

物 理 学 报

第 70 卷 第 18 期 2021 年 9 月 20 日

目 次

青年科学评述

- 180702 面向先进光源线站等大科学装置的低温 X 射线能谱仪原理及应用进展
... 张硕 崔伟 金海 陈六彪 王俊杰 伍文涛 吴秉骏 夏经铠 宋艳汝 杨瑾屏 翁祖谦 刘志

综述

- 183601 水团簇掺杂实验方法研究进展 黄传甫

总论

- 180301 刚性对称陀螺分子 Stark 效应的精确解
..... 陈昌远 孙国华 王晓华 孙东升 尤源 陆法林 董世海
- 180302 量子密钥分发系统中抗扰动偏振编码模式的实验研究
..... 沈琦琦 张毅 王金东 於亚飞 魏正军 张智明
- 180303 玻色-爱因斯坦凝聚体中的淬火孤子与冲击波 贾瑞煜 方乒乓 高超 林机
- 180501 一类典型磁力摆的全局动力学行为分析 秦波 尚慧琳 蒋慧敏
- 180502 两次淬火下横场中 XY 链的动力学量子相变 符浩 曹凯源 钟鸣 童培庆
- 180601 双光梳非线性异步光学采样测距中关键参数的数值分析
..... 夏文泽 刘洋 赫明钊 曹士英 杨伟雷 张福民 缪东晶 李建双
- 180602 谐振子势阱中双费米原子光钟的碰撞频移 陈泽锐 刘光存 俞振华
- 180701 高功率脉冲磁控溅射钛靶材的放电模型及等离子体特性 陈畅子 马东林 李延涛 冷永祥
- 180703 基于流体-磁流体-粒子混合方法的高空核爆炸碎片云模拟 彭国良 张俊杰

原子和分子物理学

- 183201 Bragg 峰能区 Xe^{20+} 与不同靶作用产生的 X 射线 ... 梁昌慧 张小安 周贤明 赵永涛 肖国青

电磁学、光学、声学、传热学、经典力学和流体动力学

- 184201 基于红外多光谱相机分析长后焦距对无热化设计的影响
..... 徐皖垚 徐亮 沈先春 徐寒杨 孙永丰 刘文清 刘建国
- 184202 基于时域剪切干涉的纳秒脉冲相位测量技术 潘良泽 刘诚 朱健强
- 184203 双端泵浦 Nd^{3+} 掺杂 $MgO:LiNbO_3$ 正交偏振双波长连续激光调控
..... 刘鸿志 王宇恒 郑浩 赵云峰 于永吉 金光勇
- 184204 高能电子三维成像技术实验研究 ... 李双双 赵全堂 曹树春 冉朝晖 申晓康 赵书俊 张子民
- 184205 基于小波变换的激光水下测距 刘欣宇 杨苏辉 廖英琦 林学彤
- 184206 非局域非线性耦合器中暗孤子的传输 李森清 张肖 林机
- 184207 光子芯片中串联移相器的快速标定方法 邢泽宇 李志浩 冯田峰 周晓祺
- 184301 超声场中单气泡的平移和非球形振动 吴学由 梁金福
- 184302 声子晶体板中的第二类狄拉克点和边缘传输 ... 骆全斌 黄学勤 邓伟胤 吴迎 陆久阳 刘正猷
- 184701 基于 Marangoni 效应的液-液驱动铺展过程 赵文景 王进 秦威广 纪文杰 蓝鼎 王育人
- 184702 横向磁场作用下 Taylor-Couette 湍流流动的大涡模拟 董帅 纪祥勇 李春曦

184703 基于格子 Boltzmann 方法的幂律流体二维顶盖驱动流转变研究 张恒 任峰 胡海豹

气体、等离子体和放电物理

185201 中国环流器 2 号 A 托卡马克弹丸注入放电中空电流与反磁剪切位形 沈勇 董家齐
何宏达 丁玄同 石中兵 季小全 李佳 韩明昆 吴娜 蒋敏 王硕 李继全 许敏 段旭如

185202 “强光一号”加速器短 γ 二极管径向箍缩率计算方法
..... 胡杨 孙江 张金海 蔡丹 杨海亮 苏兆锋 孙铁平 孙剑锋 赵博文

凝聚物质: 结构、力学和热学性质

186201 李晶界对 $\text{Cr}_{26}\text{Mn}_{20}\text{Fe}_{20}\text{Co}_{20}\text{Ni}_{14}$ 高熵合金力学行为影响的分子动力学模拟
..... 申天展 宋海洋 安敏荣

186202 $\text{SrCoO}_{2.5}$ 材料的超快应变动力学 刘旭 黄昱 毛婧一 陈黎明

186801 反铁磁轴子绝缘体候选材料 EuIn_2As_2 的表面原子排布和电子结构 李渊 邓翰宾 王翠香
李帅帅 刘立民 朱长江 贾可 孙英开 杜鑫 于鑫 关童 武睿 张书源 石友国 毛寒青

凝聚物质: 电子结构、电学、磁学和光学性质

187301 转角双层石墨烯在应变下的光电导率 蔡潇潇 罗国语 李志强 贺言

187302 石墨烯/碳化硅异质界面热学特性的分子动力学模拟 刘东静 王韶铭 杨平

187303 基于介电常数近零模式与间隙表面等离激元强耦合的增强非线性光学效应 郭绮琪 陈溢杭

187304 Si 微/纳米带的制备与热电性能 ... 魏江涛 杨亮亮 魏磊 秦源浩 宋培帅 张明亮 杨富华 王晓东

187501 $\text{Y}_3\text{Fe}_5\text{O}_{12}$ - CoFeB 自旋波定向耦合器中的自旋波 闫健 任志伟 钟智勇

187701 外延 $\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$ 薄膜负电容的应变调控 林翠 白刚 李卫 高存法

187702 原子层沉积的超薄 InN 强化量子点太阳能电池的界面输运
..... 李晔 王茜茜 卫会云 仇鹏 何荧峰 宋祎萌 段彰 申诚涛 彭铭曾 郑新和

物理学交叉学科及有关科学技术领域

188101 金刚石 (111)/Al 界面形成及性能的第一性原理研究
..... 孙士阳 迟中波 徐平平 安泽宇 张俊皓 谭心 任元

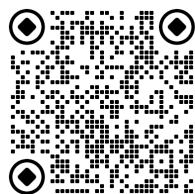
188401 硅异质结太阳能电池中钝化层和发射层的优化设计
..... 张博宇 周佳凯 任程超 苏祥林 任慧志 赵颖 张晓丹 侯国付

188501 高效、偏振不敏感超导纳米线单光子探测器 张文英 胡鹏 肖游 李浩 尤立星

188701 基于超表面的多波束多模态太赫兹涡旋波产生
..... 李国强 施宏宇 刘康 李博林 衣建甲 张安学 徐卓

188801 空间碎片超高速撞击下太阳能电池阵伏安特性
..... 郑建东 周江 皮晓丽 邹晨 李一帆 徐坤博 龚自正 胡帼杰

文章图片的彩色效果详见网刊



扫码阅读
电子版

ACTA PHYSICA SINICA

Vol. 70, No. 18, September 20, 2021

CONTENTS

YOUNG SCIENTISTS' FORUM

- 180702 Development of basic theory and application of cryogenic X-ray spectrometer in light sources and X-ray satellite
*Zhang Shuo Cui Wei Jin Hai Chen Liu-Biao Wang Jun-Jie Wu Wen-Tao
Wu Bing-Jun Xia Jing-Kai Song Yan-Ru Yang Jin-Ping Weng Tsu-Chien Liu Zhi*

REVIEW

- 183601 Experimental methodology of water cluster doping
Huang Chuan-Fu

GENERAL

- 180301 Exact solutions to Stark effect of rigid symmetric-top molecules
*Chen Chang-Yuan Sun Guo-Hua Wang Xiao-Hua Sun Dong-Sheng You Yuan
Lu Fa-Lin Dong Shi-Hai*
- 180302 Experimental research on disturbance resistant polarization modulation mode for quantum key distribution
Shen Qi-Qi Zhang Yi Wang Jin-Dong Yu Ya-Fei Wei Zheng-Jun Zhang Zhi-Ming
- 180303 Quenched solitons and shock waves in Bose-Einstein condensates
Jia Rui-Yu Fang Ping-Ping Gao Chao Lin Ji
- 180501 Global dynamic behavior analysis of typical magnetic pendulum
Qin Bo Shang Hui-Lin Jiang Hui-Min
- 180502 Dynamical quantum phase transitions in transverse field XY chain after a double quench
Fu Hao Cao Kai-Yuan Zhong Ming Tong Pei-Qing
- 180601 Numerical analyses of key parameters of nonlinear asynchronous optical sampling using dual-comb system
*Xia Wen-Ze Liu Yang He Ming-Zhao Cao Shi-Ying Yang Wei-Lei Zhang Fu-Min
Miao Dong-Jing Li Jian-Shuang*
- 180602 Collision clock shift of two Fermi atoms in harmonic potentials
Chen Ze-Rui Liu Guang-Cun Yu Zhen-Hua
- 180701 Discharge model and plasma characteristics of high-power pulsed magnetron sputtering titanium target
Chen Chang-Zi Ma Dong-Lin Li Yan-Tao Leng Yong-Xiang
- 180703 Hydro-Magneto-PIC hybrid model for description of debris motion in high altitude nuclear explosions
Peng Guo-Liang Zhang Jun-Jie

ATOMIC AND MOLECULAR PHYSICS

- 183201 X-rays produced by interaction of Xe^{20+} with different targets in Bragg peak energy region
Liang Chang-Hui Zhang Xiao-An Zhou Xian-Ming Zhao Yong-Tao Xiao Guo-Qing

(Continued)

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

- 184201 Analysis of influence of long back focal length on athermal design based on infrared multispectral camera
Xu Huan-Yao Xu Liang Shen Xian-Chun Xu Han-Yang Sun Yong-Feng Liu Wen-Qing Liu Jian-Guo
- 184202 Phase retrieval of nanosecond laser pulses based on temporal shearing interferometry
Pan Liang-Ze Liu Cheng Zhu Jian-Qiang
- 184203 Regulation of orthogonally polarized dual-wavelength continuous wave laser based on double-end pumped Nd³⁺ doped MgO:LiNbO₃
Liu Hong-Zhi Wang Yu-Heng Zheng Hao Zhao Yun-Feng Yu Yong-Ji Jin Guang-Yong
- 184204 Experimental demonstration of three-dimensional high energy electron radiography
Li Shuang-Shuang Zhao Quan-Tang Cao Shu-Chun Ran Zhao-Hui Shen Xiao-Kang Zhao Shu-Jun Zhang Zi-Min
- 184205 Laser underwater ranging based on wavelet transform
Liu Xin-Yu Yang Su-Hui Liao Ying-Qi Lin Xue-Tong
- 184206 Propagation of dark soliton in nonlocal nonlinear coupler
Li Sen-Qing Zhang Xiao Lin Ji
- 184207 High-speed calibration method for cascaded phase shifters in integrated quantum photonic chips
Xing Ze-Yu Li Zhi-Hao Feng Tian-Feng Zhou Xiao-Qi
- 184301 Translation and nonspherical oscillation of single bubble in ultrasound field
Wu Xue-You Liang Jin-Fu
- 184302 Type-II Dirac points and edge transports in phononic crystal plates
Luo Quan-Bin Huang Xue-Qin Deng Wei-Yin Wu Ying Lu Jiu-Yang Liu Zheng-You
- 184701 Liquid-liquid-driven spreading process based on Marangoni effect
Zhao Wen-Jing Wang Jin Qin Wei-Guang Ji Wen-Jie Lan Ding Wang Yu-Ren
- 184702 Large eddy simulation of Taylor-Couette turbulent flow under transverse magnetic field
Dong Shuai Ji Xiang-Yong Li Chun-Xi
- 184703 Transitions of power-law fluids in two-dimensional lid-driven cavity flow using lattice Boltzmann method
Zhang Heng Ren Feng Hu Hai-Bao

PHYSICS OF GASES, PLASMAS, AND ELECTRIC DISCHARGES

- 185201 Hollow current and reversed magnetic shear configurations in pellet injection discharges on Huanliuqi 2A tokamak
Shen Yong Dong Jia-Qi He Hong-Da Ding Xuan-Tong Shi Zhong-Bing Ji Xiao-Quan Li Jia Han Ming-Kun Wu Na Jiang Min Wang Shuo Li Ji-Quan Xu Min Duan Xu-Ru
- 185202 Methods of calculating radial collapse velocity of short- γ diode field on Qiangguang-I accelerator
Hu Yang Sun Jiang Zhang Jin-Hai Cai Dan Yang Hai-Liang Su Zhao-Feng Sun Tie-Ping Sun Jian-Feng Zhao Bo-Wen

CONDENSED MATTER: STRUCTURAL, MECHANICAL, AND
THERMAL PROPERTIES

- 186201 Effect of twin boundary on mechanical behavior of Cr₂₆Mn₂₀Fe₂₀Co₂₀Ni₁₄ high-entropy alloy by molecular dynamics simulation
Shen Tian-Zhan Song Hai-Yang An Min-Rong
- 186202 Ultrafast strain dynamics in SrCoO_{2.5} thin films
Liu Xu Huang Yu Mao Jing-Yi Chen Li-Ming

(Continued)

- 186801 Surface and electronic structure of antiferromagnetic axion insulator candidate EuIn_2As_2
*Li Yuan Deng Han-Bin Wang Cui-Xiang Li Shuai-Shuai Liu Li-Min Zhu Chang-Jiang
Jia Ke Sun Ying-Kai Du Xin Yu Xin Guan Tong Wu Rui Zhang Shu-Yuan
Shi You-Guo Mao Han-Qing*

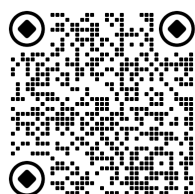
CONDENSED MATTER: ELECTRONIC STRUCTURE, ELECTRICAL, MAGNETIC, AND OPTICAL PROPERTIES

- 187301 Optical conductivity of twisted bilayer graphene under heterostrain
Cai Xiao-Xiao Luo Guo-Yu Li Zhi-Qiang He Yan
- 187302 Thermal property of graphene/silicon carbide heterostructure by molecular dynamics simulation
Liu Dong-Jing Wang Shao-Ming Yang Ping
- 187303 Enhanced nonlinear optical effects based on strong coupling between epsilon-near-zero mode and gap surface plasmons
Guo Qi-Qi Chen Yi-Hang
- 187304 Fabrication and thermoelectric properties of Si micro/nanobelts
*Wei Jiang-Tao Yang Liang-Liang Wei Lei Qin Yuan-Hao Song Pei-Shuai
Zhang Ming-Liang Yang Fu-Hua Wang Xiao-Dong*
- 187501 Spin waves in $\text{Y}_3\text{Fe}_5\text{O}_{12}$ -CoFeB spin-wave directional coupler
Yan Jian Ren Zhi-Wei Zhong Zhi-Yong
- 187701 Strain tuning of negative capacitance in epitaxial $\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$ thin films
Lin Cui Bai Gang Li Wei Gao Cun-Fa
- 187702 Enhancement of interface transportation for quantum dot solar cells using ultrathin InN by atomic layer deposition
*Li Ye Wang Xi-Xi Wei Hui-Yun Qiu Peng He Ying-Feng Song Yi-Meng Duan Zhang
Shen Cheng-Tao Peng Ming-Zeng Zheng Xin-He*

INTERDISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY

- 188101 First-principles study of formation and performance of diamond (111)/Al interface
*Sun Shi-Yang Chi Zhong-Bo Xu Ping-Ping An Ze-Yu Zhang Jun-Hao Tan Xin
Ren Yuan*
- 188401 Design and optimization of passivation layers and emitter layers in silicon heterojunction solar cells
*Zhang Bo-Yu Zhou Jia-Kai Ren Cheng-Chao Su Xiang-Lin Ren Hui-Zhi Zhao Ying
Zhang Xiao-Dan Hou Guo-Fu*
- 188501 High-efficiency polarization-insensitive superconducting nanowire single photon detector
Zhang Wen-Ying Hu Peng Xiao You Li Hao You Li-Xing
- 188701 Multi-beam multi-mode vortex beams generation based on metasurface in terahertz band
Li Guo-Qiang Shi Hong-Yu Liu Kang Li Bo-Lin Yi Jian-Jia Zhang An-Xue Xu Zhuo
- 188801 Hypervelocity impact on volt-ampere characteristic of solar arrays by using two-stage light gas gun
*Zheng Jian-Dong Zhou Jiang Pi Xiao-Li Zou Chen Li Yi-Fan Xu Kun-Bo
Gong Zi-Zheng Hu Guo-Jie*

Color figures can be viewed in the online issue.



Online issue