

TIXUAN TAN

◇ ttx2000@stanford.edu ◇ <https://ttx002000.github.io/homepage/>

EDUCATION

University of Hong Kong

Bsc in Physics (starting from September 2020)

Sept 2018 - Jan 2023

GPA: 4.3/4.3, ranking 1/44

University of Chicago

Two-Quarter Exchange

Jan 2021- June 2021

GPA: 4.0/4.0

Stanford University

Doctoral study in Physics, Benchmark fellow, Condensed Matter theory

Starting Sept 2023

RESEARCH INTEREST

Condensed Matter Theory, including correlation phenomena (superconductivity, magnetism, etc.), topological phenomena, Moiré system, etc.

HONORS AND AWARDS

Dean's Honors List	In Business& Economics Faculty, by HKU	2019
Grace Wei Huang Memorial Prize	Academic-merit-based scholarship, by HKU	2019 Jun
Noel Chau Scholarship	Academic-merit-based scholarship, by HKU	2020 Jun
AEON Scholarship	Academic-merit-based scholarship, by HKU	2020 May
Zhi Yuan Scholarship	Academic-merit-based scholarship, by Soong Ching Ling Foundation	2018-2022
Lam Chi Him Memorial Prize in Physics	For being the best Year 2 physics student, by HKU	2021
Outstanding Poster Presentation	In the university-wide research poster presentation, by HKU	2021
Undergraduate Research Fellowship	With Research Award (awarded to $\frac{1}{3}$ of fellowship recipients), by HKU	2021
PLANCKS2022 Hong Kong District Champion	International theoretical physics competition, held by DPG, awarded by Physical Society of Hong Kong	2022
Cheung Hon Kit Scholarship	by Faculty of Science, HKU	2023
Stanford Graduate Fellowship	by Stanford University	2023-2026
QuICS Fellowship	by University of Maryland	Declined
Chandrasekhar Fellowship	by University of Chicago	Declined
Provost's Graduate Excellence Fellowship	by UTexas Austin	Declined

PUBLICATION, PREPRINTS AND TALKS

Paper

* for co-first author

- **T.T.**, C. Li, and W. Yao, Edge state in AB-stacked bilayer graphene and its correspondence with SSH ladder, *Phys. Rev. B* **104**, 245419 (2021)
- **T.T.**, F. Fan, C. Li, and W. Yao, Anomalous Bloch oscillation and electrical switching of edge magnetization in bilayer graphene nanoribbon, *Phys. Rev. B* **106**, 045405 (2022)
- Kim, D.S., Dominguez, R.C., Mayorga-Luna, R., **T.T.** et al. Electrostatic moiré potential from twisted hexagonal boron nitride layers. *Nat. Mater.* **23**, 65–70 (2024).
- **T.T.***, Reddy, A. P., Fu, L., Devakul, T. (2024). Designing topology and fractionalization in narrow gap semiconductor films via electrostatic engineering. arXiv preprint arXiv:2402.03085.

- **T.T.**, Devakul, T. (2024). Parent Berry curvature and the ideal anomalous Hall crystal. arXiv preprint arXiv:2403.04196.
- F. Fan*, **T.T.***, C. Xiao, W. Yao. (2024). Magnetic and nematic order of Bose-Fermi mixtures in moiré superlattices of 2D semiconductors . arXiv preprint arXiv:2407.10767.
- **T.T.***, V. Calvera*, S. A. Kivelson. (2024). Importance of electron-phonon coupling near the electron-liquid to Wigner-crystal transition in two-dimensional atomically thin materials. arXiv preprint arXiv:2408.02653
- **T.T.**, J May-Mann, T Devakul. (2024). Wavefunction approach to the fractional anomalous Hall crystal. arXiv preprint arXiv:2409.06775

Talks and Poster

- **Talk at APS March Meeting**, March 15, 2022, Chicago. Connecting edge states in bilayer graphene nanoribbon with SSH ladder. Session F56.00013
- **Invited Talk at Research Colloquium** hosted by University of Hong Kong, October 28, 2021, on projects involving graphene nanoribbon.
- **Poster at Poster Presentation of SRF and ORF Schemes and Summer Research Internship of URFP Programme 2020-21 of University of Hong Kong**, October 21, 2021, on projects involving graphene nanoribbon.
- **Poster at The 24th International Conference on High Magnetic Fields in Semiconductor Physics (HMF-24)**, July, 2022
- **Talks at Carnegie Mellon University Condensed Matter Journal Club**, April, 2024
- **Poster at Gordon Research Conference, Correlated Electron Systems**, June, 2024

PROFESSIONAL SKILLS

Programming

- Mathematica (advanced), Matlab (advanced, primary use), Python, HTML, Julia
- Moiré band calculation (tight-binding, continuum), tight-binding calculation, topological invariant calculation, Hartree-Fock calculation, exact diagonalization, etc.

Courses

- All physics courses are full grade point.
- Graduate Courses: Particle Physics, Group Theory in Physics (Lie algebra & manifold), Graduate QM(Scattering & Quantum Information), Graduate EM I&II, Graduate Stat Mech, General Relativity.

Teaching

- PHYS220 Classical Electrodynamics, 2023-24 Winter Quarter, Stanford University, taught by Prof. Sri Raghu
- PHYS216 Back of the Envelope Physics, 2023-24 Spring Quarter, Stanford University, taught by Prof. Jon Simons