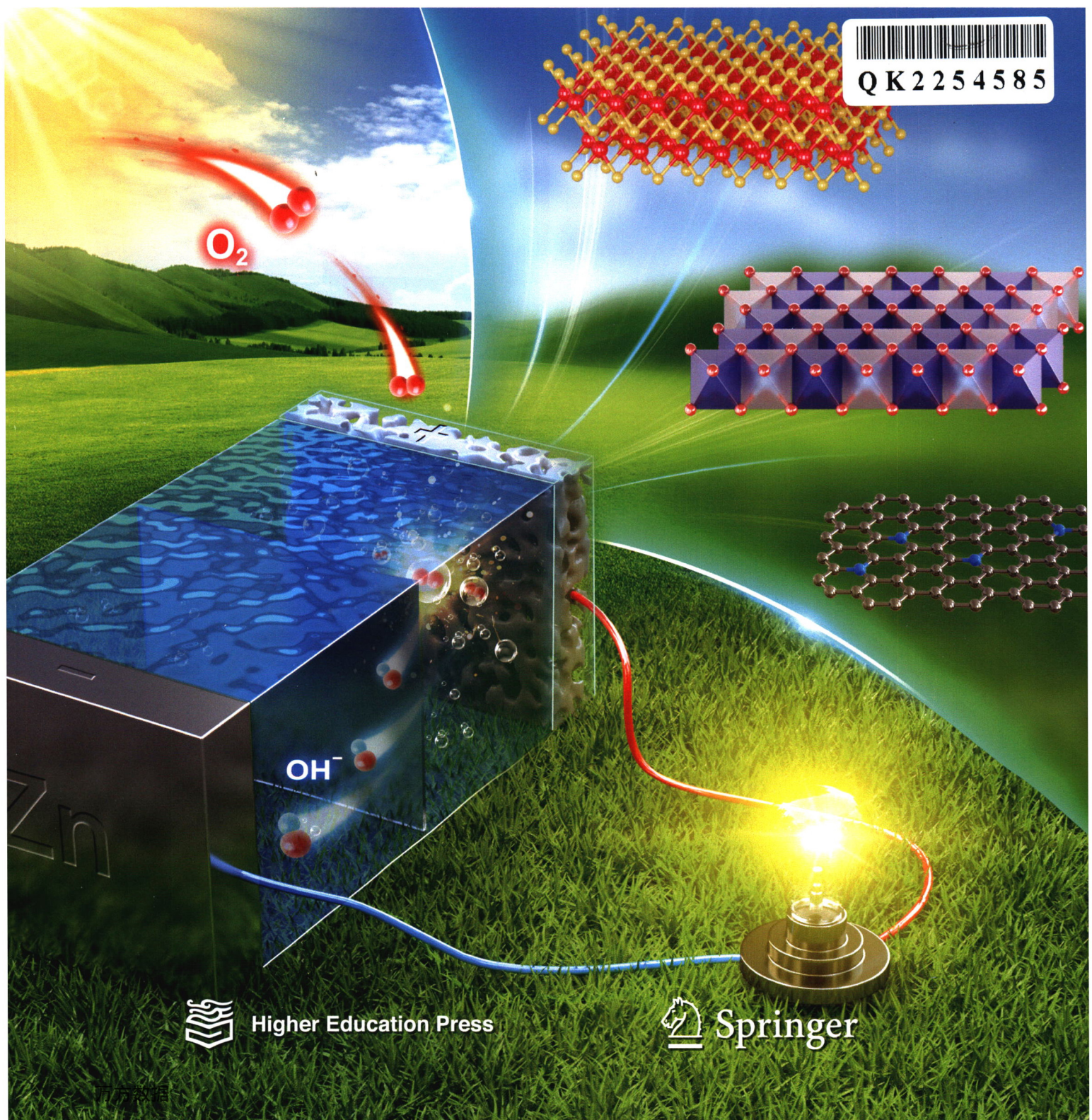


# Frontiers of Physics

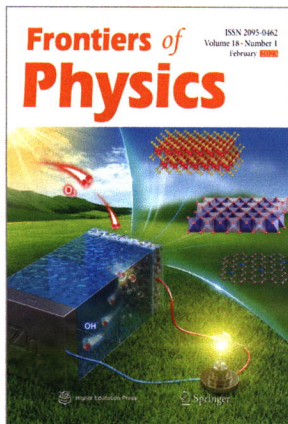
ISSN 2095-0462  
Volume 18 • Number 1  
February 2023



Higher Education Press



Springer



Online submission via  
[mc.manuscriptcentral.com/fop](http://mc.manuscriptcentral.com/fop)

Available online at  
[www.springer.com/11467](http://www.springer.com/11467),  
[journal.hep.com.cn/fop](http://journal.hep.com.cn/fop)

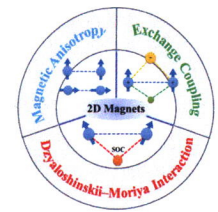
Abstracted/Indexed in  
 Science Citation Index  
 Expanded (SciSearch), Journal  
 Citation Reports/Science  
 Edition, SCOPUS, INSPEC,  
 Astrophysics Data System  
 (ADS), Google Scholar,  
 Academic OneFile, Chinese  
 Science Citation Database,  
 Current Contents/Physical,  
 Chemical and Earth Sciences,  
 Expanded Academic, Gale,  
 INIS Atomindex, INSPIRE,  
 OCLC, SCImago, Summon by  
 ProQuest

# CONTENTS

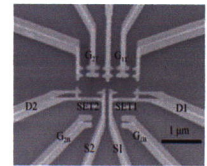
Vol. 18 No. 1 February 2023

## Condensed Matter, Material Sciences & Interdiscipline

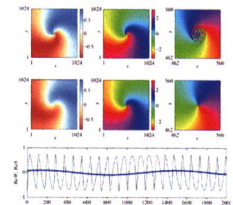
- 13604 **Two-dimensional MXenes and their applications**  
 Guangcun Shan, Zejian Ding, Yury Gogotsi
- 13603 **Bifunctional oxygen electrocatalysts for rechargeable zinc–air battery based on MXene and beyond**  
 Jing Zhang, Zixiang Cui, Jie Liu, Chunjie Li, Haoyi Tan, Guangcun Shan, Ruguang Ma
- 13602 **Magnetic anisotropy, exchange coupling and Dzyaloshinskii–Moriya interaction of two-dimensional magnets**  
 Qirui Cui, Liming Wang, Yingmei Zhu, Jinghua Liang, Hongxin Yang
- 13601 **Topological invariants for anomalous Floquet higher-order topological insulators**  
 Biao Huang
- 13310 **Demonstration and operation of quantum harmonic oscillators in an AlGaAs–GaAs heterostructure**  
 Guangqiang Mei, Pengfei Suo, Li Mao, Min Feng, Limin Cao
- 13309 **Spiral wave chimeras in populations of oscillators coupled to a slowly varying diffusive environment**  
 Lei Yang, Yuan He, Bing-Wei Li
- 13308 **Topological hinge modes in Dirac semimetals**  
 Xu-Tao Zeng, Ziyu Chen, Cong Chen, Bin-Bin Liu, Xian-Lei Sheng, Shengyuan A. Yang
- 13307 **Moiré flat bands of twisted few-layer graphite**  
 Zhen Ma, Shuai Li, Meng-Meng Xiao, Ya-Wen Zheng, Ming Lu, Haiwen Liu, Jin-Hua Gao, X. C. Xie
- 13306 **Graph attention network for global search of atomic clusters: A case study of  $Ag_n$  ( $n = 14–26$ ) clusters**  
 Linwei Sai, Li Fu, Qiuying Du, Jijun Zhao
- 13305 **Two dimensional  $GeO_2/MoSi_2N_4$  van der Waals heterostructures with robust type-II band alignment**  
 Xueping Li, Peize Yuan, Lin Li, Ting Liu, Chenhai Shen, Yurong Jiang, Xiaohui Song, Congxin Xia
- 13304 **Emerging weak antilocalization effect in  $Ta_{0.7}Nb_{0.3}Sb_2$  semimetal single crystals**  
 Meng Xu, Lei Guo, Lei Chen, Ying Zhang, Shuang-Shuang Li, Weiyao Zhao, Xiaolin Wang, Shuai Dong, Ren-Kui Zheng
- 13303 **Electronic properties of monolayer copper selenide with one-dimensional moiré patterns**  
 Gefei Niu, Jianchen Lu, Jianqun Geng, Shicheng Li, Hui Zhang, Wei Xiong, Zilin Ruan, Yong Zhang, Boyu Fu, Lei Gao, Jinming Cai



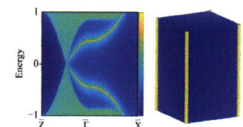
13602



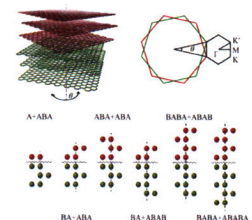
13310



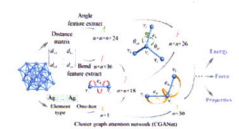
13309



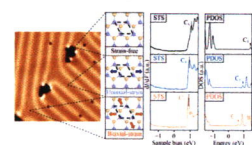
13308



13307



13306



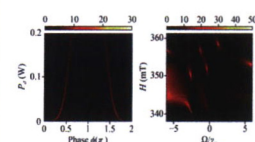
13305

Contents Continued ▶

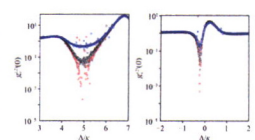
# CONTENTS

- 13302 **Magnetic properties and critical behavior of quasi-2D layered Cr<sub>2</sub>Te<sub>3</sub> thin film**  
Hao Liu, Jiyu Fan, Huan Zheng, Jing Wang, Chunlan Ma,  
Haiyan Wang, Lei Zhang, Caixia Wang, Yan Zhu, Hao Yang
- 13301 **Energy band alignment of 2D/3D MoS<sub>2</sub>/4H-SiC heterostructure modulated by multiple interfacial interactions**  
Huili Zhu, Zifan Hong, Changjie Zhou, Qihui Wu, Tongchang Zheng, Lan Yang,  
Shuqiong Lan, Weifeng Yang
- Atomic, Molecular & Optical Physics**
- 12501 **Nonreciprocal microwave transmission under the joint mechanism of phase modulation and magnon Kerr nonlinearity effect**  
Cui Kong, Jibing Liu, Hao Xiong
- 12305 **Spinning microresonator-induced chiral optical transmission**  
Lu Bo, Xiao-Fei Liu, Chuan Wang, Tie-Jun Wang
- 12304 **Unconventional photon blockade induced by the self-Kerr and cross-Kerr nonlinearities**  
Ling-Juan Feng, Li Yan, Shang-Qing Gong
- 12303 **Dynamic polarization rotation and vector field steering based on phase change metasurface**  
Hairong He, Hui Yang, Zhenwei Xie, Xiacong Yuan
- 12302 **A multi-band atomic candle with microwave-dressed Rydberg atoms**  
Yafen Cai, Shuai Shi, Yijia Zhou, Jianhao Yu, Yali Tian, Yitong Li, Kuan Zhang,  
Chenhao Du, Weibin Li, Lin Li
- 12301 **A giant atom with modulated transition frequency**  
Lei Du, Yan Zhang, Yong Li
- 11301 **Inequality relations for the hierarchy of quantum correlations in two-qubit systems**  
Xiao-Gang Fan, Fa Zhao, Huan Yang, Fei Ming, Dong Wang, Liu Ye

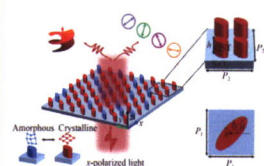
**Special Focus:** School of Materials Science and Engineering, Suzhou University of Science and Technology



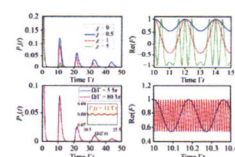
12501



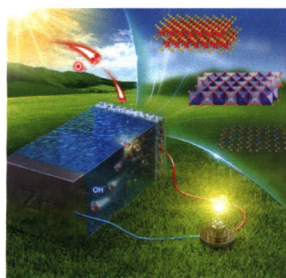
12304



12303



12301

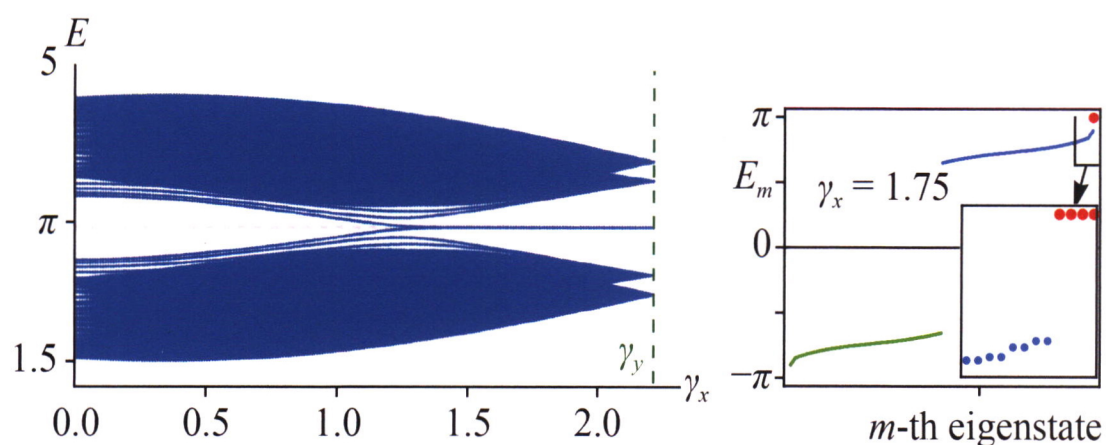


## Cover

Oxygen electrocatalysts are of great importance for the air electrode in zinc–air batteries (ZABs). Owing to large surface area, high electrical conductivity and ease of modification, two-dimensional (2D) materials have been widely studied as oxygen electrocatalysts for the rechargeable ZABs. The elaborately modified 2D materials-based electrocatalysts, usually exhibit excellent performance toward the oxygen reduction reaction (ORR) and oxygen evolution reaction (OER), which have attracted extensive interests of worldwide researchers. Given the rapid development of bifunctional electrocatalysts toward ORR and OER, the latest progress of non-noble electrocatalysts based on layered double hydroxides (LDHs), graphene, and MXenes are intensively reviewed. The discussion ranges from fundamental structure, synthesis, electrocatalytic performance of these catalysts, as well as their applications in the rechargeable ZABs. Finally, the challenges and outlook are provided for further advancing the commercialization of rechargeable ZABs. For more details, please refer to the article entitled “Bifunctional oxygen electrocatalysts for rechargeable zinc–air battery based on MXene and beyond” by Jing Zhang, et al., *Front. Phys.* 18(1), 13603 (2023). [Photo credit: Ruguang Ma at Suzhou University of Science and Technology.]

# Frontiers of Physics

Vol. 18 No. 1 February 2023



The authors review the recent development in constructing higher-order topological band insulators under strong periodic drivings. In particular, they focus on various approaches in formulating the anomalous Floquet topological invariants beyond (quasi-)static band topology, and compare their different physical consequences. See: Biao Huang, Topological invariants for anomalous Floquet higher-order topological insulators, *Front. Phys.* 18(1), 13601 (2023)

Available online  
<http://www.springerlink.com>

物理学前沿  
CN 11-5994/O4  
邮发代号: 80-965

ISSN 2095-0462

