

Zelong Yin

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Research Interest: quantum hardware, cryogenics and microwave engineering

EDUCATION

Stanford University

Applied Physics, PhD

Sep 2022 - May 2028

Stanford, CA

- Shoucheng Zhang Graduate Fellow. MS degree conferred, GPA: 3.95

University of North Carolina at Chapel Hill

Physics BS & Math BS

Jul 2018 - Apr 2022

Chapel Hill, NC

- Graduated with highest departmental Juniors & Seniors award, GPA: 3.97

EXPERIENCE

Laboratory of Integrated Nano-Quantum Systems

Applied Physics, Stanford

Jan 2023 - Present

Stanford, CA

Research on quantum computing and quantum hardware.

Lab Supervisor: Prof. [Amir Safavi-Naeini](#).

- Develop numerical framework for learning noisy Floquet quantum dynamics, discovering new quantum error correction codes and quantum sensing schemes
- Develop new sub-GHz superconducting wave-mixing devices for quantum sensing and transduction applications

Tencent Quantum Lab

CSIG/Quantum Lab, Tencent

April 2020 - May 2022

Shenzhen, China

Research on quantum computing with superconducting qubits.

Intern supervisor: Dr. [Shuoming An](#). Lab supervisor: Prof. [Shengyu Zhang](#).

- Demonstrate the first shortcut to adiabaticity (STA) for open quantum systems, and fast optimal control of multiple readout resonators (published on *Nature Communication*)
- Demonstrate a rapid and unconditional parametric reset scheme for tunable transmon qubits (published on *Nature Communication*)
- Develop a new Bayesian filter readout protocol for superconducting qubits, which greatly improved readout fidelity for T_1 -limited qubits
- Develop waveguide QED regimes, novel benchmarking protocols and two qubit gates
- Develop a software system for live monitoring multiple instruments and dilution refrigerators
- Develop the base-plate suspending structures and cryogenic magnetic shields for scaling up qubit counts

Theory Group in High Energy Physics

Physics & Astronomy, UNC

Nov 2020 - May 2022

Chapel Hill, NC

Research on strongly interacting systems in nuclear and particle physics

Supervisor: Prof. [Gokce Basar](#) in collaboration with Prof. [Gerald Dunne](#)

- Reconstructing the equations of state for strongly interacting systems, using resummation and uniformization map techniques (published on *Physical Reivew D*)

MAJORANA project at UNC & Triangle Universities Nuclear Laboratory (TUNL)

Physics & Astronomy, UNC

Jun 2019 - Jun 2020

Chapel Hill, NC

Supervisor: Prof. [Reyco Henning](#).

- Research on exploiting linear methods to analyze background components for MAJORANA (and the future generation LEGEND) experiment data

SKILLS

Software: Matlab, Python, COMSOL, SONNET, Julia, Mathematica, scientific computing, machine learning and numerical optimization

Hardware: CAD design, EM simulation, PCB making, chip packaging, wirebonding, soldering, dilution refrigerator, VNA, spectrum analyzer, FPGA programming (Quantum Machine)

Fabrication: electron beam lithography, photolithography, acid cleaning, dry etching, electron beam evaporation, scanning electron microscopy, dicing, probe station

Theory: quantum optics and quantum noise, quantum information and error correction, quantum field theory and statistical physics, quantum control and measurement, analog circuit, microwave engineering, mathematical analysis

SELECTED PUBLICATIONS

- **Yin, Z.**, Li, C., Allcock, J. et al.. Shortcuts to adiabaticity for open systems in circuit quantum electrodynamics. *Nat Commun* **13**,188 (2022).
- Zhou, Y., Zhang, Z., **Yin, Z.** et al. Rapid and unconditional parametric reset protocol for tunable superconducting qubits. *Nat Commun* **12**, 5924 (2021).
- Hu, J., Li, D., Qie, Y., **Yin, Z.** et al.. Engineering the Environment of a Superconducting Qubit with an Artificial Giant Atom. <https://arxiv.org/abs/2410.15377>.
- Basar, G., Dunne, G., **Yin, Z.**. Uniformizing Lee-Yang Singularities. *Physical Review D* **105.10** (2022): 105002.

HONORS & AWARDS

- 2022-2025: Shoucheng Zhang Graduate Fellowship, Stanford University
- 2022: Paul E. Shearin Outstanding Senior Award in Physics, UNC
- 2021: Daniel C. Johnson Outstanding Junior Award in Physics, UNC
- 2020: 'Xinrui Houlang' Outstanding Internship Award, Tencent Quantum Lab
- 2020: Phi Kappa Beta honor society, UNC Chapter
- 2017: 1st prize and team leader, Chinese Young Physicist Tournament
- 2017: 2nd prize, Chinese Physics Olympics in Beijing (ranked top 50)
- 2017: Bronze Medal and \$9000 Fellowship, St. Yau High School Science Award in physics. Thesis: Study on Figure-8 Shaped Trajectory of Kites