刘晓雄

Curriculum Vitae

基本情况

生日 02.02.1993

国籍 中国

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教育情况

2019–2023 **凝聚态理论物理 博士**, 苏黎世大学.
导师: Prof. Titus Neupert, Dr. Stepan S. Tsirkin

2016–2019 **理论物理 硕士**, 兰州大学.

2012–2016 **物理学基地班 学士**, 兰州大学.

工作经历

2023–至今 **博士后**, 南方科技大学物理系.
合作导师：卢海舟教授

教学经历

苏黎世大学

（负责作业，习题课，答疑）

量子力学，线性代数，数学物理方法，科学计算，科学研究中的机器学习

获奖情况

2024 国家级海外博士后引才专项

2018 研究生国家奖学金

语言

英语 **工作语言，流利**

科学软件开发情况 (开源)

作者:

symmetrize wann matrix

用于对称化 Wannier90 输出矩阵。例如，哈密顿矩阵，位置矩阵等。

软件地址: https://github.com/Liu-Xiaoxiong/symmetrize_wann_matrix

主要开发者:

WannierBerri

一个用于对 Berry 曲率和磁矩及其偏导进行 Wannier 差值高级工具。用于输运性质研究。此外该代码能够自动分辨能带对阵指标进行自动化 Wannierization。(全世界用户超过两百人) http://wannier-berri.org

软件地址: https://github.com/wannier-berri/wannier-berri

计算机技能

编程语言	*Python3, Fortran, Mathematica, Linux*
DFT 软件	*VASP, QuantumEspresso,FPLO,Abinit,Siesta*
DFT 后处理	*Wannier90,WannierBerri,WannierTools,Irrep,Z2Pack*

文章发表情况

共发表 19 篇文章，包括: Nature Material 一篇, Nature Physics 两篇，PRL 三篇, PRB 六篇，APL 一篇

共被引用 1021 次，h-index 11

发表文章

第一作者 ♯，通信作者 ∗

9. Electrical switching of altermagnetism, Yiyuan Chen♯, Xiaoxiong Liu♯, Hai-Zhou Lu, X. C. Xie, arXiv:2412.20938

8. Electrical magnetochiral anisotropy in trigonal tellurium from first principles, Xiaoxiong Liu♯, S. S. Tsirkin, I. Souza, arXiv:2303.10164

7. Covariant derivatives of Berry-type quantities: Application to nonlinear transport,Xiaoxiong Liu♯, S. S. Tsirkin, I. Souza, arXiv:2303.10129

6. Quantum oscillation in Hopf-link semimetals, Lei Shi♯, Xiaoxiong Liu♯, CM Wang, Tianyu Liu, Hai-Zhou Lu, XC Xie, **Physical Review B** 111 (20), L201103 (2025)

5. Triple nodal points characterized by their nodal-line structure in all magnetic space groups, PM Lenggenhager♯, Xiaoxiong Liu∗, T Neupert, T Bzdušek, **Physical Review B** 106 (8), 085128 (2023)

4. Signatures of Weyl fermion annihilation in a correlated kagome magnet, I. Belopolski♯, T. A. Cochran♯, Xiaoxiong Liu♯, Z. Cheng, X. Yang, Z. Guguchia, S. S. Tsirkin, J. Yin, P. Vir, G. S. Thakur, S. Zhang, J. Zhang, K. Kaznatcheev, G. Cheng, G. Chang, D. Multer, N. Shumiya, M. Litskevich, E. Vescovo, T. K. Kim, C. Cacho, N. Yao, C. Felser, T. Neupert, M. Z. Hasan, **Physical Review Letters** 127 (25), 256403, (2021)

3. Magneto-transport and Shubnikov–de Haas oscillations in the type–II Weyl semimetal candidate NbIrTe4 flake, X. Huang♯, Xiaoxiong Liu♯, P. Yu, P. Li, J. Cui, J. Yi, J. Deng, J. Fan, Z. Ji, F. Qu, X. Jing, C. Yang, L Lu, Z. Liu, G. Liu, **Chinese Physics Letters** 36 (7), 077101, (2019)

2. A nonmagnetic topological Weyl semimetal in quaternary Heusler compound CrAlTiV, Xiaoxiong Liu♯, L Li, Y Cui, J Deng, X Tao, **Applied Physics Letters** 111 (12), 122104, (2017)

1. First-principle investigations of 3d transition metal (Fe, Cu, and Co)-doped rocksalt MgO by chain, Xiaoxiong Liu♯, Q Gao, L Li, J Zhao, X Hu, J Deng, **Journal of Superconductivity and Novel Magnetism** 30 (6), 1635-1641, (2017)

合作作者

13. Topological excitonic insulator with tunable momentum order, Md Shafayat Hossain, Zi-Jia Cheng, Yu-Xiao Jiang, Tyler A. Cochran, Song-Bo Zhang, Huangyu Wu, Xiaoxiong Liu, Xi-quan Zheng, Guangming Cheng, Byunghoon Kim, Qi Zhang, Maksim Litskevich, Junyi Zhang, Jinjin Liu, Jia-Xin Yin, Xian P. Yang, Jonathan D. Denlinger, Massimo Tallarida, Ji Dai, Elio Vescovo, Anil Rajapitamahuni, Nan Yao, Anna Keselman, Yingying Peng, Yugui Yao, Zhiwei Wang, Luis Balicas, Titus Neupert, M. Zahid Hasan, **Nature Physics** (accepted)

12. Anomalous Hall Effect due to Magnetic Fluctuations in a Ferromagnetic Weyl Semimetal, Ola Kenji Forslund, Xiaoxiong Liu, Soohyeon Shin, Chun Lin, Masafumi Horio, Qisi Wang, Kevin Kramer, Saumya Mukherjee, Timur Kim, Cephise Cacho, Chennan Wang, Tian Shang, Victor Ukleev, Jonathan S White, Pascal Puphal, Yasmine Sassa, Ekaterina Pomjakushina, Titus Neupert, Johan Chang. **Physical Review Letters** 134 (12), 126602 (2025)

11. Boundary modes of a charge density wave state in a topological material, Maksim Litskevich, Md Shafayat Hossain, Song-Bo Zhang, Zi-Jia Cheng, Satya N Guin, Nitesh Kumar, Chandra Shekhar, Zhiwei Wang, Yongkai Li, Guoqing Chang, Jia-Xin Yin, Qi Zhang, Guangming Cheng, Tyler A Cochran, Nana Shumiya, Yu-Xiao Jiang, Xian P Yang, Daniel Multer, Xiaoxiong Liu, Nan Yao, Yugui Yao, Claudia Felser, Titus Neupert, M Zahid Hasan, **Nature Physics** 20 (8), 1253-1261 (2024)

10. Origin of spin reorientation and intrinsic anomalous Hall effect in the kagome ferrimagnet TbMn6Sn6, DC Jones, S Das, H Bhandari, Xiaoxiong Liu, P Siegfried, MP Ghimire, SS Tsirkin, II Mazin, NJ Ghimire, **Physical Review B** 110 (11), 115134 (2024)

9. Emergent edge modes in shifted quasi-one-dimensional charge density waves, Song-Bo Zhang, Xiaoxiong Liu, Md Shafayat Hossain, Jia-Xin Yin, M Zahid Hasan, Titus Neupert, **Physical Review Letters** 130 (10), 106203 (2023)

8. Universal higher-order bulk-boundary correspondence of triple nodal points, PM Lenggenhager, Xiaoxiong Liu, T Neupert, T Bzdušek, **Physical Review B** 106 (8), 085129 (2023)

7. Low-temperature magnetic crossover in the topological kagome magnet TbMn6Sn6, C Mielke III, WL Ma, V Pomjakushin, O Zaharko, S Sturniolo, Xiaoxiong Liu, V Ukleev, JS White, J-X Yin, SS Tsirkin, CB Larsen, TA Cochran, M Medarde, V Porée, D Das, R Gupta, CN Wang, J Chang, ZQ Wang, R Khasanov, T Neupert, A Amato, L Liborio, S Jia, MZ Hasan, H Luetkens, Z Guguchia. **Communications Physics** 5, 107 (2022)

6. Unconventional chiral charge order in kagome superconductor KV3Sb5, Y. Jiang, J. Yin, M. M. Denner, N. Shumiya, B. R. Ortiz, G. Xu, Z. Guguchia, J. He, M. S. Hossain, Xiaoxiong Liu, J. Ruff, L. Kautzsch, S. Zhang, G. Chang, I. Belopolski, Q. Zhang, T. A. Cochran, D. Multer, M. Litskevich, Z. Cheng, X. Yang, Z. Wang, R. Thomale, T. Neupert, S. D. Wilson, M. Z. Hasan, **Nature Materials** 20 (10), 1353-1357, (2021)

5. From triple-point materials to multiband nodal links, PM Lenggenhager, Xiaoxiong Liu, SS Tsirkin, T Neupert, T Bzdušek, **Physical Review B** 103 (12), L121101, (2021)

4. Quantum anomalous Hall effect and topological phase transition in two-dimensional antiferromagnetic Chern insulator NiOsCl6, WW Yang, L Li, JS Zhao, Xiaoxiong Liu, JB Deng, XM Tao, XR Hu, **Journal of Physics: Condensed Matter** 30 (18), 185501, (2018)

3. Ternary Weyl semimetal $NbIrTe_4$ proposed from first-principles calculation, L Li, HH Xie, JS Zhao, Xiaoxiong Liu, JB Deng, XR Hu, XM Tao, **Physical Review B** 96 (2), 024106, (2017)

2. Effect of As and Nb doping on the magnetic properties for quaternary Heusler alloy FeCoZrGe, GY Mao, Xiaoxiong Liu, Q Gao, L Li, HH Xie, G Lei, JB Deng, **Journal of Magnetism and Magnetic Materials** 398, 1-6, (2016)

1. First-principle study of half-metallic ferromagnetism in rocksalt XO (X= Li, K, Rb, Cs), G Lei, Xiaoxiong Liu, HH Xie, L Li, Q Gao, JB Deng,**Journal of Magnetism and Magnetic Materials** 397, 176-180, (2016)