

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. 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
- 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

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| [1] | APS March Meeting, online
“Non-Abelian fracton order from gauging a mixture of subsystem and global symmetries”
(Oral) | Mar. 2022 |
| [2] | The NCTS international summer school and workshop on emergent quantum many-body phenomena, online
“Non-Abelian fracton order from gauging a mixture of subsystem and global symmetries”
(Oral) | Jul. 2021 |
| [3] | APS March Meeting, online
“Gauge Theories and Stabilizer Codes: From Abelian to non-Abelian models” (Oral) | Mar. 2021 |
| [4] | Young Researchers Forum on Quantum Information Science, Taiwan
“Positive Partial Transpose Criterion in Symplectic geometry” (Oral) | Aug. 2019 |
| [5] | Annual Meeting of the Physical Society, Taiwan
“Positive Partial Transpose Criterion in Symplectic geometry” (Oral) | Jan. 2019 |
| [6] | Asian Quantum Information Science Conference, Japan
“Positive Partial Transpose Criterion in Symplectic geometry” (Poster) | Sep. 2018 |

PUBLICATIONS & PREPRINTS

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| [1] | Yi-Ting Tu and S. Das Sarma, “Wiedemann-Franz law in graphene,” (2022), arXiv:2211.05192 [cond-mat.mes-hall]. |
| [2] | Yi-Ting Tu, DinhDuy Vu, and S. Das Sarma, “Existence or not of many body localization in interacting quasiperiodic systems,” (2022), arXiv:2207.05051 [cond-mat.dis-nn]. |
| [3] | 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]. |
| [4] | 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). |
| [5] | 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

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

Teaching Assistant of Undergraduate Course in

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| • 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)
- L^AT_EX (Advanced)
- C (Intermediate)
- Python (Intermediate)
- MATLAB (Basic)