

Danyang Chen

EDUCATION

Northwestern University

Ph.D. in Physics, School of Physics and Astronomy — Advised by [Jens Koch](#)

Sep. 2021 – Present

Shanghai Jiao Tong University

B.S. Major in Physics, School of Physics and Astronomy — Co-advised by [Carlos Navarrete-Benlloch](#) and [Xian-Min Jin](#)

Thesis: [Non-equilibrium quantum phenomena through the Van Der Pol model](#)

Sep. 2017 – June 2021

B.S. Minor in Computer Science, School of Electronic Information and Electrical Engineering

Sep. 2019 – June 2021

PUBLICATIONS

All of my publications can be found on my [Google Scholar page](#).

1. Shashwat Kumar, Xinyuan You, Xanthe Croot, Tianpu Zhao, Danyang Chen, Sara Sussman, Anjali Premkumar, Jacob Bryon, Jens Koch, Andrew A Houck — **Protomon: A Multimode Qubit in the Fluxonium Molecule** — [arXiv:2411.16648](#)
2. Helin Zhang, Chunyang Ding, D. K. Weiss, Ziwen Huang, Yuwei Ma, Charles Guinn, Sara Sussman, Sai Pavan Chitta, Danyang Chen, Andrew A. Houck, Jens Koch, David I. Schuster — **Tunable Inductive Coupler for High-Fidelity Gates Between Fluxonium Qubits** — [PRX Quantum 5, 020326](#)
3. Xu, Xiao-Yun; Wang, Xiao-Wei; Chen, Dan-Yang; Smith, C Morais; Jin, Xian-Min — **Quantum transport in fractal networks** — [Nature Photonics 15, 703–710 \(2021\)](#)
4. Huang, Xuan-Lun, Jun Gao, Zhi-Qiang Jiao, Zeng-Quan Yan, Zhe-Yong Zhang, Dan-Yang Chen, Xi Zhang, Ling Ji, and Xian-Min Jin — **Reconstruction of quantum channel via convex optimization** — [Science Bulletin 65, 286–292 \(2020\)](#)

CURRENT RESEARCH PROJECTS

- **Scaling Up Fluxonium-Based Quantum Processors: Challenges and Potential Solutions** — Design, simulate, and optimize multi-fluxonium quantum systems using two distinct coupling schemes: indirect capacitive coupling through a transmon coupler, and inductive coupling through shared inductances.
 - Talk: [Flux jumps depend on global magnetic field in gradiometric fluxonium](#), APS Global Summit 2026. (Original title: Understanding drive-induced state transitions in fluxonium)
- **Open System Dynamics during Fluxonium Measurement** — Identify the new factors governing measurement-induced state transitions in fluxonium qubits, including measurement duration, qubit decoherence, and weak state hybridization.
 - Talk: [An open quantum systems picture of measurement-induced state transitions in fluxonium qubits](#), APS Global Summit 2026.
- **Error Budgeting for Quantum Error Correction Protocols** — Perform device-level error-budget analysis for quantum error correction (QEC) protocols. Optimize device parameters using a rapidly computable figure of merit derived from this error budget to improve QEC performance.
 - Talk: [Quantum error correction in cat-code qubits: analysis and minimization of failure rates](#), APS March Meeting 2023.
 - Talk: [Accurate Error Budgeting for Quantum Error Correction Protocols in Superconducting Qubits](#), APS Global Summit 2026.

SOFTWARE

- **QFit: Interactive Parameter Fitting for Superconducting Circuits** — A GUI based on scqubits, featuring visualized calibration, resonance peak extraction, manual pre-fit and numerical fitting. Available on [GitHub](#) and [conda-forge](#).
 - Talk: [QFit: simplifying calibration and parameter fitting for superconducting circuits](#), APS March Meeting 2024.

SELECTED HONORS

- Outstanding graduate in Shanghai, 2021 (4%)
- Meritorious Winner of the Mathematical Contest In Modeling (MCM), 2020 (7%)

PROFESSIONAL ACTIVITIES AND SERVICES

Chair of the Seminar Committee in Physics and Astronomy Graduate Student Council (PAGSC), hosting:

- Physics and Astronomy Early Career Research Seminar (PAECRS), 2022–2025
- Rapid Fire Research, 2022–2025
- Presentation & Poster Workshop, 2022–2025
- Community Outreach, 2024–2025

Peer reviewer of journals including Physical Review Letters, Physical Review Applied, and Physical Review Research.

NON-ACADEMIC ACTIVITIES

- Leader of Crafters' (Students' association) in 2021
- President of Astronomer's Home (Students' Association) in term 2018–2019
- Captain of school's soccer team in season 2019–2020

Last update: July 2026