

Chaofan Wang

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EDUCATION

The Chinese University of Hong Kong, Shatin, N.T., Hong Kong, China
Incoming Ph.D. Student, Computer Science and Engineering

Starting January 2026

Yale University, New Haven, CT, U.S.A.
Ph.D. Student, Electrical Engineering

September, 2023 - Now

University of Science and Technology of China, Hefei, Anhui, China
B.S., Physics (School of the Gifted Young)

September, 2019 - July, 2023

RESEARCH EXPERIENCES

Quantum-Limited K-band Parametric Amplifier for Qubit Readout

Yale University, New Haven, CT, U.S.A.

PhD Student (Hong Tang lab, Electrical Engineering department)

September, 2023 - Nov, 2025

Produced a first-of-its-kind near-quantum-limited amplifier in K-band, enabling upcoming developments of qubit readout and dark matter search in this frequency band; current work focuses on applying the amplifier to demonstrate state-of-the-art qubit readout fidelity

Integrated Spin-wave Quantum Memory with a Waveguide in Eu:YSO Crystal

University of Science and Technology of China, Hefei, Anhui, P.R. China

with Prof. Zong-Quan Zhou

April, 2021 - September, 2023

Together with graduate students in the lab, we implemented (for the first time in the world) a spin-wave optical quantum memory in an integrated system, and optimized the signal-to-noise ratio to reach a fidelity >92% for time-bin qubits at 1.1 photon weak coherent input

Numerical and Analytical Analysis on TASEP Networks

University of Science and Technology of China, Hefei, Anhui, P.R. China

With Prof. Yu-Qing Wang

October, 2019 - May, 2021

Analytically and/or numerically solved for the steady state and the transportation dynamics of the particles in one-dimensional TASEP (Totally-Asymmetric Simple Exclusion Process) chain and TASEP networks.

Conceived two ideas (1.a new cluster mean-field theory for two interacting 1D TASEP chains; 2.a spatio-temporal phase transition in an empty 1D TASEP chain under open boundary condition) which resulted in two papers, respectively (see Publications - Former Research); Mean-field analysis and Monte-Carlo simulations. (Yu-Qing contributed to the analytical treatment of the systems beyond mean-field analysis)

SHORT-TERM EXPERIENCES

University of Chicago, Chicago, IL, U.S.A.

Summer Research Assistant (Tian Zhong lab, PME)

August, 2022 - November, 2022

- **Project:** Laser Stabilization with Pound-Drever-Hall Technique
- **Result:** Built the RF feedback setup for laser stabilization (involving electro-optical modulators, photodetectors, waveform generators, and RF filters), reduced the laser's long-term linewidth by 10x; this system is then used for spectroscopy of single Er^{3+} ions in solid state host

Institute of Physics at the Chinese Academy of Science, Beijing, P.R. China

Summer Visitor via the Yan Ji-Ci Talent Program

July, 2021

- **Gave a talk:** "Micro/nanoresonator-enhanced Solid-state Quantum Memory with Rare-Earth Ions". In the talk, I provided an overview of the applications of micro/nano-resonators for building quantum memories in rare-earth ion doped crystals

PUBLICATIONS

- (1) Wu, Y., **Wang, C.**, Wang, D., Xu, M., Zhou, Y., & Tang, H. X. (2025).
"Broad Spectrum Coherent Frequency Conversion with Kinetic Inductance Superconducting Metastructures."Physical Review Applied (in press)
- (2) Zhu, T. X.*, Su, M.X.*, Liu, C., Liu, Y. P., **Wang, C.F.**, Liu, P.X., Zhou, Z.Q., Li, C.F., Guo, G.C. (2022)
"Integrated spin-wave quantum memory" National Science Review 11.11 (2024): nwae161.
- (3) Wang, Y. Q.*, **Wang, C. F.***, Wang, H. T., Du, M. X., Wang, B. H. (2021) (*equal contributions)
"Physical mechanism of equiprobable exclusion network with heterogeneous interactions in phase transitions: Analytical analyses of steady state evolving from initial state"
Communications in Nonlinear Science and Numerical Simulation, 103, 10598
- (4) Wang, Y. Q.*, **Wang, C. F.***, Wang, H. T.* (2021) (*equal contributions)
"Phase transitions in two-channel TASEPs based on a new method of cluster mean-field analyses"
The European Physical Journal Plus, 136, 29

SKILLS

- *Simulation Tools:* HFSS, Comsol, Sonnet
- *Language:* English (TOEFL 111)
- *Programming:* Python, C++, Matlab, Mathematica
- *Nanofabrication Skills:* Lithography, Atomic-Layer Deposition, RIE Dry Etching, Metal Evaporation