

# Yuanhao Liang

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## Education

- University of Oxford** Department of Engineering Science Oxford, UK  
**D.Phil. student**, Engineering Science (2025 –)  
• Advisor: Professor Stephen Morris
- University of Southern California** Dept of Electrical and Computer Engineering CA, USA  
**M.S.**, Electrical Engineering (2023 – 2024)  
• Advisor: Professor Zaijun Chen
- Nankai University** School of Physics Tianjin, CHN  
**B.S.**, Physics (2019 – 2023)  
• Advanced Honor Class of Physics Education, Boling College  
• Summa Cum Laude, Top 1%.

## Research Experience

- University of California, Berkeley** Division of Electrical Engineering Berkeley, CA, USA  
**Visiting Student**, Laboratory of Intelligent and Quantum Photonics (2025 - 2026)  
• Principal Investigator: Professor Zaijun Chen  
• **Achievement:** End-to-end development and performance benchmarking of VCSEL-based free-space optical neural networks, including optical CNN implementation and YOLO-style object detection, for ultrafast, energy-efficient AI inference and training.
- Nankai University** TEDA Institute of Applied Physics and School of Physics Tianjin, CHN  
**Research Assistant**, The Key Laboratory of Weak-Light Nonlinear Photonics (2025 - 2026)  
• Principal Investigator: Professor Qiang Wu  
• **Research areas include:** metasurface-enabled ultra-compact optical computing systems; micro- and nano-scale design and simulation; sim-to-real mapping and compensation; and orbital-angular-momentum (OAM)-based noise-resilient information transmission.
- Purdue University** Department of Physics and Astronomy West Lafayette, IN, USA  
**Undergraduate Visiting Student**, Ultracold Atoms and Nanophotonics Laboratory (2022)  
• Principal Investigator: Professor Chen-Lung Hung  
• **Achievement:** Built optical and electronic setups for microring-resonator frequency locking with thermo control, LabVIEW-based feedback, and Pound–Drever–Hall (PDH) locking, achieving Hz-level frequency stability; and simulated evanescent-field-based atom trapping in microresonators using Monte Carlo methods.
- Tsinghua University** Department of Physics Beijing, CHN  
**Undergraduate Visiting Student**, State Key Lab of Low-Dimensional Quantum Physics (2021)  
• Principal Investigator: Professor Yongchun Liu  
• **Achievement:** Designed and implemented optical and magnetic systems with thermal control for an Rb vapor cell to achieve far-off-resonance laser locking, and employed a Herriott cell to extend the optical path, combining simulations with spectroscopic measurements to validate experimental performance.

## Teaching Experience

**Teaching Assistant** School of Physics, Nankai University

- Atomic Physics, Spring 2023
- College Physics I, Fall 2021

## Honors and Awards

- Outstanding Graduate Award (Top 1%), 2023
- First Prize Scholarship (Top 5%), 2022
- Institute of Physics and Chemistry, CAS Scholarship (Top 3%), 2021
- First Prize Scholarship (Top 5%), 2021
- Meritorious Winner, American Mathematical Contest in Modeling, 2021
- National Scholarship (Top 1%), 2020
- Top Prize, China Undergraduate Physics Tournament, 2020

## Publications

### Journal Articles

1. Yuanhao Liang, James Wang, Kaiwen Xue, . . . , and Zaijun Chen. “High-clockrate free-space optical in-memory computing.” *Light: Science & Applications* **15**, 115 (2026).

### Conference Papers

1. Yuanhao Liang, James Wang, Xinyi Ren, . . . , and Zaijun Chen. “VCSEL Optical Neural Networks for High-throughput AI Training.” Accepted by *Conference on Lasers and Electro-Optics (CLEO)*, 2025.
2. Kaiwen Xue, Lian Zhou, . . . , Yuanhao Liang, . . . , and Zaijun Chen. “Scalable, Low-energy Homodyne Computing Crossbar based on TFLN and SiN/Si Photonics.” Accepted by *CLEO*, 2025.
3. Yuan Li, Lian Zhou, . . . , Yuanhao Liang, . . . , and Zaijun Chen. “Single-shot In-sensor Optical Spectral AI Processing.” Accepted by *CLEO*, 2025.
4. Ran Yin, Yue Yu, . . . , Yuanhao Liang, . . . , and Mengjie Yu. “Intrinsic Frequency Noise of Thin-film Lithium Niobate Platforms.” Accepted by *CLEO*, 2025.