

# Yi-Ting Tu (涂懿庭)

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## EDUCATION

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**University of Maryland, College Park, MD, USA**

Aug. 2021 – Present

*PhD 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

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**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 is 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

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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] 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)
- [2] APS March Meeting, online Mar. 2021  
*“Gauge Theories and Stabilizer Codes: From Abelian to non-Abelian models”* (Oral)
- [3] Young Researchers Forum on Quantum Information Science, Taiwan Aug. 2019  
*“Positive Partial Transpose Criterion in Symplectic geometry”* (Oral)
- [4] Annual Meeting of the Physical Society, Taiwan Jan. 2019  
*“Positive Partial Transpose Criterion in Symplectic geometry”* (Oral)
- [5] Asian Quantum Information Science Conference, Japan Sep. 2018  
*“Positive Partial Transpose Criterion in Symplectic geometry”* (Poster)

## PUBLICATIONS & PREPRINTS

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- [1] Yi-Ting Tu, Yu-Chin Tzeng, and Po-Yao Chang, “Rényi entropies and negative central charges in non-Hermitian quantum systems,” (2021), arXiv:2107.13006 [cond-mat.str-el].
- [2] 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

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### 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 – Dec. 2021
- Linear Algebra (College of EECS) Sep. 2019 – Jan. 2020
- Quantum Physics Sep. 2018 – Jun. 2019

## PROGRAMMING LANGUAGES & SOFTWARE

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- Mathematica (Advanced)
- L<sup>A</sup>T<sub>E</sub>X (Advanced)
- C (Intermediate)
- Python (Intermediate)
- MATLAB (Basic)