

# Yue Yu

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## EDUCATION

### PEKING UNIVERSITY

Sep. 2019 - Jul. 2023(expected)

*Bachelor of Science in Physics*

- **Academics:** Overall GPA: 3.76/4.00
- **Courses:** Nonlinear Optics (96), Quantum Information (95)
- **Honors and Awards:**
  - Wei Ming Physics Scholarship (2020, 2021, 2022)
  - Wong Lo Kat Peking University Scholarship (2020)
  - Wang Chenyang & Cheng Ya College Scholarship (2021)
  - Sheng Keqi College Scholarship (2022)
  - Gold Medal in the 35th China Physics Olympics Final (2019)

## RESEARCH INTEREST

- Quantum Photonics
- Quantum Computing & Quantum Transducer

## PREPRINTS & PUBLICATION

- *Simulating Hamiltonian dynamics in a programmable photonic quantum processor using linear combinations of unitary operations*
  - Author: **Y.Yu**, Y. Chi, J. Huang, C. Zhai, Q. Gong and J. Wang
  - Submitted to **Nature Computational Science**
- *High-dimensional Quantum Information Processing on Programmable Integrated Photonic Chips*
  - Author: Y. Chi, **Y.Yu**, Q.Gong and J.Wang
  - Submitted to **Science China Information Science**

## RESEARCH EXPERIENCE

### Research on Quantum Transducer

Jul. 2022 – Dec. 2022(expected)

*Advisor: Prof. Mohammad Mirhosseini, California Institute of Technology*

- Optimize coupling strength between microwave photon and phonon in an electromechanical transducer with heuristic algorithm using Comsol and Matlab.
- Model 2D phonon shield (phonon crystal) and simulate its susceptibility to fabrication disorder and blow-out.
- Design superconducting microwave filter using Python and model it in Sonnet.

### Research on Photonics Quantum Computing & Quantum Hamiltonian Simulation

Apr. 2021 – Present

*Advisor: Prof. Jianwei Wang, Peking University*

- Read papers about quantum computing based on photonics and some state-of-the-art quantum algorithms (quantum walk, quantum signal processing, VQE, etc.)
- Assist the calibration of photonics quantum computing chip.

- Assist the photonic chip design.
- (Submitted) Modified the multi-product algorithm for Hamiltonian simulation (proposed by Nathan Wiebe and Andrew M. Childs, arXiv:1202.5822), and adapt it for the simulation of non-Hermitian Hamiltonian on photonics quantum computing chip.

### Research on Integrated Optics and Machine Learning

Oct. 2020 – Apr. 2021

*Advisor: Prof. Xiaoyong Hu, Peking University*

- Read papers about Integrated Photonics and conducted literature review about machine learning for photonics devices design and optical neural networks.
- Assisted the design of silicon-based photonics devices using COMSOL.
- (In preparation) Design an optical cavity with certain Q automatically using inverse design with machine learning.

### SKILLS

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- **Programming:** Python, Mathematica, Matlab, LaTeX
- **Numerical Simulation:** Comsol, Sonnet
- **Machine Learning Algorithms:** Neural network, SVM, unsupervised learning, etc.
- **Chip design:** *ipkiss* and *phidl* (Python package) and Klayout