Zhengyi Han

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Personal Website: https://pkucshzy.github.io ·

Education

Peking University, Beijing **Sep 2019 - July 2023 (expected)**

BS in computer science and technology, EECS Overall GPA: 3.41/4.00

Research Interests

- Quantum Computation (Quantum Algorithm for Algebraic Problems, Quantum Walk)
- Quantum Information and Quantum Complexity

Research Experience

Research on Quantum Algorithms for Number Theory **Sept 2021 - Oct 2022**

Undergraduate Research Student Advisor: Tongyang Li

- **Quantum Algorithms for Sieve Methods** Attempted to improve the space and time complexity of Helfgott's sieve method via quantum algorithms; concluded that it might allow no improvement.
- **Quantum Algorithms for Fourier Transform on Local Fields** Entended the quantum Fourier transform to local fields; took Rademacher functions as the character group and truncated the local fields by the norm to adjust the topology.
- **Quantum Algorithms for Supersingular Isogeny Problems.** Used the quantum walk to solve the isogeny problems of elliptic curves via property tests; compared various possible methods and concluded that this problem could not be improved in general. The paper is posted on my **website**.

Research on Quantum Interactive Proofs **Aug 2022 - present**

Undergraduate Research Student Advisor: Zhengfeng Ji

- **Compression Theorem for Nonlocal Games** Aimed to compress an arbitrary nonlocal game into a linear constraint system game preserving the gap.

Academic Experience

Subreviewer for QIP 2023 **Oct 2022**

Seminar on Probabilistic Proofs, Tsinghua University **Mar 2022 - Jun 2022**

○ The seminar is about varieties of classic interactive proof, especially about the PCP theorem, organized by Zhengfeng Ji.

Seminar on the Coding Theory, Tsinghua University **Sept 2022 - present**

○ The seminar is about both classic and quantum coding theory, organized by Zhengfeng Ji.

Workshop on the Computation and Physics, Peking University **2022 Winter**

○ The workshop is organized by **myself**. It is about the recent connection between computational complexity and physics, going beyond the fundamental connection established by quantum computing. The website is **here**.

Honors and Awards

- Beijing Municipality, **Beijing Innovative Talent Project for Undergraduates**.

Skills & Interests

- **Programming Languages:** C/C++, Python, R, LaTeX, HTML, CSS, Mathematica
- **Personal Interests:** Math books, badminton, table tennis, stroll, singing, and literature.