

物 理 学 报

第 73 卷 第 3 期 2024 年 2 月 5 日

目 次

《物理学报》创刊 90 周年

特邀综述

- 030302 铁基超导体中的马约拉纳零能模及其阵列构筑 李更 丁洪 汪自强 高鸿钧

专题: 热传导及其相关交叉领域研究

- 030101 热传导及其相关交叉领域研究编者按 李保文 唐桂华 杨诺
综述
- 033701 基于离子阱中离子晶体的热传导的研究进展 李冀 陈亮 冯芒
- 037201 金属导热理论的研究进展与前沿问题 王奥 盛宇飞 鲍华
研究论文
- 034401 非封闭式热斗篷热防护特性 **封面文章** 苗钰钊 唐桂华

综述

- 038102 III 族氮化物半导体及其合金的原子层沉积和应用 仇鹏 刘恒
朱晓丽 田丰 杜梦超 邱洪宇 陈冠良 胡玉玉 孔德林 杨晋 卫会云 彭铭曾 郑新和

总论

- 030201 高阶 SF-SFDTD 方法在含时薛定谔方程求解中的应用研究
..... 谢国大 潘攀 任信钢 冯乃星 方明 李迎松 黄志祥
- 030301 量子博弈——“PQ”问题 杨晓堃 李维 黄永畅

电磁学、光学、声学、传热学、经典力学和流体动力学

- 034101 基于人工表面等离激元的小型化电可调缺口带滤波器 ... 孙淑鹏 程用志 罗辉 陈浮 杨玲玲 李享成
- 034201 部分相干多离轴涡旋矢量光束的传输特性 徐华锋 张兴宇 王仁杰
- 034202 氟化镁微瓶腔光频梳光谱分析及优化
..... 郭状 欧阳峰 卢志舟 王梦宇 谭庆贵 谢成峰 魏斌 何兴道
- 034203 基于双频泵浦正常色散碳化硅微环谐振腔的光频率梳设计
..... 高荣 杨亚楠 湛晨翌 张宗祯 邓宜 王子潇 梁坤 冯素春
- 034301 浅海粗糙海底声散射建模及声场特性 汪磊 黄益旺 郭霖 任超
- 034302 多晶材料散射模型及识别实验研究 刘昱 贺西平 贺升平
- 034303 Janus-Helmholtz 换能器的振动模态谐振频率理论分析研究 张羿双 桑永杰 陈永耀 吴帅
- 034304 声悬浮条件下双水相液滴的蒸发与相分离 贺华丹 钟琦超 解文军
- 034701 基于双柔性电极模拟叉指图案电极的液体介电泳研究 尚修霆 陈陶 湛静 徐荣青

气体、等离子体和放电物理

- 035201 EAST 托卡马克钨杂质上下不对称性分布的实验研究 赵伟宽
张凌 程云鑫 周呈熙 张文敏 段艳敏 胡爱兰 王守信 张丰玲 李政伟 曹一鸣 刘海庆
- 035202 品质因数对 TM_{02} 模相对论返波管工作模式影响
..... 李雨晴 王洪广 翟永贵 杨文晋 王玥 李韵 李永东

凝聚物质: 结构、力学和热学性质

- 036101 冷却速率对 La 基非晶合金 β 弛豫行为和应力弛豫的影响 ... 孟绍怡 郝奇 王兵 段亚娟 乔吉超
- 036102 新型空间太阳能电池用的钙钛矿薄膜与器件的电子辐照效应 罗攀 李响 孙学银 谭晓洪 罗俊 甄良
- 036103 重离子辐射对 AlGaIn/GaN 高电子迁移率晶体管低频噪声特性的影响 吕玲 邢木涵 薛博瑞 曹艳荣 胡培培 郑雪峰 马晓华 郝跃
- 036201 冲击下铁的各向异性对晶界附近相变的影响 张学阳 胡望宇 戴雄英
- 036801 基于亚稳态液膜空化的长程疏水力作用机制 包西程 邢耀文 张凡凡 张德轲 刘秦杉 杨海昌 桂夏辉

凝聚物质: 电子结构、电学、磁学和光学性质

- 037202 具有平带的一维十字型晶格中重返局域化现象 陆展鹏 徐志浩
- 037501 基于不同流动时间占比的紧凑式室温磁制冷系统实验研究 李瑞 沈俊 张志鹏 李振兴 莫兆军 高新强 海鹏 付琪
- 037502 过渡金属元素掺杂对 SmCo_3 合金结构和磁性能影响的第一性原理计算 严志 方诚 王芳 许小红
- 037601 基于微观结构非均匀性理解非晶态聚苯乙烯的应力松弛行为 张婧祺 郝奇 吕国建 熊必金 乔吉超
- 037801 透射式 GaAs 光电阴极性能提高以及结构优化 吕行 富容国 常本康 郭欣 王芝
- 037802 Al 纳米颗粒高频局域等离子体效应对 BCzVBi 深蓝光有机发光器件发光效率的影响 王银霞 白小川 张勇 李国庆
- 037803 基于阳极氧化铝模板增强 $\text{NaYF}_4:\text{Yb}^{3+}/\text{Er}^{3+}$ 上转换发光研究 慕立鹏 周姚 赵建行 王丽 蒋礼 周见红

物理学交叉学科及有关科学技术领域

- 038101 助溶剂法生长的 AgNbO_3 晶体相转变特征、电学和光学性能 牛佳林 董思远 魏永星 靳长清 南瑞华 杨斌
- 038401 定中和驱动一体化的超导转子驱动方法 张源 胡新宁 崔春艳 崔旭 牛飞飞 黄兴 王路忠 王秋良
- 038501 超导动态电感探测器的噪声谱分析 石中誉 代旭城 王浩宇 麦展彰 欧阳鹏辉 王翼卓 柴亚强 韦联福 刘旭明 潘长钊 郭伟杰 舒诗博 王轶文
- 038701 基于动态湿度传感的穿戴式呼吸功能检测系统: 肺功能测量原理与实验对照 卢昌盛 蒋泽荣 王晓 李轲轶 林桂阳 杨璞琦 林益华 郑冠英 谢宝松 刘向阳
- 038801 BaTiO_3 掺杂调控内建电场提升钙钛矿太阳能电池性能 金程程 丁玲玲 宋子馨 陶海军
- 038901 基于高阶信息的网络相似性比较方法 陈浩宇 徐涛 刘闯 张子柯 詹秀秀

地球物理学、天文学和天体物理学

- 039501 亚角秒空间分辨的太阳极紫外宽波段成像光谱仪光学设计 黄一帆 邢阳光 沈文杰 彭吉龙 代树武 王颖 段紫雯 闫雷 刘越 李林

文章图片的彩色效果详见网刊



扫码阅读
电子版

ACTA PHYSICA SINICA

Vol. 73, No. 3, February 5, 2024

CONTENTS

The 90th Anniversary of *Acta Physica Sinica*

INVITED REVIEW

- 030302 Majorana zero mode and its lattice construction in iron-based superconductors
Li Geng Ding Hong Wang Zi-Qiang Gao Hong-Jun

SPECIAL TOPIC—Heat conduction and its related interdisciplinary areas

- 030101 Preface to the special topic: Heat conduction and its related interdisciplinary areas
Li Bao-Wen Tang Gui-Hua Yang Nuo

REVIEW

- 033701 Research progress of heat transport in trapped-ion crystals
Li Ji Chen Liang Feng Mang
- 037201 Recent advances in thermal transport theory of metals
Wang Ao Sheng Yu-Fei Bao Hua

ARTICLE

- 034401 Thermal protection characteristics of non-enclosed thermal cloak **COVER ARTICLE**
Miao Yu-Zhao Tang Gui-Hua

REVIEW

- 038102 Atomic layer deposition and application of group III nitrides semiconductor and their alloys
*Qiu Peng Liu Heng Zhu Xiao-Li Tian Feng Du Meng-Chao Qiu Hong-Yu
Chen Guan-Liang Hu Yu-Yu Kong De-Lin Yang Jin Wei Hui-Yun Peng Ming-Zeng
Zheng Xin-He*

GENERAL

- 030201 Application of high-order SF-SFDTD scheme to solving a time-dependent Schrödinger equation
*Xie Guo-Da Pan Pan Ren Xin-Gang Feng Nai-Xing Fang Ming Li Ying-Song
Huang Zhi-Xiang*
- 030301 Quantum game—“PQ” problem
Yang Xiao-Kun Li Wei Huang Yong-Chang

ELECTROMAGNETISM, OPTICS, ACOUSTICS, HEAT TRANSFER, CLASSICAL MECHANICS, AND FLUID DYNAMICS

- 034101 Miniaturized electronically controlled notched band filter based on spoof surface plasmon polaritons
Sun Shu-Peng Cheng Yong-Zhi Luo Hui Chen Fu Yang Ling-Ling Li Xiang-Cheng
- 034201 Propagation properties of partially coherent vector beam with multiple off-axis vortex phases
Xu Hua-Feng Zhang Xing-Yu Wang Ren-Jie
- 034202 Analysis and optimization of optical frequency comb spectra of magnesium fluoride microbottle resonator
*Guo Zhuang Ouyang Feng Lu Zhi-Zhou Wang Meng-Yu Tan Qing-Gui Xie Cheng-Feng
Wei Bin He Xing-Dao*

(Continued)

- 034203 Design of optical frequency comb based on dual frequency pumped normal dispersion silicon carbide microresonator
Gao Rong Yang Ya-Nan Zhan Chen-Yi Zhang Zong-Zhen Deng Yi Wang Zi-Xiao Liang Kun Feng Su-Chun
- 034301 Acoustic scattering modeling and sound field characteristics of rough seafloor in shallow sea
Wang Lei Huang Yi-Wang Guo Lin Ren Chao
- 034302 Ultrasonic scattering model and identification experiment of polycrystalline materials
Liu Yu He Xi-Ping He Sheng-Ping
- 034303 Theoretical study on resonance frequencies of vibration modes of Janus-Helmholtz transducer
Zhang Yi-Shuang Sang Yong-Jie Chen Yong-Yao Wu Shuai
- 034304 Evaporation and phase separation of acoustically levitated aqueous two-phase-system drops
He Hua-Dan Zhong Qi-Chao Xie Wen-Jun
- 034701 Study on liquid dielectrophoresis based on double flexible electrodes simulating interdigitated pattern electrodes
Shang Xiu-Ting Chen Tao Chen Jing Xu Rong-Qing

PHYSICS OF GASES, PLASMAS, AND ELECTRIC DISCHARGES

- 035201 Experimental study on up-down asymmetry of tungsten impurities in EAST tokamak
Zhao Wei-Kuan Zhang Ling Cheng Yun-Xin Zhou Cheng-Xi Zhang Wen-Min Duan Yan-Min Hu Ai-Lan Wang Shou-Xin Zhang Feng-Ling Li Zheng-Wei Cao Yi-Ming Liu Hai-Qing
- 035202 Influence of quality factor on operating mode of TM_{02} mode relativistic backwave oscillator
Li Yu-Qing Wang Hong-Guang Zhai Yong-Gui Yang Wen-Jin Wang Yue Li Yun Li Yong-Dong

CONDENSED MATTER: STRUCTURAL, MECHANICAL, AND THERMAL PROPERTIES

- 036101 Effects of cooling rate on β relaxation process and stress relaxation of La-based amorphous alloys
Meng Shao-Yi Hao Qi Wang Bing Duan Ya-Juan Qiao Ji-Chao
- 036102 Effect of electron irradiation on perovskite films and devices for novel space solar cells
Luo Pan Li Xiang Sun Xue-Yin Tan Xiao-Hong Luo Jun Zhen Liang
- 036103 Effect of heavy ion radiation on low frequency noise characteristics of AlGa_N/Ga_N high electron mobility transistors
Lü Ling Xing Mu-Han Xue Bo-Rui Cao Yan-Rong Hu Pei-Pei Zheng Xue-Feng Ma Xiao-Hua Hao Yue
- 036201 Influence of iron anisotropy on phase transition near grain boundary under shock
Zhang Xue-Yang Hu Wang-Yu Dai Xiong-Ying
- 036801 Mechanism of long-range hydrophobic force based on cavitation of metastable liquid film
Bao Xi-Cheng Xing Yao-Wen Zhang Fan-Fan Zhang De-Ke Liu Qin-Shan Yang Hai-Chang Gui Xia-Hui

CONDENSED MATTER: ELECTRONIC STRUCTURE, ELECTRICAL, MAGNETIC, AND OPTICAL PROPERTIES

- 037202 Reentrant localization phenomenon in one-dimensional cross-stitch lattice with flat band
Lu Zhan-Peng Xu Zhi-Hao
- 037501 Experimental study of compact room temperature magnetic cooling system based on different flow time ratios
Li Rui Shen Jun Zhang Zhi-Peng Li Zhen-Xing Mo Zhao-Jun Gao Xin-Qiang Hai Peng Fu Qi
- 037502 First-principles calculations of structural and magnetic properties of SmCo₃ alloys doped with transition metal elements
Yan Zhi Fang Cheng Wang Fang Xu Xiao-Hong

(Continued)

- 037601 Understanding stress relaxation behavior of amorphous polystyrene based on microstructural heterogeneity
Zhang Jing-Qi Hao Qi Lyu Guo-Jian Xiong Bi-Jin Qiao Ji-Chao
- 037801 Improvement and structure optimization of transmission-mode GaAs photocathode performance
Lü Xing Fu Rong-Guo Chang Ben-Kang Guo Xin Wang Zhi
- 037802 Influence of high-frequency localized surface plasmon polariton effect of Al nanoparticles on luminescence efficiency of deep-blue BCzVBi OLED
Wang Yin-Xia Bai Xiao-Chuan Zhang Yong Li Guo-Qing
- 037803 Enhancement of NaYF₄:Yb³⁺/Er³⁺ up-conversion luminescence based on anodized alumina template
Mu Li-Peng Zhou Yao Zhao Jian-Xing Wang Li Jiang Li Zhou Jian-Hong

INTERDISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY

- 038101 Phase transition characteristics, electrical and optical properties of AgNbO₃ crystals grown by flux method
Niu Jia-Lin Dong Si-Yuan Wei Yong-Xing Jin Chang-Qing Nan Rui-Hua Yang Bin
- 038401 Superconducting rotor drive method with integrated driving and alignment
Zhang Yuan Hu Xin-Ning Cui Chun-Yan Cui Xu Niu Fei-Fei Huang Xing Wang Lu-Zhong Wang Qiu-Liang
- 038501 Noise spectrum analysis of superconducting kinetic inductance detectors
Shi Zhong-Yu Dai Xu-Cheng Wang Hao-Yu Mai Zhan-Zhang Ouyang Peng-Hui Wang Yi-Zhuo Chai Ya-Qiang Wei Lian-Fu Liu Xu-Ming Pan Chang-Zhao Guo Wei-Jie Shu Shi-Bo Wang Yi-Wen
- 038701 Wearable respiratory function detection system based on dynamic humidity sensing: Principle and experimental comparison of lung function detection
Lu Chang-Sheng Jiang Ze-Rong Wang Xiao Li Ke-Yi Lin Gui-Yang Yang Ying-Qi Lin Yi-Hua Zheng Guan-Ying Xie Bao-Song Liu Xiang-Yang
- 038801 Improvement of performance of perovskite solar cells through BaTiO₃ doping regulated built-in electric field
Jin Cheng-Cheng Ding Ling-Ling Song Zi-Xin Tao Hai-Jun
- 038901 Network similarity comparison method based on higher-order information
Chen Hao-Yu Xu Tao Liu Chuang Zhang Zi-Ke Zhan Xiu-Xiu

GEOPHYSICS, ASTRONOMY, AND ASTROPHYSICS

- 039501 Optical design of sub-angular second spatially resolved solar extreme ultraviolet broadband imaging spectrometer
Huang Yi-Fan Xing Yang-Guang Shen Wen-Jie Peng Ji-Long Dai Shu-Wu Wang Ying Duan Zi-Wen Yan Lei Liu Yue Li Lin

Color figures can be viewed in the online issue.



Online issue