Yi-Ting Tu (涂懿庭)

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EDUCATION

University of Maryland, College Park, MD, USA Aug. 2021 – Present

Ph.D. candidate in Physics

- Advisor: Sankar Das Sarma

National Tsing Hua University, Hsinchu, Taiwan Sep. 2015 – Jun. 2020

Bachelor of Science

- Double Major: Physics and Mathematics
- Graduated with Honor in Physics

RESEARCH EXPERIENCE

Condensed Matter Theory Center, University of Maryland Apr. 2022 – Present
Advisor: Sankar Das Sarma

- Numerically calculated various properties of quasiperiodic spin chains coupling to a thermal bath at one end, which can be used to estimate the avalanche stability of MBL systems as well as distinguishing different thermalization behaviors.
- Calculated the Lorenz ratio of graphene with a bipolar diffusive Boltzmann transport theory with disorders and phonon scattering, which provides an alternative explanation for the sharp finite-temperature peak of the Lorenz ratio observed in an experimental paper.

Condensed Matter Theory Group, National Tsing Hua University Jul. 2020 – Aug. 2021
Advisor: Po-Yao Chang

- Developed a generalized version of the gauging procedure, using it to construct non-Abelian fractons, and exploring their algebraic properties.
- Generalized the entanglement entropy to non-Hermitian quantum systems, such that the scaling properties of conformal field theories are retained at critical points.

Quantum Optics Group, National Tsing Hua University Feb. 2018 – Jun. 2020
Advisor: Ray-Kuang Lee

- Formulated the positive partial transpose criterion in optical phase spaces using symplectic geometry.

AWARDS & SCHOLARSHIPS

Academic Achievement Award, seven semesters (top 5% in class)	2016 – 2019
2019 NTHU College of Science Elite Student Award	Spring 2019
Undergraduate Research Scholarship, Ministry of Science and Technology, Taiwan	Fall 2018
The Zhu Shun Yi He Qin Scholarship	Spring 2018

SCIENTIFIC ACTIVITIES

[1] APS March Meeting, Las Vegas, NV, USA Mar. 2023
"Avalanche stability transition in interacting quasiperiodic systems" (Oral)

[2] APS March Meeting, online Mar. 2022
"Non-Abelian fracton order from gauging a mixture of subsystem and global symmetries" (Oral)

[3] The NCTS international summer school and workshop on emergent quantum many-body phenomena, online Jul. 2021
"Non-Abelian fracton order from gauging a mixture of subsystem and global symmetries" (Oral)

[4] APS March Meeting, online Mar. 2021
"Gauge Theories and Stabilizer Codes: From Abelian to non-Abelian models" (Oral)

[5] Young Researchers Forum on Quantum Information Science, Hsinchu, Taiwan Aug. 2019
"Positive Partial Transpose Criterion in Symplectic geometry" (Oral)

[6] Annual Meeting of the Physical Society, Hsinchu, Taiwan Jan. 2019
"Positive Partial Transpose Criterion in Symplectic geometry" (Oral)

[7] Asian Quantum Information Science Conference, Nagoya, Japan Sep. 2018
"Positive Partial Transpose Criterion in Symplectic geometry" (Poster)

PUBLICATIONS & PREPRINTS

[1] Yi-Ting Tu and Sankar Das Sarma, "Wiedemann-Franz law in graphene in the presence of a weak magnetic field," (2023), arXiv:2307.05477 [cond-mat].

[2] Yi-Ting Tu, DinhDuy Vu, and Sankar Das Sarma, "Localization spectrum of a bath-coupled generalized Aubry-André model in the presence of interactions," Phys. Rev. B **108**, 064313 (2023).

[3] Yi-Ting Tu and Sankar Das Sarma, "Wiedemann-Franz law in graphene," Phys. Rev. B **107**, 085401 (2023).

[4] Yi-Ting Tu, DinhDuy Vu, and Sankar Das Sarma, "Avalanche stability transition in interacting quasiperiodic systems," Phys. Rev. B **107**, 014203 (2023).

[5] Yi-Ting Tu, Iksu Jang, Po-Yao Chang, and Yu-Chin Tzeng, "General properties of fidelity in non-Hermitian quantum systems with PT symmetry," Quantum **7**, 960 (2023).

[6] Yi-Ting Tu, Yu-Chin Tzeng, and Po-Yao Chang, "Rényi entropies and negative central charges in non-Hermitian quantum systems," SciPost Phys. **12**, 194 (2022).

[7] Yi-Ting Tu and Po-Yao Chang, "Non-Abelian fracton order from gauging a mixture of subsystem and global symmetries," Phys. Rev. Research **3**, 043084 (2021).

TEACHING EXPERIENCE

Teaching Assistant of Graduate Course in

- Condensed Matter Physics(II) Feb. 2021 – Jun. 2021
- Special Topic: Quantum Information Sep. 2020 – Jan. 2021

Teaching Assistant of Undergraduate Course in

- Experimental Physics II: Electricity and Magnetism Aug. 2021 – May 2022
- Linear Algebra (College of EECS) Sep. 2019 – Jan. 2020
- Quantum Physics Sep. 2018 – Jun. 2019

PROGRAMMING LANGUAGES & SOFTWARE

- Mathematica (Advanced)
- LaTeX (Advanced)
- Julia (Intermediate)
- C (Intermediate)
- Python (Intermediate)
- MATLAB (Basic)