

Heng-Hsi Li

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EDUCATION

National Tsing Hua University

Master with GPA 4.2/4.3

Hsinchu, Taiwan

Sep. 2023 – June 2025

National Tsing Hua University

Bachelor of Science (Graduated in honor by Physics department) with GPA 4.02/4.3

Hsinchu, Taiwan

Sep. 2019 – June 2023

RESEARCH EXPERIENCE

Undergraduate Research intern, National Tsing Hua University

June 2021 – June 2023

Advisor: Po-Yao Chang

Hsinchu, Taiwan

- Characterizing relations between entanglement and heating/non-heating phases of periodic-driven coupled harmonic oscillator and quenched Bose-Einstein condensates system based on exactly-solvable algebra ($SU(1,1)$ algebra).

Summer internship, Institute of Atomic and Molecular Sciences, Academia Sinica

2022 Summer

Advisor: Mei-Yin Chou

Taipei, Taiwan

- Investigates twisted-bilayer graphene and its flat bands by group symmetry analysis and constructs effective-tight-binding model based on literature review.
- Give a short talk at the end of the internship and was awarded the Chau-Ting Chang summer research scholarship

Master Student, National Tsing Hua University

July 2023 – June 2025

Advisor: Po-Yao Chang

Hsinchu, Taiwan

- I have been involved in two projects:
 - (I) Investigates non-unitary criticality based on adding single-site PT-symmetric impurity to the Hermitian SSH model based on entanglement entropy by exact diagonalization and analytical tools such as conformal field theory.
 - (II) Investigates novel interface physics between unitary and non-unitary critical systems by calculating scattering amplitudes, entanglement and Rényi entropy.

PUBLICATIONS & PREPRINTS

- [1] **Heng-Hsi Li** and P.-Y. Chang, “Phase transitions from heating to non-heating in $SU(1,1)$ quantum dynamics: Applications to Bose-Einstein condensates and periodically driven coupled oscillators,” *SciPost Phys. Core*, vol. 8, p. 018, 2025. DOI: 10.21468/SciPostPhysCore.8.1.018. [Online]. Available: <https://scipost.org/10.21468/SciPostPhysCore.8.1.018>.
- [2] **Heng-Hsi Li**, K.-H. Chou, X. Wen, and P.-Y. Chang, *Impurity-induced non-unitary criticality*, 2025. arXiv: 2502.12469 [quant-ph]. [Online]. Available: <https://arxiv.org/abs/2502.12469>.

TEACHING ASSISTANT

Thermal and Statistical Physics (I), (II)

2023- 2025

- Four semesters (two years) with two lecturers: We-Fu Chang and Pai-Hsien Hsu
- Answering students' questions, preparing answers to the homework, and marking the tests and exams.

Theoretical Mechanics (I), (II)

2024 fall

- Two semester with lecturer: We-Fu Chang
- Answering students' questions, preparing answers to the homework, and marking the tests and exams.

SCHOLARSHIPS AND AWARDS

- Outstanding Academic Achievement Award:** For student ranked top 5%
- Chau-Ting Chang Summer Research Scholarship:** For five summer interns in IAMS who gave great oral presentations
- Physics 84 Scholarship:** From Physics department, NTHU. For undergrads doing research with good proposals
- Shang-Keng Ma Memorial Award:** Students with great performances in statistical mechanics and research in related subjects.

TECHNICAL SKILLS

- **Languages:** Python(Exact Diagonalization), C/C++, Matlab (FDTD simulation)
Developer Tools: Git, VS Code(Latex/C++), HTML website, Jupyter