Xiangjun Tan

xiangjun.tan@student.unsw.edu.au | https://www.researchgate.net/profile/Xiangjun-Tan

Education

University of New South Wales (UNSW) — *Sydney*
Bachelor of Quantum Engineering Science/Physics, Graduated with Distinction — Sep. 2021 - Feb. 2024

Peking University (PKU) — *Beijing*
Summer School, Introduction to Quantum Information Technology — Jun. 2022 - Aug. 2022

University of New South Wales (UNSW) — *Sydney*
Bachelor of Physics(Honours) — Feb. 2024 - Current

Research Projects

Physics beyond the Standard Model enhanced through Quantum Information — *UNSW, Sydney*
Honours Project, Supervisor: Prof. Susan Coppersmith — Jan. 2024 - Current

- Developing Effective Field Theory for Dark Matter-Nuclei Scattering
- Mapping Nuclear Shell Quasi-Spin Pairing Model to Quantum Circuits
- Evaluating with different configurations to reduce noise

Quantum Simulation of Phonon Scattering for Thermal Conductivity Analysis — *Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing*
Research Assistant, Supervisor: A/Prof. Tiantian Zhang — Dec. 2023 -

- Mapping the Four Phonon scattering Hamiltonian to the quantum circuits
- Constructing the Effective Ansatz for Bosonic Vibrational System
- Utilizing VQE Algorithm to estimate the ground state energy and calculate the phonon lifetime

Quantum Hall Effect in 2D Systems — *UNSW, Sydney*
Taste of Research, Supervisor: Prof. Alex Hamilton — Sep. 2023 - Dec. 2023

- Measuring the Quantum Hall Effect at Temperatures Below 2 Kelvin and Magnetic Fields Up to 9 Tesla.

Research on Quantum Computation for Neutrino Oscillation and Many-body Problems — *UNSW, Sydney*
Talented Student Program, Supervisor: Prof. Susan Coppersmith — Mar. 2023 - Jan.2024

- Studying the Fundamentals of Many-body Physics and Quantum Field Theory (QFT).
- Developing Efficient Collective Neutrino Oscillation Algorithm on the IBMQ Platform.
- Using Error Mitigation Strategies to Reduce Errors and Optimize Gate Costs.
- Presenting the work on QPQIS-2023 Conference in Beijing

Modeling and Simulation of Silicon Qubit Devices — *Sydney Quantum Academy, Sydney*
SQA Undergraduate Research, Supervisor: Dr. Chris Escott — Jan. 2023 - Mar. 2023

- Studied the Basics of Silicon Qubits.
- Developed a Customized Ising Model for Simulation using Matlab.

Research on Neutrino Oscillation — *UNSW, Sydney*
Physics Research Project, Supervisor: Dr. Michael Schmidt — Aug. 2022 - Jan. 2023

- Studied the Time Evolution of the Effective Hamiltonian in Vacuum and Matter.
- Derived the Expression for Evolution in Dark Matter.
- Developed an Interactive Model for Neutrino Oscillation using Python.

Awards and Honors

Dec. 2022-2023	**Scholarship**: "SQA undergraduate Student Research Scholarship "	*Sydney Quantum Academy*
Feb. 2023	**Award**: Dean's list in 2022	*UNSW Engineering*

Activities

UNSW Research Seminar Association *UNSW Sydney*

President / Founder Apr. 2023 - Present

- I am the founder and president of the Research Seminar Association (RSA), a university-certified society. We bring together researchers and students on a weekly basis to discuss a variety of topics. Additionally, our association collaborates with international companies, facilitating job sharing opportunities and addressing employment-related issues for researchers.

Quantum Computation Training Program(4-th) *University of Science and Technology of China*

Research Student June. 2023 - Sep.2023

Technical Skills

Programming Matlab, C, Python

Professional Softwares Matlab, Ltspice, Mathematica

Drawing & Typesetting Photoshop, Office, LaTeX

Languages Chinese(Native), English