

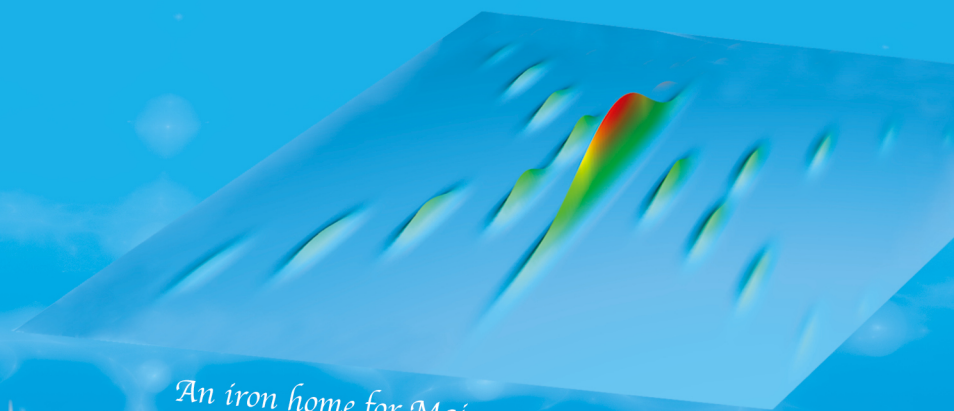
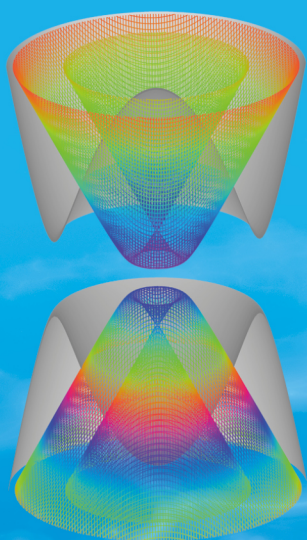
物理学报

2020 Vol.69

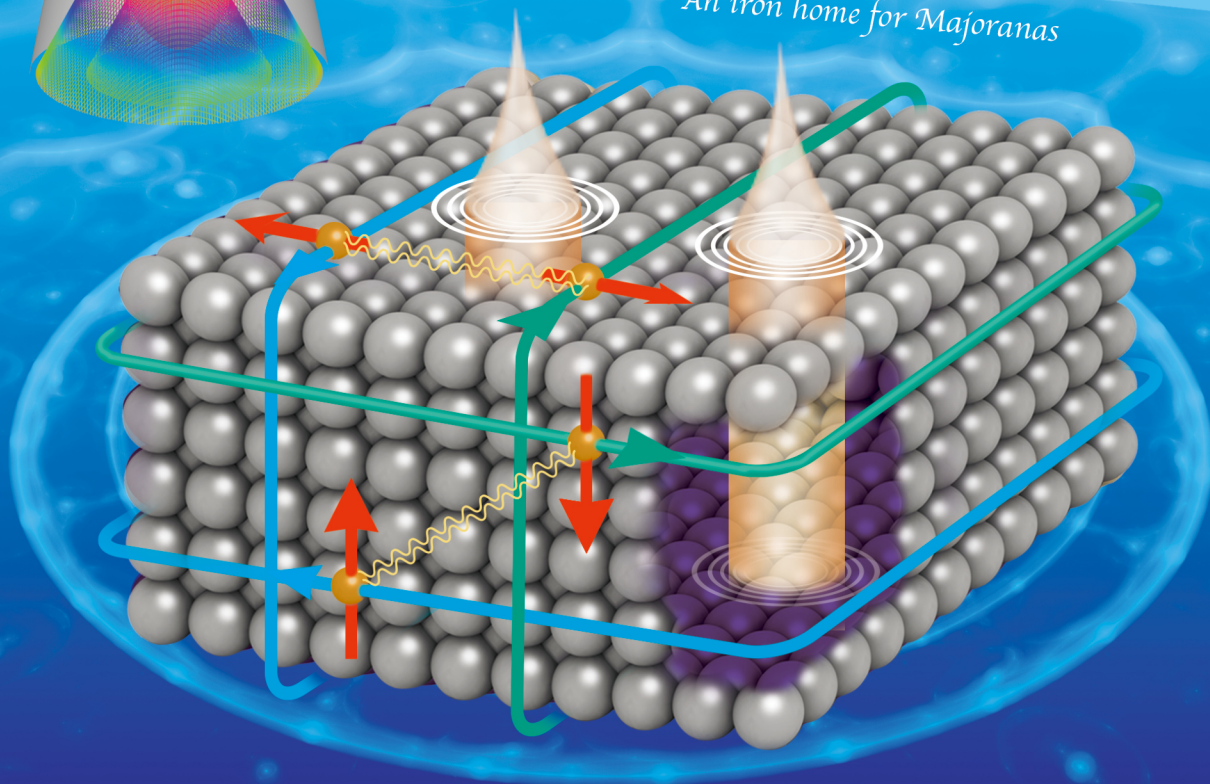
ISSN 1000-3290

11

Acta Physica Sinica



An iron home for Majoranas



中国物理学会 中国科学院物理研究所

Chinese Physical Society Institute of Physics, Chinese Academy of Sciences

万方数据

物 理 学 报

第 69 卷 第 11 期 2020 年 6 月

目 次

特邀综述

- 117501 层状手性拓扑磁材料 $\text{Cr}_{1/3}\text{NbS}_2$ 的磁学特性 王鹏程 曹亦 谢红光 殷焱 王伟 王泽莹 马欣辰 王琳 黄维

专题：探索凝聚态中的马约拉纳粒子

- 110101 探索凝聚态中的马约拉纳粒子专题编者按 张富春 丁洪
综述
- 110301 铁基超导涡旋演生马约拉纳零能模 孔令元 丁洪
- 110302 马约拉纳零能模的非阿贝尔统计及其在拓扑量子计算的应用 何映萍 洪健松 刘雄军
- 117102 拓扑超导 Majorana 束缚态的探索 梁奇锋 王志 川上拓人 胡晓
- 117302 手征马约拉纳费米子 王靖
- 117401 基于 Yu-Shiba-Rusinov 态的拓扑超导理论 李华

综述

- 118101 超高真空条件下分子束外延生长的单层二维原子晶体材料的研究进展 王兴悦 张辉 阮子林 郝振亮 杨孝天 蔡金明 卢建臣
- 118501 发光铅卤钙钛矿纳米晶稳定性的研究进展 樊钦华 祖延清 李璐 代锦飞 吴朝新

总论

- 110201 水流在旋转黑磷纳米管内轴向驱动特性 张忠强 范晋伟 张福建 程广贵 丁建宁

核物理学

- 112801 特征 γ 射线谱分析的蒙特卡罗模拟技术 邓力 李瑞 王鑫 付元光

原子和分子物理学

- 113401 D + DBr 反应的态-态动力学研究 袁方园 朱子亮
- 113701 三模腔-原子闭环系统中可控的量子干涉和光子传输 戴雨菲 陈焱彤 王岚 银恺 张岩

电磁学、光学、声学、传热学、经典力学和流体动力学

- 114201 两种 Ge-Sb-Se 薄膜的光学性质及微观结构 潘磊 宋宝安 肖传富 张培晴 林常规 戴世勋
- 114202 离轴抽运厄米-高斯模固体激光器 连天虹 王石语 寇科 刘芸

- 114203 M 型少模光纤中模间受激布里渊散射特性及其温度和应变传感特性 李雪健 曹敏 汤敏 半月安 陶洪 古皓 任文华 简伟 任国斌
- 114301 深海海底反射区声场角谱域分布结构分析及在声纳波束俯仰上的应用 ... 韩志斌 彭朝晖 刘雄厚

气体、等离子体和放电物理

- 115201 螺旋波等离子体中螺旋波与 Trivelpiece-Gould 波模式耦合及线性能量沉积特性参量分析 李文秋 赵斌 王刚 相东
- 115202 烧蚀对强脉冲离子束在分子材料中能量沉积的影响 张世健 喻晓 钟昊玟 梁国营 许莫非 张楠 任建慧 匡仕成 颜莎 Gennady Efimovich Remnev 乐小云
- 115203 屏栅边缘小孔孔径对离子推力器性能的影响 ... 赵以德 李娟 吴宗海 黄永杰 李建鹏 张天平
- 115204 脉冲调制条件下介质阻挡特高频放电特性的数值模拟 高书涵 王绪成 张远涛

凝聚物质：结构、力学和热学性质

- 116101 分子动力学模拟冷却速率对非晶合金结构与变形行为的影响 周边 杨亮
- 116102 体心立方 Fe 中 $\langle 100 \rangle$ 位错环对微裂纹扩展影响的分子动力学研究 梁晋洁 高宁 李玉红
- 116201 三元 Nb 系和 Ta 系硼碳化物稳定性和物理性能的第一性原理研究 胡前库 秦双红 吴庆华 李丹丹 张斌 袁文凤 王李波 周爱国
- 116202 单晶 Ce 冲击相变的分子动力学模拟 第伍旻杰 胡晓棉
- 116401 Straining 流对柱状晶体在三元过冷熔体中生长的影响 范海龙 陈明文

凝聚物质：电子结构、电学、磁学和光学性质

- 117101 非金属元素掺杂二硒化钨/石墨烯异质结对其肖特基调控的理论研究 马浩浩 张显斌 魏旭艳 曹佳萌
- 117301 SnSe_2 的忆阻及磁阻效应 何斌 何雄 刘国强 朱璨 王嘉赋 孙志刚
- 117701 锂辉石/碳化硅复相陶瓷材料的制备与性能 鲁媛媛 鹿桂花 周恒为 黄以能

物理学交叉学科及有关科学技术领域

- 118801 反式卤素钙钛矿太阳能电池光伏性能的理论研究 张翱 张春秀 陈云琳 张春梅 孟涛

地球物理学、天文学和天体物理学

- 119501 球几何中辐射源粒子抽样方法的改进 许育培 李树
- 119601 “嫦娥 5 号”登陆候选地 Mons Rümker 的光照与温度特征分析 钟振 张腾 张杰 陈世国

文章图片的彩色效果详见网刊



扫码阅读
电子版

ACTA PHYSICA SINICA

Vol. 69, No. 11, June 2020

CONTENTS

INVITED REVIEW

- 117501 Magnetic properties of layered chiral topological magnetic material $\text{Cr}_{1/3}\text{NbS}_2$
*Wang Peng-Cheng Cao Yi Xie Hong-Guang Yin Yao Wang Wei Wang Ze-Ying
Ma Xin-Chen Wang Lin Huang Wei*

SPECIAL TOPIC—Majorana in condensed matter

- 110101 Preface to the special topic: Majorana in condensed matter
Zhang Fu-Chun Ding Hong

REVIEW

- 110301 Emergent vortex Majorana zero mode in iron-based superconductors
Kong Ling-Yuan Ding Hong
- 110302 Non-abelian statistics of Majorana modes and the applications to topological quantum computation
He Ying-Ping Hong Jian-Song Liu Xiong-Jun
- 117102 Exploration of Majorana bound states in topological superconductors
Liang Qi-Feng Wang Zhi Kawakami Takuto Hu Xiao
- 117302 Chiral Majorana fermion
Wang Jing
- 117401 Theory of topological superconductivity based on Yu-Shiba-Rusinov states
Li Jian

REVIEW

- 118101 Research progress of monolayer two-dimensional atomic crystal materials grown by molecular beam epitaxy in ultra-high vacuum conditions
*Wang Xing-Yue Zhang Hui Ruan Zi-Lin Hao Zhen-Liang Yang Xiao-Tian
Cai Jin-Ming Lu Jian-Chen*
- 118501 Research progress of stability of luminous lead halide perovskite nanocrystals
Fan Qin-Hua Zu Yan-Qing Li Lu Dai Jin-Fei Wu Zhao-Xin

GENERAL

- 110201 Axial driving characteristics of water in rotating black phosphorus nanotubes
Zhang Zhong-Qiang Fan Jin-Wei Zhang Fu-Jian Cheng Guang-Gui Ding Jian-Ning

INVITED REVIEW

- 112801 Monte Carlo simulation technology based on characteristic γ -ray spectrum analysis
Deng Li Li Rui Wang Xin Fu Yuan-Guang

(Continued)

ATOMIC AND MOLECULAR PHYSICS

- 113401 State-to-state dynamics of D + DBr reaction
Yuan Fang-Yuan Zhu Zi-Liang
- 113701 Controllable quantum interference and photon transport in three-mode closed-loop cavity-atom system
Dai Yu-Fei Chen Yao-Tong Wang Lan Yin Kai Zhang Yan

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

- 114201 Optical properties and microstructure of two Ge-Sb-Se thin films
Pan Lei Song Bao-An Xiao Chuan-Fu Zhang Pei-Qing Lin Chang-Gui Dai Shi-Xun
- 114202 Off-axis pumped Hermite-Gaussian mode solid-state laser
Lian Tian-Hong Wang Shi-Yu Kou Ke Liu Yun
- 114203 Inter-mode stimulated Brillouin scattering and simultaneous temperature and strain sensing in M-shaped few-mode fiber
Li Xue-Jian Cao Min Tang Min Mi Yue-An Tao Hong Gu Hao Ren Wen-Hua Jian Wei Ren Guo-Bin
- 114301 Analysis of sound field distribution of angle dimension in deep ocean bottom bounce area and its application to active sonar vertical beam pitch
Han Zhi-Bin Peng Zhao-Hui Liu Xiong-Hou

PHYSICS OF GASES, PLASMAS, AND ELECTRIC DISCHARGES

- 115201 Parametric analysis of mode coupling and liner energy deposition properties of helicon and Trivelpiece-Gould waves in helicon plasma
Li Wen-Qiu Zhao Bin Wang Gang Xiang Dong
- 115202 Influence of ablation on energy deposition in polymer material under irradiation of intense pulsed ion beam
Zhang Shi-Jian Yu Xiao Zhong Hao-Wen Liang Guo-Ying Xu Mo-Fei Zhang Nan Ren Jian-Hui Kuang Shi-Cheng Yan Sha Gennady Efimovich Remnev Le Xiao-Yun
- 115203 Influence of screen gird aperture diameter in outer region on performance of dual-mode ion thruster
Zhao Yi-De Li Juan Wu Zong-Hai Huang Yong-Jie Li Jian-Peng Zhang Tian-Ping
- 115204 Numerical study on discharge characteristics in ultra-high frequency band modulated by pulses with electrodes covered by barriers
Gao Shu-Han Wang Xu-Cheng Zhang Yuan-Tao

CONDENSED MATTER: STRUCTURAL, MECHANICAL, AND THERMAL PROPERTIES

- 116101 Molecular dynamics simulation of effect of cooling rate on the microstructures and deformation behaviors in metallic glasses
Zhou Bian Yang Liang

(Continued)

- 116102 Effect of interstitial $\langle 100 \rangle$ dislocation loop on expansion of micro-crack in body centered cubic iron investigated by molecular dynamics method
Liang Jin-Jie Gao Ning Li Yu-Hong
- 116201 First-principles calculations of stabilities and physical properties of ternary niobium borocarbides and tantalum borocarbides
Hu Qian-Ku Qin Shuang-Hong Wu Qing-Hua Li Dan-Dan Zhang Bin Yuan Wen-Feng Wang Li-Bo Zhou Ai-Guo
- 116202 Molecular dynamics simulation of shock-induced isostructural phase transition in single crystal Ce
Diwu Min-Jie Hu Xiao-Mian
- 116401 Effect of straining flow on growth of columnar crystal in ternary undercooled melt
Fan Hai-Long Chen Ming-Wen

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

- 117101 Theoretical study on Schottky regulation of WSe₂/graphene heterostructure doped with nonmetallic elements
Ma Hao-Hao Zhang Xian-Bin Wei Xu-Yan Cao Jia-Meng
- 117301 Memristive and magnetoresistance effects of SnSe₂
He Bin He Xiong Liu Guo-Qiang Zhu Can Wang Jia-Fu Sun Zhi-Gang
- 117701 Preparation and properties of spodumene/silicon carbide composite ceramic materials
Lu Yuan-Yuan Lu Gui-Hua Zhou Heng-Wei Huang Yi-Neng

INTERDISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY

- 118801 Theoretical study of photovoltaic performance for inverted halide perovskite solar cells
Zhang Ao Zhang Chun-Xiu Chen Yun-Lin Zhang Chun-Mei Meng Tao

GEOPHYSICS, ASTRONOMY, AND ASTROPHYSICS

- 119501 Modification of method of sampling radiation source particle in spherical geometry
Xu Yu-Pei Li Shu
- 119601 Illumination and temperature analysis for CE-5 candidate landing site Mons Rümker
Zhong Zhen Zhang Teng Zhang Jie Chen Shi-Guo

Color figures can be viewed in the online issue.



Online issue