

中国科技核心期刊  
德国《数学文摘》(ZM)  
JST 日本科学技术振兴机构数据库  
美国EBSCO学术数据库



# 首都师范大学学报

(自然科学版)

JOURNAL OF CAPITAL NORMAL UNIVERSITY  
(NATURAL SCIENCE EDITION)

首都师范大学学报(自然科学版)

二〇二二年

第四十三卷

第四期

ISSN 1004-9398  
CN 11-3189/N

2022年 8月 第43卷 第4期

# 首都师范大学学报(自然科学版)

Shoudu Shifan Daxue Xuebao(Ziran Kexue Ban)

2022年8月

第43卷 第4期

## 目 次

### 研究论文

- 移动边界域上一类退化波动方程的高精度格式 ..... 刘 颖,谢伟松,何振鹏(1)
- Riesz表现定理的向量值形式 ..... 汪成咏,王序岩(8)
- 布尔代数的乘积型双极值模糊点理想 ..... 姜 曼(15)
- 复化三点 Gauss-Legendre 数值求积公式的外推算法 ..... 宋云涛,王慧颖,苏 莉(19)
- 边缺陷诱导的双层锯齿型石墨烯纳米带能隙 ..... 韩 超,龙 文(23)
- 量子导引在量子通讯中的作用 ..... 杨挪亚,李 崇(33)
- 基于 ANSYS 软件的压电和电磁复合式振动俘能器设计 .....  
..... 范媛媛,王其权,桑英军,盛政霖,董 昭,尹明宇,黄 飞(38)
- 京津冀区域二氧化碳排放特征及其与大气污染物协同减排潜力分析 .....  
..... 万芸菲,崔阳阳,吴雪芳,沈 岩,薛亦峰(46)
- 湖北省新冠肺炎疫情扩散的时空过程及人文影响因素分析 .....  
..... 庞宇欣,李昀卿,卢明华,赵 璐,周伶俐(53)

### 教育动态

- 食品类专业无机及分析化学课程思政的探索与实践 .....  
..... 李 照,王秋月,张 园,丁 宁(63)
- 思政元素在遗传学教学中的融合探索 ..... 李雅轩,张飞雄,赵 昕,胡英考,李小辉(68)
- 环境工程微生物学思政教育的实践探讨:以“蓝细菌”教学为例 .....  
..... 王晓凤,李 洁,薛维纳,鲁成秀,徐贞贞,徐 飞,成杰民,张 英(75)

### 述 评

- 功能性水凝胶材料在慢性难愈性伤口的应用进展 ..... 李嘉炜,黄潇楠(80)
- 旅游企业社会责任研究热点 ..... 王 娟,封洁洁,赵 婕(88)

# Journal of Capital Normal University

## (Natural Science Edition)

Vol.43 No.4

Aug. 2022

### Contents

#### Research Article

- High order scheme for a class of degenerate wave equations in moving boundary domain .....  
..... LIU Ying , XIE Weisong , HE Zhenpeng ( 1 )
- Vector-valued form of Riesz 's representation theorem .....WANG Chengyong, WANG Xuyan( 8 )
- Product type bipolar value fuzzy dot ideal of boole algebras .....JIANG Man( 15)
- Extrapolation method for composite three points Gauss-Legendre numerical integral formulas .....  
..... SONG Yuntao , WANG Huiying , SU Li( 19)
- Edge-defect induced gaps in zigzag bilayer graphene nanoribbons .....HAN Chao, LONG Wen( 23)
- Effect of quantum steering in quantum communication process .....YANG Nuoya, LI Chong( 33)
- Design of piezoelectric and electromagnetic composite vibration harvester based on ANSYS software .....  
..... FAN Yuanyuan, WANG Qiquan, SANG Yingjun, SHENG Zhenglin, DONG Zhao,  
YIN Mingyu, HUANG Fei( 38)
- Characteristics of carbon dioxide emission in Beijing-Tianjin-Hebei region and its synergistic reduction potential  
with air pollutants .....WAN Yunfei, CUI Yangyang, WU Xuefang, SHEN Yan, XUE Yifeng( 46)
- Analysis of the spatio-temporal process and humanistic influencing factors of COVID-19 spread in Hubei Province  
.....PANG Yuxin, LI Yunqing, LU Minghua, ZHAO Lu, ZHOU Lingli( 53)

#### Educational Trends

- Exploration and practice of ideological and political theories teaching in Inorganic and Analytical Chemistry  
course of food majors .....LI Zhao, WANG Qiuyue, ZHANG Yuan, DING Ning( 63)
- Integration of ideological and political elements in genetics teaching.....  
..... LI Yaxuan , ZHANG Feixiong , ZHAO Xin , HU Yingkao , LI Xiaohui( 68)
- A practical discussion on teaching and ideological and political education of Environmental Engineering  
Microbiology :taking *Cyanobacteria* as an example ...WANG Xiaofeng, LI Jie, XUE Weina, LU Chengxiu,  
XU Zhenzhen, XU Fei, CHENG Jiemin, ZHANG Ying( 75)

#### Review

- Compound hydrogel materials for chronic and difficult-to-heal wounds .....LI Jiawei, HUANG Xiaonan( 80)
- Research hotspots of tourism enterprises' social responsibility .....WANG Juan, FENG Jiejie, ZHAO Jie( 88)