Yi-Ting Tu (涂懿庭)

Email: yttu@umd.edu Website: ricktu288.github.io Pronouns: he/him

EDUCATION

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

Ph.D. student in Physics

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

Bachelor of Science

- Double Major: Physics and Mathematics
- Graduated with Honor in Physics
- GPA: 4.2/4.3
- Ranking: 1/58

RESEARCH EXPERIENCE

Condensed Matter Theory Center — Apr. 2022 – Present
University of Maryland, College Park, MD, USA

Condensed Matter Theory Group — Jul. 2020 – Aug. 2021
National Tsing Hua University, Hsinchu, Taiwan

- Developing a generalized version of the gauging procedure, using it to construct non-Abelian fractons, and exploring their algebraic properties.
- Generalizing 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 — Feb. 2018 – Jun. 2020
National Tsing Hua University, Hsinchu, Taiwan

- Using the mathematical language of symplectic geometry to reformulate the positive partial transpose criterion in phase space.

AWARDS & SCHOLARSHIPS

Academic Achievement Award, seven semesters (top 5% in class) — 2016 – 2019

2019 NTHU College of Science Elite Student Award — Spring 2019

- Awarded for showing high motivation and exceptional academic performance

Undergraduate Research Scholarship, Ministry of Science and Technology, Taiwan — Fall 2018

The Zhu Shun Yi He Qin Scholarship — Spring 2018

- NT$100,000 awarded to top one junior student in College of Science, NTHU for outstanding performance in research and coursework

SCIENTIFIC ACTIVITIES

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

[2] 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)

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

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

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

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

PUBLICATIONS & PREPRINTS

[1] 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).

[2] Yi-Ting Tu, Iksu Jang, Po-Yao Chang, and Yu-Chin Tzeng, "General properties of fidelity in non-Hermitian quantum systems with PT symmetry," (2022), arXiv:2203.01834 [quant-ph].

[3] 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)
- C (Intermediate)
- Python (Intermediate)
- MATLAB (Basic)