Qiang Gao

Curriculum Vitae

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Google Scholar

Education

2018–2023 **Ph.D. in Physics**, *The University of Texas at Austin*, Austin, TX
Thesis: *Exotic phases in condensed matter systems: space-time crystals and moiré superlattices.*
Advisors: Qian Niu, Eslam Khalaf.

2013–2017 **B.Sc. in Applied Physics**, *University of Science and Technology of China*, Hefei, China
Thesis: *On the Efficiency and its Enhancement of the Quantum-dot based light-emitting diode.*
Advisor: Zhenyu Zhang.

Appointments

2024–present **Postdoctoral Fellow**, *Harvard University*, Cambridge, MA

2019–2023 **Research Assistant**, *The University of Texas at Austin*, Austin, TX

2018–2019 **Teaching Assistant**, *The University of Texas at Austin*, Austin, TX

2017–2018 **Research Assistant**, *USTC & Shenzhen University*, China

Publications

Peer-reviewed

1. **Q. Gao**, R. A. Lanzetta, P. Ledwith, J. Wang, and E. Khalaf, "Bootstrapping the quantum Hall problem," *Physical Review X* **15**, 031034 (2025).
2. Y. Li, C. Shi, F. Zhang, X. Liu, Y. Xue, V.-A. Ha, **Q. Gao**, C. Dong, Y.-C. Lin, L. N. Holtzman, *et al.*, "Robust supermoiré pattern in large-angle single-twist bilayers," *Nature Physics* (2025), 1–8.
3. Y. Li, F. Zhang, V.-A. Ha, Y.-C. Lin, C. Dong, **Q. Gao**, Z. Liu, X. Liu, S. H. Ryu, H. Kim, *et al.*, "Tuning commensurability in twisted van der Waals bilayers," *Nature* **625**, 494–499 (2024).
4. **Q. Gao**, J. Dong, P. Ledwith, D. Parker, and E. Khalaf, "Untwisting moiré physics: Almost ideal bands and fractional Chern insulators in periodically strained monolayer graphene," *Physical Review Letters* **131**, 096401 (2023).
5. **Q. Gao** and Q. Niu, "Semiclassical dynamics of electrons in a space-time crystal: Magnetization, polarization, and current response," *Physical Review B* **106**, 224311 (2022).
6. **Q. Gao** and E. Khalaf, "Symmetry origin of lattice vibration modes in twisted multilayer graphene: Phasons versus moiré phonons," *Physical Review B* **106**, 075420 (2022).
7. **Q. Gao**, Y. Ren, and Q. Niu, "DC current generation and power feature in strongly driven Floquet–Bloch systems," *Physical Review Research* **4**, 013216 (2022).
8. **Q. Gao**, Z. Lin, X. Li, and Z. Zhang, "Spontaneous surface plasmon polariton decay of band-edge excitons in quantum dots near a metal surface," *Physical Review B* **103**, 035416 (2021).
9. **Q. Gao** and Q. Niu, "Floquet–Bloch oscillations and intraband Zener tunneling in an oblique spacetime crystal," *Physical Review Letters* **127**, 036401 (2021).
10. Y. Ren, **Q. Gao**, A. H. MacDonald, and Q. Niu, "WKB estimate of bilayer graphene's magic twist angles," *Physical Review Letters* **126**, 016404 (2021).
11. H. Shen, **Q. Gao**, Y. Zhang, Y. Lin, Q. Lin, Z. Li, L. Chen, Z. Zeng, X. Li, Y. Jia, *et al.*, "Visible quantum dot light-emitting diodes with simultaneous high brightness and efficiency," *Nature Photonics* **13**, 192–197 (2019).

Preprints

1. **Q. Gao**, Z. Han, and E. Khalaf, "Bootstrapping Flat-band Superconductors: Rigorous Lower Bounds on Superfluid Stiffness," arXiv:2506.18969 (2025).
2. Z. Liu, **Q. Gao**, Y. Li, X. Liu, F. Zhang, D. S. Kim, Y. Ni, M. Mackenzie, H. Abudayyeh, K. Watanabe, *et al.*, "Field-Tunable Valley Coupling and Localization in a Dodecagonal Semiconductor Quasicrystal," arXiv:2408.02176 (2024).

Contributed Talks

05/2025 Kid's Seminar @Harvard, Boston, MA. *Bootstrapping the Quantum Hall problem.*

03/2025 APS March Meeting, Anaheim, CA. *Bootstrapping the Quantum Hall problem.*

03/2023 APS March Meeting, Las Vegas, NV. *Almost ideal Chern bands in periodically strained graphene.*

03/2018 APS March Meeting, Los Angeles, CA. *Surface plasmon polariton controlled de-excitation of quantum dot.*

Skills

Languages Mandarin Chinese (native), English

Coding MATLAB, Mathematica, Python, LaTeX, Java

Awards and Fellowships

2018–2023 Provost's Graduate Excellence Fellowship, The University of Texas at Austin

2017 Outstanding Undergraduate Thesis, University of Science and Technology of China