

Chinese Physics B

Volume 31 Number 1 January 2022

Contents

TOPICAL REVIEW — Unconventional superconductivity

017403 Superconductivity in octagraphene

Jun Li and Dao-Xin Yao

SPECIAL TOPIC — Superconductivity in vanadium-based kagome materials

017105 Tri-hexagonal charge order in kagome metal CsV_3Sb_5 revealed by ^{121}Sb nuclear quadrupole resonance

Chao Mu, Qiangwei Yin, Zhijun Tu, Chunsheng Gong, Ping Zheng, Hechang Lei, Zheng Li and Jianlin Luo

017106 A density-wave-like transition in the polycrystalline V_3Sb_2 sample with bilayer kagome lattice

Ningning Wang, Yuhao Gu, M. A. McGuire, Jiaqiang Yan, Lifen Shi, Qi Cui, Keyu Chen, Yuxin Wang, Hua Zhang, Huaixin Yang, Xiaoli Dong, Kun Jiang, Jiangping Hu, Bosen Wang, Jianping Sun and Jinguang Cheng

017404 Evolution of superconductivity and charge order in pressurized RbV_3Sb_5

Feng Du, Shuaishuai Luo, Rui Li, Brenden R. Ortiz, Ye Chen, Stephen D. Wilson, Yu Song and Huiqiu Yuan

017405 Pressure tuning of the anomalous Hall effect in the kagome superconductor CsV_3Sb_5

Fang-Hang Yu, Xi-Kai Wen, Zhi-Gang Gui, Tao Wu, Zhenyu Wang, Zi-Ji Xiang, Jianjun Ying and Xianhui Chen

TOPICAL REVIEW — Non-Hermitian physics

010307 Efficient and stable wireless power transfer based on the non-Hermitian physics

Chao Zeng, Zhiwei Guo, Kejia Zhu, Caifu Fan, Guo Li, Jun Jiang, Yunhui Li, Haitao Jiang, Yaping Yang, Yong Sun and Hong Chen

SPECIAL TOPIC — Non-Hermitian physics

010308 Non-Hermitian Weyl semimetals: Non-Hermitian skin effect and non-Bloch bulk-boundary correspondence

Xiaosen Yang, Yang Cao and Yunjia Zhai

010309 Two-body exceptional points in open dissipative systems

Peize Ding and Wei Yi

010310 Topological properties of non-Hermitian Creutz ladders

Hui-Qiang Liang and Linhu Li

(Continued on the Bookbinding Inside Back Cover)

010311 Disorder in parity–time symmetric quantum walks

Peng Xue

010312 Topology of a parity–time symmetric non-Hermitian rhombic lattice

Shumai Zhang, Liang Jin and Zhi Song

010313 Exact solutions of non-Hermitian chains with asymmetric long-range hopping under specific boundary conditions

Cui-Xian Guo and Shu Chen

014215 Anti- \mathcal{PT} -symmetric Kerr gyroscope

Huilai Zhang, Meiyu Peng, Xun-Wei Xu and Hui Jing

017401 Majorana zero modes, unconventional real–complex transition, and mobility edges in a one-dimensional non-Hermitian quasi-periodic lattice

Shujie Cheng and Xianlong Gao

RAPID COMMUNICATION

017502 Probing the magnetization switching with in-plane magnetic anisotropy through field-modified magnetoresistance measurement

Runrun Hao, Kun Zhang, Yinggang Li, Qiang Cao, Xueying Zhang, Dapeng Zhu and Weisheng Zhao

018202 Substrate tuned reconstructed polymerization of naphthalocyanine on Ag(110)

Qi Zheng, Li Huang, Deliang Bao, Rongting Wu, Yan Li, Xiao Lin, Shixuan Du and Hong-Jun Gao

GENERAL

010201 Soliton molecules and asymmetric solitons of the extended Lax equation via velocity resonance

Hongcai Ma, Yuxin Wang and Aiping Deng

010202 Theoretical study of (e, 2e) triple differential cross sections of pyrimidine and tetrahydrofurfuryl alcohol molecules using multi-center distorted-wave method

Yiao Wang, Zhenpeng Wang, Maomao Gong, Chunkai Xu and Xiangjun Chen

010301 Protection of entanglement between two V-atoms in a multi-cavity coupling system

Wen-Jin Huang, Mao-Fa Fang and Xiong Xu

010302 Semi-quantum private comparison protocol of size relation with d -dimensional GHZ states

Bing Wang, San-Qiu Liu and Li-Hua Gong

010303 Determination of quantum toric error correction code threshold using convolutional neural network decoders

Hao-Wen Wang, Yun-Jia Xue, Yu-Lin Ma, Nan Hua and Hong-Yang Ma

010304 Low-loss belief propagation decoder with Tanner graph in quantum error-correction codes

Dan-Dan Yan, Xing-Kui Fan, Zhen-Yu Chen and Hong-Yang Ma

010305 Quantum multicast communication over the butterfly network

Xing-Bo Pan, Xiu-Bo Chen, Gang Xu, Zhao Dou, Zong-Peng Li and Yi-Xian Yang

- 010306 Vacuum-gap-based lumped element Josephson parametric amplifier**
Sishi Wu, Dengke Zhang, Rui Wang, Yulong Liu, Shuai-Peng Wang, Qichun Liu, J S Tsai and Tiefu Li
- 010314 Dynamical learning of non-Markovian quantum dynamics**
Jintao Yang, Junpeng Cao and Wen-Li Yang
- 010501 Nonlinear dynamics analysis of cluster-shaped conservative flows generated from a generalized thermostatted system**
Yue Li, Zengqiang Chen, Zenghui Wang and Shijian Cang
- 010502 A new simplified ordered upwind method for calculating quasi-potential**
Qing Yu and Xianbin Liu
- 010503 Explosive synchronization in a mobile network in the presence of a positive feedback mechanism**
Dong-Jie Qian
- 010504 An extended smart driver model considering electronic throttle angle changes with memory**
Congzhi Wu, Hongxia Ge and Rongjun Cheng
- 010505 Large-amplitude dust acoustic solitons in an opposite polarity dusty plasma with generalized polarization force**
Mahmood A. H. Khaled, Mohamed A. Shukri and Yusra A. A. Hager
- 010701 Effect of staggered array structure on the flow field of micro gas chromatographic column**
Daohan Ge, Zhou Hu, Liqiang Zhang and Shining Zhu
- 010702 Instantaneous frequency measurement using two parallel I/Q modulators based on optical power monitoring**
Chuangye Wang, Tigang Ning, Jing Li, Li Pei, Jingjing Zheng and Jingchuan Zhang

ATOMIC AND MOLECULAR PHYSICS

- 013101 M1 transition energy and rate in the ground configuration of Ag-like ions with $62 \leq Z \leq 94$**
Ju Meng, Wen-Xian Li, Ji-Guang Li, Ze-Qing Wu, Jun Yan, Yong Wu and Jian-Guo Wang
- 013201 Solving the time-dependent Schrödinger equation by combining smooth exterior complex scaling and Arnoldi propagator**
Shun Wang and Wei-Chao Jiang
- 013202 Influence of Coulomb force between two electrons on double ionization of He-like atoms**
Peipei Liu, Yongfang Li and Jingtao Zhang
- 013401 Electron-impact ionization cross section calculations for lithium-like ions**
Guo-Jie Bian, Jyh-Ching Chang, Ke-Ning Huang, Chen-Sheng Wu, Yong-Jun Cheng, Kai Wang and Yong Wu

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

- 014101 Tunable terahertz transmission behaviors and coupling mechanism in hybrid MoS₂ meta-materials**
Yuwang Deng, Qingli Zhou, Wanlin Liang, Pujiang Zhang and Cunlin Zhang
- 014102 High-confinement ultra-wideband bandpass filter using compact folded slotline spoof surface plasmon polaritons**
Xue-Wei Zhang, Shao-Bin Liu, Ling-Ling Wang, Qi-Ming Yu, Jian-Lou and Shi-Ning Sun
- 014201 Bandwidth-tunable silicon nitride microring resonators**
Jiacheng Liu, Chao Wu, Gongyu Xia, Qilin Zheng, Zhihong Zhu and Ping Xu
- 014202 High-efficiency asymmetric diffraction based on PT-antisymmetry in quantum dot molecules**
Guangling Cheng, Yongsheng Hu, Wenxue Zhong and Aixi Chen
- 014203 Propagation dynamics of dipole breathing wave in lossy nonlocal nonlinear media**
Jian-Li Guo, Zhen-Jun Yang, Xing-Liang Li and Shu-Min Zhang
- 014204 High-energy picosecond single-pass multi-stage optical parametric generator and amplifier**
Yang Yu, Zhao Liu, Ke Liu, Chao Ma, Hong-Wei Gao, Xiao-Jun Wang, Yong Bo, Da-Fu Cui and Qin-Jun Peng
- 014205 Photonic spin Hall effect and terahertz gas sensor via InSb-supported long-range surface plasmon resonance**
Jie Cheng, Gaojun Wang, Peng Dong, Dapeng Liu, Fengfeng Chi and Shengli Liu
- 014206 Plasmonic sensor with self-reference capability based on functional layer film composed of Au/Si gratings**
Jiankai Zhu, Xiangxian Wang, Yunping Qi and Jianli Yu
- 014207 Wavelength and sensitivity tunable long period gratings fabricated in fluid-cladding microfibers**
Wa Jin, Linke Zhang, Xiang Zhang, Ming Xu, Weihong Bi and Yuefeng Qi
- 014208 Topological phases and type-II edge state in two-leg-coupled Su–Schrieffer–Heeger chains**
Tianqi Luo, Xin Guan, Jingtao Fan, Gang Chen and Suo-Tang Jia
- 014209 Brightening single-photon emitters by combining an ultrathin metallic antenna and a silicon quasi-BIC antenna**
Shangtong Jia, Zhi Li and Jianjun Chen
- 014210 Hidden symmetry operators for asymmetric generalized quantum Rabi models**
Xilin Lu, Zi-Min Li, Vladimir V Mangazeev and Murray T Batchelor
- 014211 Wideband switchable dual-functional terahertz polarization converter based on vanadium dioxide-assisted metasurface**
De-Xian Yan, Qin-Yin Feng, Zi-Wei Yuan, Miao Meng, Xiang-Jun Li, Guo-Hua Qiu and Ji-Ning Li

- 014212 Research of NO₂ vertical profiles with look-up table method based on MAX-DOAS**
Yingying Guo, Suwen Li, Fusheng Mou, Hexiang Qi and Qijin Zhang
- 014213 A 515-nm laser-pumped idler-resonant femtosecond BiB₃O₆ optical parametric oscillator**
Jinfang Yang, Zhaohua Wang, Jiajun Song, Renchong Lv, Xianzhi Wang, Jiangfeng Zhu and Zhiyi Wei
- 014214 Lattice plasmon mode excitation via near-field coupling**
Yun Lin, Shuo Shen, Xiang Gao and Liancheng Wang
- 014216 Mode splitting and multiple-wavelength managements of surface plasmon polaritons in coupled cavities**
Ping-Bo Fu and Yue-Gang Chen
- 014217 Quality factor enhancement of plasmonic surface lattice resonance by using asymmetric periods**
Yunjie Shi, Lei Xiong, Yuming Dong, Degui Sun and Guangyuan Li
- 014301 Microcrack localization using a collinear Lamb wave frequency-mixing technique in a thin plate**
Ji-Shuo Wang, Cai-Bin Xu, You-Xuan Zhao, Ning Hu and Ming-Xi Deng
- 014401 Thermal apoptosis analysis considering injection behavior optimization and mass diffusion during magnetic hyperthermia**
Yun-Dong Tang, Jian Zou, Rodolfo C C Flesch, Tao Jin and Ming-Hua He
- 014402 Construction and mechanism analysis on nanoscale thermal cloak by *in-situ* annealing silicon carbide film**
Jian Zhang, Hao-Chun Zhang, Zi-Liang Huang, Wen-Bo Sun and Yi-Yi Li
- 014501 Three-dimensional clogging structures of granular spheres near hopper orifice**
Jing Yang, Dianjinfeng Gong, Xiaoxue Wang, Zhichao Wang, Jianqi Li, Bingwen Hu and Chengjie Xia
- 014701 Characteristics of temperature fluctuation in two-dimensional turbulent Rayleigh–Bénard convection**
Ming-Wei Fang, Jian-Chao He, Zhan-Chao Hu and Yun Bao
- 014702 Speedup of self-propelled helical swimmers in a long cylindrical pipe**
Ji Zhang, Kai Liu and Yang Ding
- 014703 *In situ* measurement on nonuniform velocity distribution in external detonation exhaust flow by analysis of spectrum features using TDLAS**
Xiao-Long Huang, Ning Li, Chun-Sheng Weng and Yang Kang
- CONDENSED MATTER: STRUCTURAL, MECHANICAL, AND THERMAL PROPERTIES**
- 016101 Mechanism of microweld formation and breakage during Cu–Cu wire bonding investigated by molecular dynamics simulation**
Beikang Gu, Shengnan Shen and Hui Li

016102 First-principles study of structural and opto-electronic characteristics of ultra-thin amorphous carbon films

Xiao-Yan Liu, Lei Wang and Yi Tong

016103 Polymorph selection of magnesium under different pressures: A simulation study

Wei Liu, Boqiang Wu, Ze'an Tian, Yunfei Mo, Tingfei Xi, Zhiyi Wan, Rangsu Liu and Hairong Liu

016104 Pressure dependence of the thermal stability in LiMn_2O_4

Yan Zeng, Hao Liang, Shixue Guan, Junpu Wang, Wenjia Liang, Mengyang Huang and Fang Peng

016105 Spin and spin-orbit coupling effects in nickel-based superalloys: A first-principles study on Ni_3Al doped with Ta/W/Re

Liping Liu, Jin Cao, Wei Guo and Chongyu Wang

016106 Probing structural and electronic properties of divalent metal Mg_{n+1} and SrMg_n ($n = 2-12$) clusters and their anions

Song-Guo Xi, Qing-Yang Li, Yan-Fei Hu, Yu-Quan Yuan, Ya-Ru Zhao, Jun-Jie Yuan, Meng-Chun Li and Yu-Jie Yang

016401 Role of compositional changes on thermal, magnetic, and mechanical properties of Fe-P-C-based amorphous alloys

Indah Raya, Supat Chupradit, Mustafa M Kadhim, Mustafa Z Mahmoud, Abduladheem Turki Jalil, Aravindhan Surendar, Sukaina Tuama Ghafel, Yasser Fakri Mustafa and Alexander N Bocharov

016701 Observation of the BEC-BCS crossover in a degenerate Fermi gas of lithium atoms

Xiang-Chuan Yan, Da-Li Sun, Lu Wang, Jing Min, Shi-Guo Peng and Kai-Jun Jiang

016702 Observation of photon recoil effects in single-beam absorption spectroscopy with an ultracold strontium gas

Fachao Hu, Canzhu Tan, Yuhai Jiang, Matthias Weidemüller and Bing Zhu

016801 Three-dimensional vertical ZnO transistors with suspended top electrodes fabricated by focused ion beam technology

Chi Sun, Linyuan Zhao, Tingting Hao, Renrong Liang, Haitao Ye, Junjie Li and Changzhi Gu

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

017101 Pressure- and temperature-dependent luminescence from Tm^{3+} ions doped in GdYTaO_4

Peng-Yu Zhou, Xiu-Ming Dou, Bao-Quan Sun, Ren-Qin Dou, Qing-Li Zhang, Bao Liu, Pu-Geng Hou, Kai-Lin Chi and Kun Ding

017102 $SU(3)$ spin-orbit coupled fermions in an optical lattice

Xiaofan Zhou, Gang Chen and Suo-Tang Jia

017103 Defect calculations with quasiparticle correction: A revisited study of iodine defects in $\text{CH}_3\text{NH}_3\text{PbI}_3$

Ling Li and Wan-Jian Yin

- 017104 First-principles study on improvement of two-dimensional hole gas concentration and confinement in AlN/GaN superlattices**
Huihui He and Shenyuan Yang
- 017201 Separating spins by dwell time of electrons across parallel double δ -magnetic-barrier nanostructure applied by bias**
Sai-Yan Chen, Mao-Wang Lu and Xue-Li Cao
- 017301 Dependence of short channel length on negative/positive bias temperature instability (NBTI/PBTI) for 3D FinFET devices**
Ren-Ren Xu, Qing-Zhu Zhang, Long-Da Zhou, Hong Yang, Tian-Yang Gai, Hua-Xiang Yin and Wen-Wu Wang
- 017302 Spin transport properties for B-doped zigzag silicene nanoribbons with different edge hydrogenations**
Jing-Fen Zhao, Hui Wang, Zai-Fa Yang, Hui Gao, Hong-Xia Bu and Xiao-Juan Yuan
- 017303 Light focusing in linear arranged symmetric nanoparticle trimer on metal film system**
Yuxia Tang, Shuxia Wang, Yingzhou Huang and Yurui Fang
- 017304 Study on a novel vertical enhancement-mode Ga₂O₃ MOSFET with FINFET structure**
Liangliang Guo, Yuming Zhang, Suzhen Luan, Rundi Qiao and Renxu Jia
- 017305 Integer quantum Hall effect in Kekulé-patterned graphene**
Yawar Mohammadi and Samira Bahrami
- 017402 Cross correlation mediated by distant Majorana zero modes with no overlap**
Lupei Qin, Wei Feng and Xin-Qi Li
- 017501 Perpendicular magnetic anisotropy of Pd/Co₂MnSi/NiFe₂O₄/Pd multilayers on F-mica substrates**
Qingwang Bai, Bin Guo, Qin Yin and Shuyun Wang
- 017601 Theoretical investigation of ferromagnetic resonance in a ferromagnetic thin film with external stress anisotropy**
Jieyu Zhou, Jianhong Rong, Huan Wang, Guohong Yun, Yanan Wang and Shufei Zhang
- 017701 Observation of source/drain bias-controlled quantum transport spectrum in junctionless silicon nanowire transistor**
Yang-Yan Guo, Wei-Hua Han, Xiao-Di Zhang, Jun-Dong Chen and Fu-Hua Yang
- 017801 Efficiency droop in InGaN/GaN-based LEDs with a gradually varying In composition in each InGaN well layer**
Shang-Da Qu, Ming-Sheng Xu, Cheng-Xin Wang, Kai-Ju Shi, Rui Li, Ye-Hui Wei, Xian-Gang Xu and Zi-Wu Ji
- 017802 Magnetic polaron-related optical properties in Ni(II)-doped CdS nanobelts: Implication for spin nanophotonic devices**
Fu-Jian Ge, Hui Peng, Ye Tian, Xiao-Yue Fan, Shuai Zhang, Xian-Xin Wu, Xin-Feng Liu and Bing-Suo Zou

017803 Uniform light emission from electrically driven plasmonic grating using multilayer tunneling barriers

Xiao-Bo He, Hua-Tian Hu, Ji-Bo Tang, Guo-Zhen Zhang, Xue Chen, Jun-Jun Shi, Zhen-Wei Ou, Zhi-Feng Shi, Shun-Ping Zhang, Chang Liu and Hong-Xing Xu

017804 Demonstration of Faraday anomalous dispersion optical filter with reflection configuration

Yi Liu, Baodong Yang, Junmin Wang, Wenyi Huang, Zhiyu Gou and Haitao Zhou

017901 Two different emission enhancement of trans-stilbene crystal under high pressure: Different evolution of structure

Yarong Gu, Guicheng Shao, Zhumei Tian, Haixia Li, Kai Wang and Bo Zou

INTERDISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY

018101 Removal of GaN film over AlGaN with inductively coupled BCl₃/Ar atomic layer etch

Jia-Le Tang and Chao Liu

018102 Plasma assisted molecular beam epitaxial growth of GaN with low growth rates and their properties

Zhen-Hua Li, Peng-Fei Shao, Gen-Jun Shi, Yao-Zheng Wu, Zheng-Peng Wang, Si-Qi Li, Dong-Qi Zhang, Tao Tao, Qing-Jun Xu, Zi-Li Xie, Jian-Dong Ye, Dun-Jun Chen, Bin Liu, Ke Wang, You-Dou Zheng and Rong Zhang

018103 Synthesis and study the influence of yttrium doping on band structure, optical, non-linear optical and dielectric results for Ca₁₂Al₁₄O₃₃ (C12A7) single crystals grown using traveling-solvent floating zone (TSFZ) method

A. Abdel Moez, Ahmed I. Ali and A. Tayel

018201 Theoretical study on the exciton dynamics of coherent excitation energy transfer in the phycoerythrin 545 light-harvesting complex

Xue-Yan Cui, Yi-Jing Yan and Jian-Hua Wei

018401 Modeling and character analyzing of multiple fractional-order memcapacitors in parallel connection

Xiang Xu, Gangquan Si, Zhang Guo and Babajide Oluwatosin Oresanya

018501 Sensitivity of heavy-ion-induced single event burnout in SiC MOSFET

Hong Zhang, Hong-Xia Guo, Feng-Qi Zhang, Xiao-Yu Pan, Yi-Tian Liu, Zhao-Qiao Gu, An-An Ju and Xiao-Ping Ouyang

018502 Heterogeneous integration of InP HEMTs on quartz wafer using BCB bonding technology

Yan-Fu Wang, Bo Wang, Rui-Ze Feng, Zhi-Hang Tong, Tong Liu, Peng Ding, Yong-Bo Su, Jing-Tao Zhou, Feng Yang, Wu-Chang Ding and Zhi Jin

018503 Voltage-controllable magnetic skyrmion dynamics for spiking neuron device applications

Ming-Min Zhu, Shu-Ting Cui, Xiao-Fei Xu, Sheng-Bin Shi, Di-Qing Nian, Jing Luo, Yang Qiu, Han Yang, Guo-Liang Yu and Hao-Miao Zhou

- 018504 A 3D SiC MOSFET with poly-silicon/SiC heterojunction diode**
Sheng-Long Ran, Zhi-Yong Huang, Sheng-Dong Hu, Han Yang, Jie Jiang and Du Zhou
- 018505 Impact of symmetric gate-recess length on the DC and RF characteristics of InP HEMTs**
Ruize Feng, Bo Wang, Shurui Cao, Tong Liu, Yongbo Su, Wuchang Ding, Peng Ding and Zhi Jin
- 018506 A novel low-loss four-bit bandpass filter using RF MEMS switches**
Lulu Han, Yu Wang, Qiannan Wu, Shiyi Zhang, Shanshan Wang and Mengwei Li
- 018701 Social bots and mass media manipulated public opinion through dual opinion climate**
Chun Cheng, Yun Luo, Chang-bin Yu and Wei-ping Ding
- 018801 High efficiency ETM-free perovskite cell composed of CuSCN and increasing gradient $\text{CH}_3\text{NH}_3\text{PbI}_3$**
Tao Wang, Gui-Jiang Xiao, Ren Sun, Lin-Bao Luo and Mao-Xiang Yi
- 018901 Cascading failures of overload behaviors using a new coupled network model between edges**
Yu-Wei Yan, Yuan Jiang, Rong-Bin Yu, Song-Qing Yang and Cheng Hon
- 018902 Information flow between stock markets: A Koopman decomposition approach**
Semba Sherehe, Huiyun Wan, Changgui Gu and Huijie Yang