

Bo-Yu Yang | 楊博宇

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🔍 [Google Scholar](#)

🌐 [Personal Website](#)

Research Interests

Quantum Information Theory, Privacy and Security, and Network Information Theory.

Education

National Taiwan University
B.S., Electrical Engineering

Taipei, Taiwan
Sep. 2020 – present

Relevant coursework: Quantum Information and Computation, Network Information Theory, Information Theory, Principles of Wireless Communications, Convex Optimization, Online Convex Optimization, Advanced Algorithms, and Error Correction Code.

Publications (Google Scholar)

- [1] Bo-Yu Yang, Hsuan Yu, and Hao-Chung Cheng. Maximal α -leakage for quantum privacy mechanisms. *arXiv preprint*, 2024.
- [2] Bo-Yu Yang, Hsuan Yu, and Hao-Chung Cheng. Maximal α -Leakage for Quantum Privacy Mechanisms and Operational Meaning of Measured Rényi Capacity. *IEEE International Symposium on Information Theory (ISIT)*, pp. 3308–3313, 2024.

Research Experience

Quantum Security and Privacy

Jan. 2023 – Mar. 2024

- Led a research *Maximal α -Leakage for Quantum Privacy Mechanisms* (*arXiv:2403.14450*), advised by Prof. Hao-Chung Cheng
- Major works completed:
 - Characterized a quantum adversary’s maximal expected α -gain (Thm.1) using optimal measurement by measured conditional Rényi entropy, which can be viewed as parametric generalization of König’s famous guessing probability formula
 - Proved that α -leakage (Thm.2) and maximal α -leakage (Thm.3) for quantum privacy mechanisms are determined by measured Arimoto information and measured Rényi capacity
 - Derived the composition property (Thm.5) of maximal α -leakage
 - Proved that regularized maximal α -leakage (Thm.7) can be characterized by both sandwiched Rényi capacity and sandwiched Rényi divergence radius

Conference

- **The 2024 IEEE International Symposium on Information Theory (ISIT)** Athens, Greece
Presenter Jul. 2024
”Maximal α -Leakage for Quantum Privacy Mechanisms and Operational Meaning of Measured Rényi Capacity”

Academic Activities

- Reviewer for ISIT 2024, ITW 2024, IEEE Transaction on Information Theory, Quantum Information Processing (Springer Journal)
- Volunteer for ISIT 2023, QIP 2024
- The NCTS Student/Young Researcher Event
Coordinator Taipei, Taiwan
Sep. 2023 – present
 - Directed a quantum paper study group
 - Helped invite young researchers to give talks

Teaching Experience

- **Undergraduate Summer Research Program** National Center for Theoretical Sciences (NCTS)
Teaching Assistant Jul. 2024 - Aug. 2024
 - Taught students to understand basic knowledge in quantum information theory
 - Provided some research directions for students
- **Quantum Information and Computation** National Taiwan University
Teaching Assistant Spring 2024
 - Set a question about quantum entanglement for midterm exam
 - Graded students' homework

Awards

- ISIT Student Travel Grant Athens, Greece
IEEE International Symposium on Information Theory (ISIT) Jul. 2024

Skills

- **Natural Languages:** Mandarin (Native), English (C1/Proficient: TOEFL 102/120, GRE 326/340), French (Moderate), German (Beginner)
- **Programming Languages:** C/C++, Matlab, Python, Go