Jian Hou **LAI**

Jian Hou Lai | laijianhou1122@gmail.com

Summary

I am interested in research in quantum mechanics, quantum field theory, and mathematics. My research experience includes quantum field theory in curved spacetime (bachelor's thesis) and Bose–Einstein condensates (internship project). I am actively involved in teaching and coaching high school students for competitive physics, including preparing Malaysia's national team for the International Physics Olympiad. I earned a B.Sc. (Hons) in Physics with a CGPA of 3.79/4.00 from the University of Science Malaysia. My full CV can be found here (Github)!

Work Experiences & Selected Professional Experiences

Part-time Tutor *Sept. 2025 – Present*

- Taught Physics and Mathematics across IGCSE, SPM, STPM, A-level, and Further Maths physically and virtually.
- Delivered personalised academic support and exam preparation strategies.

Coach, Malaysia Physics Olympiad Training Camps *2023 – Present*

- Designed and taught competitive physics lectures and tutorials to high school students.
- Created and graded screening tests; trained finalists for international competitions.

Team Leader for Malaysia Team, ISPhO 2026 *Oct. 2025 – Jun. 2026*

- International Scientific Physics Olympiad (ISPhO).
- Responsible for training & guiding a group of high school students for ISPhO 2026, at Moscow Institute of Physics and Technology (MIPT).

Research Intern, Academia Sinica, Taiwan *Jun. – Jul. 2025*

- At the Institute of Atomic and Molecular Science, under the supervision of Dr. Hsiang Hua Jen.
- Focus: Quantum turbulence in 2D Bose–Einstein condensates.
- Developed understanding of Gross–Pitaevskii equation's simulations.

Intern, Xiamen University Malaysia *Apr. – May & Aug. – Sept. 2025*

- Delivered weekly seminars on quantum mechanics and quantum field theory.
- Prepared formatted lecture notes to support the outcomes of the seminar.

Research Experiences

Review on Turbulence in 2D Bose-Einstein Condensation *Jun. – Jul. 2025*

Internship project in the *Institute of Atomic and Molecular Science*, Academia Sinica, Taiwan.

Probing an Expanding Universe with an Unruh-deWitt Detector *Sept. 2023 – Jun. 2024*

Bachelor's thesis at the *University of Science Malaysia*, Penang, Malaysia.

Selected Extracurricular Activities

President, Physical Science Society USM *Jul. 2022 – Jun. 2023*

- Led 38 committees and organised 30+ academic and community events in one academic year.
- Represented physics students in collaborations with faculty leadership.

Chairman, National Physics Undergraduate Project Conference *Mar. – Oct. 2023*

– Organised the first on-site NPUPC at Xiamen University Malaysia.

– Attracted 100 participants including students, educators, and professionals.

Committee Member, Agape Christian Society USM *2022 – 2024*

– Facilitated weekly small-group sessions for 20+ participants.

– Prepared learning materials used by 5 cell groups across campus and trained 10 new student leaders.

Student Committee, GMAC - Penang Roadshow *Sept. 2022 – Jan. 2023*

– This event was part of the Global Malaysian Astronomer Convention (GMAC).

– Led volunteers to run 2 astronomy exhibition booths and engaged with 50+ public visitors through demos and guided activities.

Education

2021 – 2025 **BSc. (Hons) Physics (Track: Pure Physics)** (CGPA: 3.79/4.00)
University of Science Malaysia, Penang, Malaysia.

2019 – 2021 **Sijil Tinggi Persekolahan Malaysia (A-Level Equivalent)** (CGPA: 3.83/4.00)
SMK Gajah Berang, Melaka, Malaysia.

2014 – 2018 **Sijil Pelajaran Malaysia (O-Level Equivalent)** (Grades: 9A)
SMK Munshi Ibrahim Labis, Johor, Malaysia.

Awards & Honours

Dean's List Academic Award *2021 – 2025*

Recognition of outstanding academic performance by the School of Physics USM.

Silver Medal, The University Physics Competition *2024*

Team 159, Top 2.2–17% out of 681 teams (International).

Prize of Honour (Hadiah Kepujian) *2022*

Recognition of achieving a perfect GPA (4.00) in Semester 1, Academic Session 2021/2022 by USM.

Kuok Foundation Study Award *2022*

3 years of loan-grant award of RM14,000.00 per academic year.

Selected to represent IPhO Malaysia Team *2021*

After competing in multiple national selection tests.

Honorable Mention, Kangaroo Math Competition *2020*

Skills

Intermediate Research skill, Python, LaTeX, Microsoft Word, Microsoft Excel, Wolfram Mathematica
Elementary MATLAB, Orange

Languages

Mother tounge Chinese
Advanced English, Malay