

CHANG-TENG LIN

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National Taiwan University Department of Physics

Major in Physics, Minor in Mathematics

Master in Physics

RESEARCH EXPERIENCES

■ Tensor Network

Prof. Ying-Jer Kao

GRADUATE RESEARCH, DEPT. OF PHYSICS, NATIONAL TAIWAN UNIVERSITY

Summer 2022 – 2024

- ✓ Thesis: Generating Function Study of Kitaev Model Spectral Function
 - ✧ Using Tensor Network Operators to calculate 2-dimensional system ground state
 - ✧ Extending 2-dimensional excitation algorithm to more complex system
- ✓ Maintaining Cytex, Tensor Network Library for Physics Simulation
 - ✧ Optimized critical simulation codes to achieve performance meeting industry standards.
 - ✧ Writing C++, Python Codes, Optimize Algorithm, Data Structure, Unit Tests

■ Spintronics

Prof. Ssu-Yen Huang

UNDERGRADUATE RESEARCH, DEPT. OF PHYSICS, NATIONAL TAIWAN UNIVERSITY

Fall 2021 – Spring 2022

- ✓ Measurement of spin orbit torque, spin hall angle
 - ✧ Generation of spin current using NM/FM multilayer
 - ✧ Harmonic measurement: Lock-in amplifier and single magnetic field source
- ✓ Weyl semimetal
 - ✧ Fabrication of nanometer films
 - ✧ PPMS measurement of magneto-resistance, hall conductance
 - ✧ Post-annealing of multilayer multi-layer using RTA

■ Quantum algorithm

Prof. Jiunn-Wei Chen

QUANTUM COMPUTER STUDY GROUP

Summer 2021

- ✓ Shor's algorithm, HHL algorithm, QFT, QPE. Studying mathematics foundation of quantum computer, learning important quantum algorithms

SKILLS

■ Programming Languages

2013 – Present

- ✓ C/C++, Cuda, Python, Java, Julia, Javascript, Rust, HTML, CSS, NodeJs

- **Tools** 2013 – Present
 - ✓ Git, VTune, profiling tools, Linux
- **Data Science & Maching Learning** 2022 – Present
 - ✓ PyTorch, Numpy, Scipy, Pandas, Matplotlib, Keras
- **DevOps** 2013 – Present
 - ✓ Anaconda, Github action
- **Classical Algorithm** 2018 – Present
 - ✓ Competitive programming problems
 - ✧ Dynamic programming, Binary search, Binary Indexed Tree, Segment Tree, Monotone Stack, Basic graph theory, Basic Number theory, Divide and Conquer, ...etc.
- **Mathematical Training** 2018 – Present
 - ✓ Mathematical Finance, Probability Theory, Linear Algebra, Analysis, ODE, PDE, Algebra, Complex Analysis, Geometry, Cryptography
 - ✓ Can be applied to machine learning, algorithm design, mathematical modeling and data analysis
- **Maintaining Linux Server** Summer 2020 – Present
 - ✓ Maintaining Game Server
 - ✧ Set up secure connections, writing scripts for repetitive procedures, Maintaining Databases, ...etc.
 - ✧ Familiar with daily Linux usage, has capability and experience in problem solving
 - ✓ Maintaining Internet Connections
 - ✧ Set up DNS records, reverse proxy, DDNS
 - ✓ Writing Java Server plugins 2013 – Present

EXTRACURRICULAR ACTIVITIES & OUTREACH

- **Attended Events**
 - ✓ SITCON and COSCUP 2015, 2016, 2017
 - ✧ Set up booth for group Young Student's IT Discussion (YSITD)
 - ✓ As TA in Tensor Network Summer School at National Tsing Hua University Summer 2022
 - ✓ Annual Meeting of the Physical Society of Taiwan 2023
 - ✓ Workshop on Tensor Network and Quantum Embedding in Tokyo, Japan 2024

PUBLICATION

Kai-Hsin Wu, **Chang-Teng Lin**, Ke Hsu, Hao-Ti Hung, Manuel Schneider, Chia-Min Chung, Ying-Jer Kao, Pochung Chen: “The Cytinx Library for Tensor Networks”, 2024