



科学出版社

一门科学只有在成功地运用数学时，
才算达到了真正完善的地步。

——马克思

ISSN 1000-0984

CODEN SSHRE8



QK2030391

数学的实践与认识

MATHEMATICS

IN PRACTICE AND THEORY

第四十九卷

Vol. 49

第23期

No. 23

2019

中国数学会会刊

中国科学院数学与系统科学研究院主办

科学出版社出版

数学的实践与认识

2019 年第 49 卷第 23 期

目 次

管理科学

离散时间模型下带分红交易费的最优分红..... 王绍锋,尹传存,申 莹(1)

基于 BSA-ELM 模型的建筑工程施工成本预测研究..... 李万庆,陈佳琪,孟文清,马利华(10)

基于演化博弈的企业创新网络协同行为及提升策略研究..... 魏云凤,史文雷,阮平南(18)

PPP 项目多主体行为策略演化博弈研究..... 李壮阔,吕亚兰(31)

山东省供给侧改革推动工业结构优化升级的实证分析..... 童 素,史成东,程顺斌,林 静,倪仕萍,冯 硕,邢恩凤(40)

基于熵权修正 Shapley 值法的共同物流商业模式合作风险分担研究..... 张 磊,李占雷,杨金廷(49)

信用评级模型的数据离散化研究..... 夏利宇,刘赛可,何晓群(60)

基于跟踪微分器的泰勒展开与 ARIMA 混合模型对股票价格的短期预测..... 罗志丹,刘 英,郭 伟(67)

基于云模型和前景理论的城市生态位适宜度评价研究..... 姚 远(78)

工 程

基于数值模拟方法的水力压裂分支裂缝产能预测研究..... 柯西军,郭大立,薛 玲,黎孝奎,赵运祥(89)

混凝土中氯离子扩散的二次有限元分析..... 白 羽,汤梦洁,董 军,侍爱玲(99)

基于信度模型的超短期风电预测..... 房婷婷,谭 涛,吴黎军(108)

费用约束下产品寿命试验与退化试验优化..... 马心宇,金 光,陆 峥(114)

不确定变时滞 Lurie 切换系统的 H_∞ 记忆输出反馈控制..... 秦燕飞,包俊东,梁胡义乐(122)

一种新型的蝙蝠算法..... 刘 敏(131)

非恒定概率下基于不完全检查的受限维护优化研究..... 和 柳,赵英俊,左文博,孙明杰(141)

研 究

代数流形奇点的切空间..... 胡双年,李艳艳,秦振涛,牛玉俊(149)

四阶抛物型方程在加权空间下临界状态的小初值问题..... 赵建峰,王淑英,郝 芳,苏 晓(155)

(3+1) 维 Klein-Gordon 方程的新求解方法..... 套格图桑,伊丽娜(162)

重力场中 Navier-Stokes 方程的线性不稳定性..... 杨 静,葛 晴,李吉娜(171)

关于加权移位算子的 n - 亚正规性..... 董延武,郑桂君,李晓培(177)

矩阵 SR 分解 R 因子新的扰动界..... 李 平,余小飞(183)

一类一般的双单叶强 Bazilevič 解析函数类的系数估计..... 郭 栋,汤 获,敖 恩,李宗涛(191)

filiform 李代数 R_n 的 triple 导子..... 朱开晓,吴明忠(198)

特征为 2 的素环上强保持 k - 交换性的映射..... 贾 娟,齐霄霏(204)

教学研究

例谈两点分布的魅力..... 梁 敏(213)

Hilbert 空间中非扩张映射的广义隐粘性迭代方法..... 唐天国(222)

基于直觉模糊层次分析法的 90 后知识型员工绩效评价与激励策略研究..... 黄明田,李泽玲(230)

我国研究生教育规模与经济发展水平间的非线性关系研究..... 王永哲,徐宪红,常俊英,籍俊伟(240)

CEV 模型下最大化 HARA 效用的最优再保险与投资策略..... 聂高琴(249)

一类分数阶复值 SIR 传染病模型的稳定性分析..... 刘 娜,方 洁,邓 玮,方 娜(256)

一类具有非线性发生率的戒烟模型动力学分析..... 李志民,苏宁亚,张太雷(262)

产业转移与中国环境效率协同效应研究..... 张军峰(269)

国立科研机构品牌资产测量模型及其实证研究——以中国科学院为例..... 帅俊全,孙 倬,张莹利,赵 红(277)

高校社区老年人养老需求特征及其影响因素研究——以西安市为例..... 刘晓君,段玲玲(288)

基于新陈代谢灰色预测模型的,西安市电力需求量的预测..... 孙爱民(298)

关于哈代空间上 Calderón-Zygmund 分解的一些思考..... 吴新峰(306)

新旧动能转换背景下煤炭产业碳减排路径仿真研究——以山东省为例..... 曾 军,姚庆国,李 跃,于向宇(312)

基于距离测度的可信犹豫模糊集一致性检验方法..... 肖会敏,孟鹏洋(322)

MATHEMATICS IN PRACTICE AND THEORY

2019 Vol.49 No. 23

Contents

Managed Science

- An Optimal Dividend Strategy in the Discrete Sparre Andersen Model When Payments are Subject to Transaction Costs WANG Shao-feng, YIN Chuan-cun, SHEN Ying (1)
- Research on Building Project Construction Cost Prediction Based on BSA-ELM Model LI Wan-qing, CHEN Jia-qi, MENG Wen-qing, MA Li-hua (10)
- Research on Synergy Behavior and Promotion Strategy of Enterprise Innovation Network Based on Evolutionary Game Theory WEI Yun-feng, SHI Wen-lei, RUAN Ping-nan (18)
- Research on the Behavior Strategy of Multi-agent in PPP Project based on Evolutionary Game Theory LI Zhuang-kuo, LV Ya-lan (31)
- Empirical Analysis And Research on the Supply-Side Reform in Shandong Province to Promote the Optimization and Upgrading of Industrial Structure TONG Su, SHI Cheng-dong, CHENG Shun-bin, LIN Jing, NI Shi-ping, FENG Shuo, XING En-feng (40)
- Using Shapley Value Method Modified by Entropy Weight to Study Cooperative Risk Sharing of Joint Logistics Business Model ZHANG Lei, LI Zhan-lei, YANG Jin-ting (49)
- Data Discretization for Credit Score Model XIA Li-yu, LIU Sai-ke, HE Xiao-qun (60)
- Short-term Prediction for Stock Price Using a Hybrid Taylor Expansion Based on Tracking Differentiator and ARIMA Model LUO Zhi-dan, LIU Ying, GUO Wei (67)
- Evaluation of Urban Niche-fitness Based on Cloud Model and Prospect Theory YAO Yuan (78)

Engineering

- Study on Productivity Prediction of Hydraulic Fracturing with Branch Fractures Based on Numerical Simulation Method KE Xi-jun, GUO Da-li, XUE Ling, LI Xiao-kui, ZHAO Yun-xiang (89)

Applications

- The Finite Element Model with the Quadratic Interpolating Basis Functions and Its Numerical Analysis of Chloride Ions' Diffusion in the Concrete Structures BAI Yu, TANG Meng-jie, DONG Jun, SHI Ai-ling (99)
- Prediction of Ultra - short Term Wind Power Based on Reliability Model FANG Ting-ting, TAN Tao, WU Li-jun (108)
- Optimization of Product Life Test and Degradation Test under Cost Constraints MA Xin-yu, JIN Guang, LU Zheng (114)
- H_{∞} Memory Output Feedback Control for Uncertain Linear Switched Systems with Time-Varying Delays QIN Yan-fei, BAO Jun-dong, LIANG Hu-yi-le (122)
- A Novel Bat Algorithm LIU Min (131)
- Constrained Maintenance Optimization Under Non-constant Probabilities of Imperfect Inspections HE Liu, ZHAO Ying-jun, ZUO Wen-bo, SUN Ming-jie (141)

Research

- Tangent Space of Algebraic Manifold in Singularity HU Shuang-nian, LI Yan-yan, QIN Zhen-tao, NIU Yu-jun (149)
- The Small Initial Value Problem for the Four Order Parabolic Equation under the Weighted Space Condition ZHAO Jion-feng, WANG Shu-ying, HAO Fang, SU Xiao (155)
- The New Method of Solving Solutions of the (3+1)-dimension Klein-Gordon Equation Taogetusang, YI Li-na (162)
- The Linear Instability of the Gravity Driven Viscous Navier-Stokes flow in Three-dimensional YANG Jing, GE Qing, LI Ji-na (171)
- On n -hyponormal of Weighted Shifts Operators DNOG Yan-wu, ZHENG Gui-jun, LI Xiao-pei (177)
- New Perturbation Bounds for Factor R of the SR Factorization LI Ping, YU Xiao-fei (183)
- Coefficient Estimates for a General Subclass of Analytic Function and Bi-Univalent Strongly Bazilevič Function GUO Dong, TANG Huo, AO En, LI Zong-tao (191)
- Lie Triple Derivations of Filiform Lie Algebra R_n ZHU Kai-xiao, WU Ming-zhong (198)
- Strong k -commutativity Preserving Maps on Prime Rings with Characteristic 2 JIA Juan, QI Xiao-fei (204)

Teaching Research

- Some Amazing Examples of Bernoulli Distribution LIANG Min (213)
- A General Viscosity Approximation Methods for the Implicit Rule of Nonexpansive Mappings in Hilbert Spaces TANG Tian-guo (222)
- Study on Performance Appraisal and Incentive Strategy of 90s Knowledge Worker based on Intuitionistic Fuzzy Hierarchy Model HUANG Ming-tian, LI Ze-ling (230)
- Research on Nonlinear Relationship between Postgraduate Education Scale and Economic Development in China WANG Yong-zhe, XU Xian-hong, CHANG Jun-ying, JI Jun-wei (240)
- Optimal Reinsurance and Investment Strategies to Maximize HARA utility under CEV model NIE Gao-qin (249)
- Stability Analysis For a Class of Complex Value Fractional-Order Sir Model LIU Na, FANG Jie, DENG Wei, FANG Na (256)
- Analysis on a Giving up Smoking Model with Nonlinear Infection Rate LI Zhi-min, SU Ning-ya, ZHANG Tai-lei (262)
- Research on Synergistic Effect of Industrial Transfer for China's Environmental Efficiency ZHANG Jun-feng (269)
- An Empirical Study on the Measurement Model of National Research Institutions' Brand Assets: A case study of the Chinese

- Academy of Sciences SHUAI Jun-quan, SUN Zhuo, ZHANG Ying-li, ZHAO Hong (277)
- Research on the Characteristics and Influencing Factors of the Pension Service Demand in University Community: An Empirical Study in Xi'an LIU Xiao-jun, DUAN Ling-ling (288)
- Prediction of Electric Power Demand in Xi'an Based on Metabolic Grey Forecasting Model SUN Ai-min (298)
- Some Thoughts on Calderón-Zygmund Decomposition in Hardy Spaces WU Xin-feng (306)
- Simulation Research on Carbon Emission Reduction Path of Coal Industry under the Background of New and Old Kinetic Energy Conversion—Taking Shandong Province as an Example ZENG Jun, YAO Qing-guo, LI Yue, YU Xiang-yu (312)
- Consistency Check Method for Trusted Hesitant Fuzzy Set with Confidence Level Based on Distance Measure XIAO Hui-min, MENG Peng-yang (322)

《数学的实践与认识》编辑委员会

主 编：林 群

副主编：（以下按姓氏笔划为序）

卢 焱 叶其孝 朱广田（常务副主编）

李邦河 汪寿阳 宋春伟 张继平

编 委：王 术 王冬琳 王建明 龙永红 叶 专

史福贵 冯荣权 朱一心 许 进 李 宁

余志坤 张文岭 林源渠 郑连存 姜启源

骆顺龙 贾仲孝 郭懋正 唐仲伟 黄海洋

常彦勋

数学的实践与认识

Shuxue de Shijian yu Renshi

（半月刊）

第49卷

第23期

2019年12月

Journal of Mathematics in Practice and Theory

(Semimonthly)

Vol.49

No.23

December

2019

编 辑 中国数学会
《数学的实践与认识》编委会
北京大学数学科学学院
邮政编码：100871
电 话：(86-10)62759981
电子邮件：bjmath@math.pku.edu.cn

主 编 林 群
主 管 单 位 中国科学院
主 办 单 位 中国科学院数学与系统科学研究院
承 办 单 位 中国科学院系统科学研究所

北京数学会
出 版 科 学 出 版 社
北京东黄城根北街16号
邮政编码：100717

印 刷 中国文联印刷厂
国 内 发 行 北京市邮局
国 外 发 行 中国国际图书贸易总公司
（北京399信箱）

国 内 订 购 全国各地邮局

网 址 <http://ssjs.cbpt.cnki.net>

Edited by Editorial Board of
Mathematics in Practice and Theory
School of Mathematical Sciences, PKU
Beijing 100871, China
Tel: (86-10) 62759981
Email: bjmath@math.pku.edu.cn

Editor in Chief LIN Qun

Superintended by Chinese Academy of Sciences

Sponsored by Academy of Mathematics and
Systems Science, Chinese Academy
of Sciences

Co-sponsored by Institute of Systems Science, Academy of
Mathematics and Systems Science,
Chinese Academy of Sciences
Beijing Mathematical Society

Published by Science Press
16 Donghuangchenggen North Street,
Beijing 100717, China

Printed by Printing House of Wenlian in China

Distributed at Home by Beijing Post Office

Distributed Abroad by China International Book Trading
Corporation (CIBTC) P.O.Box 399,
Beijing, China

Domestic Subscription All Local Post Office

(如有印装质量问题，印刷厂负责调换电话010-68431909)

ISSN 1000-0984

国外发行代号Q47

CN11-2018/O1

国内发行代号2-809

定 价：人民币30.00元

ISSN 1000-0984



9 771000 098199

23