



Q K 2 0 6 3 7 7 6

数学的实践与认识

MATHEMATICS

IN PRACTICE AND THEORY

第五十一卷

Vol. 51

第2期

No. 2

2021

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

2021 年第 51 卷第 2 期

目 次

管理科学

- 工程项目承包服务业主需求重要度确定方法研究 孔造杰, 李巧曼, 耿立沙 (1)
- 考虑企业社会责任的三级供应链协调策略研究 李莉英, 龙 超 (8)
- CEV 模型和 B-P 混合驱动模型下亚式期权 Monte Carlo 模拟 王爱银, 于文明 (20)
- 基于改进 SIR 模型的知识密集型企业隐性知识转移研究 张建华, 李方方, 叶建文 (28)
- 次分数布朗运动下可分离交易可转债的定价及其风险参数 程潘红, 许志宏 (36)
- 分数阶反向累加非线性灰色 Bernoulli 模型及其应用 江建明, 吴文泽 (48)
- 物流末端配送资源共享中政府作用演化博弈分析 祝凌瑶, 周 丽, 李海芬 (54)
- 属性和专家客观权重未知的多值中智数群决策方法 冯 源, 曹月静 (68)
- 高技术产业创新种群的种内关系结构对其创新输出能力的影响 金成国, 李达耀, 李燕清 (78)
- 报童问题及其商业拓展的两类利润期望模型 毛克宁 (87)
- 面向产品研发任务的知识层次协调模型及仿真研究 郑江波, 舒 珂, 李宁慧 (93)
- GPM (1,1,m) 模型及其在中国能源消费预测中的应用 王 安, 杨 雨, 杨锦伟 (104)

工 程

- 基于遗传算法的割缝衬管防砂多目标优化 袁士宝, 白 玉, 蒋海岩, 池建萍, 任宗孝, 张喻鹏 (113)
- 基于粒子群优化 Kriging 模型的边坡可靠度分析 吴海波, 刘海龙, 魏丽君 (120)
- 化学驱粘性指进微观渗流模拟研究 于 群, 王惠宇, 曹绪龙, 郭兰磊, 韦 贝, 石 静 (129)
- 基于相关系数指标筛选法的油田集输泵机组用能评价体系研究 赵德银, 张 菁, 王 爽, 黎志敏 (137)
- 基于灰色关联法的水平井压裂参数优化研究 闫文华, 暴 赫, 司 想, 余延波 (145)

应 用

- 基于中心平面的聚类模型及在电商中的应用 王方红, 黄文彪 (152)
- MEMS 矢量水听器的一种新的联合去噪算法 奥 彦, 胡红萍, 白艳萍, 史 娜 (158)
- 基于主成分分位数回归的手足口病空气质量的影响分析 郑彦玲 (164)
- 基于 GMVAR 模型的货币供应量的预测分析 李纯净, 李可可, 田 闯, 屈红雁 (171)
- 考虑复杂搭接关系的灰色网络计划模型 孔 峰, 韩蕊鲜 (179)
- 基于乌鸦喝水的元启发式优化算法 饶芸涤, 何登旭, 周永权 (189)

研 究

- 误差为鞅差序列的非参数回归模型的完全相合性 屈 聪, 张水利 (200)
- 一类具有双恢复集的局部恢复码的构造 颜 好, 胡万宝, 陈子星 (206)
- 基于 Green-Naghdi 模型与三相延迟模型的耦合热弹性波传播 王 红, 李月秋, 李晓红, 魏蕴波, 方晓燕, 林春丽 (213)
- 对流扩散方程的 QC3 无网格法 蔺宏岩, 胡星宇, 李浩宇, 郑丽颖 (224)
- 基于 $P_{h,e}$ 下 Riemann-Liouville 分数阶微分方程解的存在唯一性 刘宏伟, 张玲玲 (232)
- 具有浓度迁移率和对数势能的粘性 Cahn-Hilliard 方程的有限元算法 李亚楠, 王旦霞, 任永华 (241)

数学研究

- 具有媒体影响和时滞效应的传染病模型研究 朱霖河, 黄晓媛 (251)
- Banach 空间中单值非扩张映射和多值非扩张映射公共不动点混合迭代逼近研究 刘涌泉 (259)
- K-means 聚类算法在 SIR 传染病模型中的应用研究 李东辉, 郑三强, 杨淑伶, 韩晓卓 (268)
- 关于区间 Katugampola 分数阶积分的若干 Hermite-Hadamard 型不等式 史芳芳, 叶国菊, 赵大方, 刘 尉 (277)
- 基于 Elmeri 指标体系的煤矿作业区安全风险模糊综合评价 余 岚, 马小勇, 金小菊, 陈 娜, 刘时东, 白 雪 (284)
- 关于循环环的诣零根与诣零理想的结构 张隆辉, 石化国, 张青山 (294)
- 基于 TOPSIS 熵权模型的绿色建筑产业与其支撑环境耦合协调研究——以陕西省为例 刘晓君, 王东旭, 胡 伟 (298)
- 一类不满足 (AR) 条件的 p -Laplace 方程的无穷多解 陈丽娟 (308)
- L_p Brunn-Minkowski 型仿射均质积分不等式 曹章要, 梁俊奇 (316)
- 基于模糊——证据理论的突发事件应急预案评估 肖会敏, 刘云鸽, 翟 婷, 席筱宁, 张文结 (321)

MATHEMATICS IN PRACTICE AND THEORY

2021 Vol.51 No. 2

Contents

Managed Science

- Study on the Method of Determining the Importance of Employer's Requirements in Project Contracting Service KONG Zao-jie, LI Qiao-man, GENG Li-sha (1)
- Channel Coordination of Socially Responsible Three-Echelon Supply Chains LI Li-ying, LONG Chao (8)
- Sub-option Monte Carlo Simulation of CEV Model and B-P Hybrid Drive Model WANG Ai-ying, YU Wen-ming (20)
- Research on Tacit Knowledge Transfer of Knowledge-intensive Enterprises Based on Improved SIR Model ZHANG Jian-hua, LI Fang-fang, YE Jian-wen (28)
- Pricing and Risk Parameters of Warrant Bonds in the Sub-fractional Brownian Motion CHENG Pan-hong, XU Zhi-hong (36)
- Nonlinear Grey Bernoulli Model with Fractional-order Opposite-direction Accumulation and Its Application JIANG Jian-ming, WU Wen-ze (48)
- Evolutionary Game Analysis of the Role of Government under Sharing of Logistics Terminal Distribution Resources ZHU Lin-yao, ZHOU Li, LI Hai-fen (54)
- Multi-valued Neutrosophic Number Group Decision-making with Unknown Objective Weights of Criteria and Experts FENG Yuan, CAO Yue-jing (68)
- The Influence of Intra Species Relationship Structure of High Tech Industry Innovation Population on its Innovation Output Ability JIN Cheng-guo, LI Da-yao, LI Yan-qing (78)
- Two Kinds of Expected Profits Models of Newsvendor Problem and Its Business Expansion MAO Ke-ning (87)
- Research on Knowledge Hierarchy Coordination Model and Simulation for the Product R&D Task ZHENG Jiang-bo, SHU Ke, LI Ning-hui (93)
- GPM (1,1,m) Model and Its Application in Forecasting Energy Consumption of China WANG An, YANG Yu, YANG Jin-wei (104)

Engineering

- Multi-Objective Optimization Design of Slotted liner for Sand Control based on Genetic Algorithm YUAN Shi-bao, BAI Yu, JIANG Han-yan, CHI Jian-ping, REN Zong-xiao, ZHANG Yu-peng (113)
- A Slope Reliability Analysis Approach Using the Particle-swarm-optimization-based Kriging Model WU Hai-bo, LIU Hai-long, WEI Li-jun (120)
- Micro-Simulation Study of the Viscous Fingering in Chemical Flooding YU Qun, WANG Hui-yu, CAO Xu-long, GUO Lan-lei, WEI Bei, SHI Jing (129)
- Study on Energy Consumption Evaluation System of Oil Field Gathering Pump Unit Based on Correlation Coefficient Index Screening Method ZHAO De-yin, ZHANG Jing, WANG Shuang, LI Zhi-min (137)
- Optimization of Fracturing Parameters for Horizontal Wells Based on Grey Correlation Method YAN Wen-hua, BAO He, SI Xiang, YU Yan-bo (145)

Applications

- Research on Clustering Algorithm Based on Central Plane WANG Fang-hong, HUANG Wen-biao (152)
- A New Joint Denoising Algorithm for MEMS Vector Hydrophone AO Yan, HU Hong-ping, BAI Yan-ping, SHI Na (158)
- The Analysis of the Effect of Air Quality on Hand-Foot-Mouth Disease Based on Principal Component Analysis and Quantile Regression ZHENG Yan-ling (164)
- Forecast Analysis of Money Supply Based on GMVAR Model LI Chun-jing, LI Ke-ke, TIAN Chuang, QU Hong-yan (171)
- The Grey Network Scheduling Model with Complex Spliced Relations KONG Feng, HAN Rui-xian (179)
- Meta-heuristic Optimization Algorithm Based on Crow Drinking Water RAO Yun-di, HE Deng-xu, ZHOU Yong-quan (189)

Research

- The Complete Consistency of Estimator in Nonparametric Regression Model with Martingale Difference Errors QU Cong, ZHANG Shui-li (200)
- The Constructions of Locally Recoverable Codes With Double Recovery Sets Over Hermitian Function Fields YAN hao, HU Wan-bao, CHEN Zi-xing (206)
- The Propagation of Coupled Thermal-elastic Waves Based on Green-Naghdi Model and Three-phase-lag Model WANG Hong, LI Yue-qiu, LI Xiao-hong, WEI Yun-bo, FANG Xiao-yan, LIN Chun-li (213)
- QC3 Meshless Method of Convection-diffusion Equation LIN Hong-yan, HU Xing-yu, LI Hao-yu, ZHENG LI-ying (224)
- Existence and Uniqueness of Solutions for a Class of Riemann-Liouville Fractional Differential Equation Based on Set $P_{h,e}$ LIU Hong-wei, ZHANG Ling-ling (232)
- Finite Element Method for the Cahn-Hilliard Equation with the Concentration Mobility and the Logarithmic Potential LI Ya-nan, WANG Dan-xia, REN Yong-hua (241)

Teaching Research

- Study on Infectious Disease Model with Media Influence and Time Delay Effect .. ZHU Lin-he, HUANG Xiao-yuan (251)
- Mixed Iterative Approximation of Common Fixed Points for Single-valued and Multi-valued Nonexpansive Mappings in Banach Space LIU Yong-quan (259)
- Research on the Application of K-means Clustering Algorithm in SIR Infectious Disease Model LI Dong-hui, ZHENG San-qiang, YANG Shu-ling, HAN Xiao-zhuo (268)
- Hermite-Hadamard type Inequalities about Interval-valued Katugampola Fractional Integral SHI Fang-fang, YE Guo-ju, ZHAO Da-fang, LIU Wei (277)
- Fuzzy Comprehensive Evaluation of Safety Risk Based on Elmeri Index System in Coal Mine Operation Area YU Lan, MA Xiao-yong, JIN Xiao-jv, CHEN Na, LIU Shi-dong, BAI Xue (284)
- On The Structure of Cyclic Ring's Nil Radical and Nil Ideal .. ZHANG Long-hui, SHI Hua-guo, ZHANG Qing-shan (294)
- Research on the Coupling and Coordination Between Green Building Industry and its Supporting Environment Based on TOPSIS Entropy Model—Take Shaanxi Province for Example LIU Xiao-jun, WANG Dong-xu, HU Wei (298)
- Infinitely Many Solutions to a Class of p -Laplace Equation Without the Ambrosetti-Rabinowitz Condition CHEN Li-juan (308)
- L_p Brunn-Minkowski Type Inequalities for Affine Quermassintegrals CAO Zhang-yao, LIANG Jun-qi (316)
- Evaluation of Emergency Plans Based on Fuzzy-Evidence Theory XIAO Hui-min, LIU Yun-ge, ZHAI Ting, XI Xiao-ning, ZHANG Wen-jie (321)

《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51卷

第2期

2021年1月

Journal of Mathematics in Practice and Theory

(Semimonthly)

Vol.51

No.2 January 2021

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
Science Press
16 Donghuangchenggen North Street,
Beijing 100717, China

Published by Printing House of Wenlian in China

Printed by Beijing Post Office

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

Distributed Abroad by All Local Post Office

Domestic Subscription

【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35.00元

ISSN 1000-0984

