

# JUNWOO JUNG

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## RESEARCH INTERESTS

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Neutral Atom Quantum Computing, Resource Theory of Quantum Computing, Quantum Simulation

## EDUCATION

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### Korea Advanced Institute of Science and Technology (KAIST)

Mar 2023 – Present

*Bachelor of Science in Physics*

*Daejeon, Korea*

- **GPA:** 3.78 / 4.30
- **Relevant Coursework:** Quantum Information I/II, Quantum Mechanics I/II, Scientific Computing for Quantum Information Science, Statistical Mechanics

### Korea Science Academy of KAIST (KSA)

Feb 2020 – Feb 2023

*High School Diploma*

*Busan, Korea*

## HONORS & AWARDS

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### Second Place Presentation Award

Aug 2025

*2025 CAMPUS Asia Joint Research Presentation*

*KAIST, Korea*

- Awarded the **Second Place Prize** for the oral presentation entitled "*Exploring the Gap between Thermal Operation and Gibbs-Preserving Covariant Channel*".
- Recognized for excellence in research clarity and technical depth among representatives from **KAIST**, **NTU (Singapore)**, and **Science Tokyo (Japan)**.

## PUBLICATIONS & PREPRINTS

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- J. Park, **J. Jung**, J. Ahn. *Determined error-mitigated performance in Rydberg quantum computing for the maximum independent set problem*. **In Preparation**. 2025
- **J. Jung**, J. Son, R. Ganardi, N. Ng. *Bridging the gap between GPC and TO using robust catalysis*. **Unpublished Manuscript** (Draft available upon request). 2025
- A. Byun, **J. Jung**, K. Kim, M. Kim, S. Jeong, H. Jeong, J. Ahn. *Rydberg-atom graphs for quadratic unconstrained binary optimization problems*. **Advanced Quantum Technologies**, 2300398. [\[DOI\]](#) 2024

## SELECTED PRESENTATIONS

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### Invited Oral Presentation (Upcoming)

Scheduled for Jan 2026

*Institute of Science Tokyo (Science Tokyo)*

*Tokyo, Japan*

- Invited to present on "*Resource Theory of Quantum Computing*" to the host research group.
- Demonstrates sustained international research collaboration following the Campus Asia program.

## RESEARCH EXPERIENCE

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### Research Intern

Sep 2025 – Present

*Quantum Computing Lab (Prof. Jaewook Ahn)*

*KAIST*

- Suggested a brute-force error mitigation method applied to defective MIS data.

- **Output:** Publication in preparation.

#### Research Intern

**Jan 2025 – Aug 2025**

*Condensed Matter Theory Group (Prof. Gil Young Cho)*

*KAIST*

- Investigated the behavior of Chiral Central Charge when the strict entanglement law contains an error term.

#### Visiting Research Intern

**Aug 2024 – Jan 2025**

*The inQlings (Prof. Nelly Ng)*

*NTU, Singapore*

- Investigated the gap between Thermal Operations and Gibbs-Preserving Covariant Channels.
- **Output:** Unpublished Manuscript (Draft available).

#### Research Intern

**Apr 2024 – Jul 2024**

*Complex Systems and Statistical Physics Lab (Prof. Hawoong Jeong)*

*KAIST*

- Investigated the limits of LOCC via Quantum Catalysis.

#### Research Intern

**Sep 2023 – Feb 2024**

*Quantum Matter Lab (Prof. Jae-yoon Choi)*

*KAIST*

- Implemented a GUI for laboratory equipment monitoring and Python simulations for laser cooling.

#### Research Intern

**Jun 2023 – Sep 2023**

*Quantum Computing Lab (Prof. Jaewook Ahn)*

*KAIST*

- Developed a method to construct Rydberg atom graphs solving integer QUBO problems.
- **Output:** Published in *Advanced Quantum Technologies*.

## SELECTED TRAINING & WORKSHOPS

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#### Selected Participant

**Dec 2025**

*KIAS-SNU Physics Winter Camp 2025*

*Seoul, Korea*

- Intensive program on *New States of Quantum Matter* and AI-driven Physics.

#### Summer Student

**Summer 2025**

*Technical University of Denmark (DTU)*

*Lyngby, Denmark*

- Completed coursework on *Scientific Methods for Quantum Information Science* (5 ECTS).

#### Participant

**Jan 2024**

*KAIST-MIT Quantum Winter School*

*Daejeon, Korea*

- Joint intensive program on quantum information science.

## TECHNICAL SKILLS

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- **Programming:** Python (NumPy, SciPy, QuTiP, NetworkX), Mathematica, C++, MATLAB.
- **Languages:** Korean (Native), English (Fluent), Spanish/Chinese (Elementary).