



Xiaoxiong Liu

Curriculum Vitae

基本情况

生日 02.02.1993

国籍 中国

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职位 博士研究生, 凝聚态理论, 苏黎世大学, 瑞士

教育情况

2019–至今 博士研究生, 苏黎世大学, 瑞士.

导师: Dr. Stepan S. Tsirkin

2016–2019 硕士理论物理, 兰州大学, 中国.

毕业论文: $F\bar{4}3m$ 空间群拓扑 Weyl 半金属的电子性质研究 导师: 邓剑波教授

2012–2016 学士物理, 兰州大学, 中国.

毕业论文: 3d 过渡金属链参杂岩盐矿结构 MgO 的第一性原理研究. 导师: 邓剑波教授

教学助理

苏黎世大学

负责作业, 习题课, 答疑

2022 量子力学

2022 科学研究中的机器学习

2021 数学物理方法 I

2021 线性代数 II

2020 线性代数 I

2020 科学计算

兰州大学

负责作业

2016 力学

获奖情况

2018 研究生国家奖学金

语言

中文 母语

英语 工作语言，流利

相关网页

个人主页 <https://liu-xiaoxiong.github.io/index.html>

研究组主页 <https://www.physik.uzh.ch/en/groups/neupert/team/Xiaoxiong-Liu.html>

Google 学术 <https://scholar.google.com/citations?user=s2Py778AAAAJ&hl=zh-CN&oi=ao>

ResearchGate <https://www.researchgate.net/profile/Xiaoxiong-Liu>

Github <https://github.com/Liu-Xiaoxiong>

Gitlab https://gitlab.com/Xiaoxiong_Liu

科学软件开发情况 (开源)

作者:

symmetrize 用于对称化 Wannier90 输出矩阵。例如，哈密顿矩阵，位置矩阵等。
wann matrix

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。 <http://wannier-berri.org>

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

参与贡献: (正在进行)

ASE 是一些列 python 模块化工具，用于原子结构模拟的初始化，运行，操作，可视和分析。我在负责优化 Wannier 方程部分。 <https://wiki.fysik.dtu.dk/ase/>

计算机技能

编程语言

Python3, Fortran, Mathematica, Linux

DFT 软件

VASP, QuantumEspresso, FPLO, Abnit, Siesta, ASE

DFT 后处理

Wannier90, WannierBerri, WannierTools, Irrep, Z2Pack

高通量

AiiDA

文章发表情况

共发表 15 篇文章，包括: Nature Material 一篇, PRL 一篇（共同一作），PRB 两篇，APL 一篇

引用 279 次，h-index 7

References

Group Leader **Titus Neupert**, Institut-Physik, University of Zurich, <neupert@physik.uzh.ch>.
supervisor **Stepan S Tsirkin**, Institut-Physik, University of Zurich, <stepan@physik.uzh.ch>.
co-author **Ivo Souza**, CMF, University of the Basque Country, <ivo_souza@ehu.eus> >.

参与会议

口头报告

2. Symmetrization of berry curvature and magnetic moment, **Wannier 2022 Developers Meeting (smr 3757)**, ICTP, Trieste, Italy, May 23-27, 2022
1. Gauge-covariant derivatives of the Berry curvature and orbital moment by Wannier interpolation, **APS March meeting**, Virtual, USA, March 15-19, 2021

海报

8. Ab initio calculations of electrical magnetochiral anisotropy with Wannier interpolation, **Swiss Workshop on Materials with Novel Electronic Properties Basic research and applications**, Les Diablerets, Switzerland, August 29-31, 2022
7. Ab initio calculations of electrical magnetochiral anisotropy with Wannier interpolation, **Psi-K Conference**, EPFL, Lausanne, Switzerland, August 22-25, 2022
6. Systematic study of magnetotransport responses with Berry-Boltzmann formalism, **First-Principles Modelling of Defects in Solids Workshop**, ETHz, Zurich, Switzerland, June 13-15, 2022
5. Systematic study of magnetotransport responses with Berry-Boltzmann formalism, **Wannier 2022 Summer School**, ICTP, Trieste, Italy May 16-20, 2022
4. Wannier Interpolation of Berry-Boltzmann Formalism for Berry Curvature related quantities with WannierBerri, **Condensed Matter Theory Symposium**, ETHz, Zurich, Switzerland, September 22, 2021
3. Gauge-covariant derivatives of the Berry curvature and orbital moment by Wannier interpolation, **Virtual DPG Spring Meeting**, Virtual, Germany, March 1-4, 2021
2. Gauge-covariant derivatives of the Berry curvature and orbital moment by Wannier interpolation, **20th International Workshop on Computational Physics and Materials Science: Total Energy and Force Methods**, Virtual, Italy, February 23-25, 2021
1. Gauge-covariant derivatives of the Berry curvature and orbital moment by Wannier interpolation, **Virtual Electronic Structure Workshop**, Virtual, USA, June 3-5, 2020

文章发表

18. Ab initio calculations of electrical magnetochiral anisotropy with Wannier interpolation, [Xiaoxiong Liu](#), S. S. Tsirkin, I. Souza, in progress.
17. Systematic study of magnetotransport responses with Berry-Boltzmann formalism, [Xiaoxiong Liu](#), S. S. Tsirkin, I. Souza, in progress.

16. Covariant derivatives of Berry-type quantities: Application to nonlinear transport, [Xiaoxiong Liu](#), M. Á. Jiménez, S. S. Tsirkin, I. Souza, in progress.
15. Two-dimensional sliding charge density waves and their protected edge modes, SB Zhang, MS Hossain, JX Yin, [Xiaoxiong Liu](#), MZ Hasan, T Neupert, arXiv preprint arXiv:2204.06269
14. Origin of spin reorientation and intrinsic anomalous Hall effect in the kagome ferrimagnet TbMn_6Sn_6 , DC Jones, S Das, H Bhandari, [Xiaoxiong Liu](#), P Siegfried, MP Ghimire, SS Tsirkin, II Mazin, NJ Ghimire, arXiv e-prints, arXiv: 2203.17246
13. Triple nodal points characterized by their nodal-line structure in all magnetic space groups, PM Lenggenhager, [Xiaoxiong Liu](#), T Neupert, T Bzdušek, arXiv preprint arXiv:2201.08404
12. 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)
11. Unconventional chiral charge order in kagome superconductor KV_3Sb_5 , 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)
10. Universal higher-order bulk-boundary correspondence of triple nodal points, PM Lenggenhager, [Xiaoxiong Liu](#), T Neupert, T Bzdušek, arXiv preprint arXiv:2104.11254
9. 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)
8. Intriguing magnetism of the topological kagome magnet TbMn_6Sn_6 , C Mielke III, Wenlong Ma, V Pomjakushin, O Zaharko, [Xiaoxiong Liu](#), J-X Yin, SS Tsirkin, TA Cochran, M Medarde, V Poree, D Das, CN Wang, J Chang, T Neupert, A Amato, S Jia, MZ Hasan, H Luetkens, Z Guguchia, arXiv preprint arXiv:2101.05763
7. Magneto-transport and Shubnikov–de Haas oscillations in the type-II Weyl semimetal candidate NbIrTe_4 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)
6. Quantum anomalous Hall effect and topological phase transition in two-dimensional antiferromagnetic Chern insulator NiOsCl_6 , WW Yang, L Li, JS Zhao, [Xiaoxiong Liu](#), JB Deng, XM Tao, XR Hu, **Journal of Physics: Condensed Matter** 30 (18), 185501, (2018)
5. 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)
4. 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)

3. 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)
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)