing, REN Feng-yu, HE Rong-xing, OUYANG Zhi-hua(567)
- Safety Integrity Evaluation of High Temperature Molten Metal Operation ..... WU Ya-ju, XU Kai-li, WANG Ruo-jun, XU Xiao-hu(576)

#### Management Science

- Research on Risk Contagion of China's Real Estate Industry and Banking Industry Based on Copula Function .....  
..... YUAN Ying, LIU Rui, XU Bo(582)
- Impact of OFDI Reverse Technology Spillover on China's Export Competitiveness: An Empirical Analysis from Perspective of Technological Gap ..... NING Ye, CUI Xin-xin, WANG Jin-ting(589)
- Spatial-Temporal Evolution of Human-Land Relationship in Liaoning's City Groups Based on Fractal Theory .....  
..... WANG Yu-feng, CAO Hong-jun(598)

#### Biological Engineering

- Cloning and Expression Analysis of *SOC1* Homologue Gene in *Argyranthemum Frutescens* ..... MA Yue-ping, HU Jing(604)

Serial parameters: CN21 - 1344/T \* 1955 \* m \* A4 \* 152 \* zh \* P \* ¥ 15.00 \* 1000 \* 21 \* 2021 - 04

Editor of this issue: AN Bi-li