TONGYU ZHAO

Boulder, Colorado, United States of America 80302

tongy.zhao@colorado.edu ◆ (+1) 720 364 3300 ◆ linkedin.com/in/tongyu-zhao-6080a71bb

EDUCATION

University of Colorado Boulder — **Boulder, Colorado**
Doctor of Philosophy in Physics — Aug 2018 – Present

Nanjing University — **Nanjing, China**
Bachelor of Science in Physics — Aug 2014 – Jun 2018

- **Honors**: Elite Program
- **Thesis**: Stimulated Emission Tomography of Entangled Photon Pairs

RESEARCH EXPERIENCE

National Institute of Standards and Technology — **Boulder, Colorado**
Research Assistant — Jul 2021 – Present

- Advisor: Dr. Raymond Simmonds
- Develope quantum measurement programs.
- Investigate novel superconducting qubit architecture.
- Investigate quantum error correction with dual-rail encoding.
- Design quantum simulation experiments for small molecular systems.

Research Assistant — Mar 2019 – Jul 2021

- Advisor: Dr. David Pappas
- Build quantum measurement systems.
- Design superconducting quantum processors.
- Design quantum simulation experiments for small molecular systems.

Nanjing University — **Nanjing, Jiangsu, China**
Undergraduate Research Assistant — Sep 2017 – Jun 2018

- Advisor: Dr. Xiaosong Ma
- Build optics system for SET (Stimulated Emission Tomography) experiment.
- Build polarization analyzing systems.
- Theoretical work for clock synchronization with entangling photons.

University of California Berkeley — **Berkeley, California**
Summer Intern — May 2017 – Sep 2017

- Advisor: Dr. Dan Stamper-Kurn
- Build an optical transport system for a magneto-optical trap.
- Develope programs to characterize the performance of the transport system.

SKILLS

- **Programming**: Python, Julia, MATLAB
- **Tools**: Ansys EM, COMSOL Multiphysics, LabVIEW, Sonnet
- **Lab Skills**: Cryogenics, Measurement Electronics and Automation

PUBLICATIONS

Bal, Mustafa, Junling Long, Ruichen Zhao, Haozhi Wang, Sungoh Park, Corey Rae Harrington McRae, **TZ**, et al. "Overlap Junctions for Superconducting Quantum Electronics and Amplifiers". *Applied Physics Letters* 118, no. 11 (March 15, 2021): 112601. https://doi.org/10.1063/5.0048621

Goswami, A., A. P. McFadden, **TZ**, H. Inbar, J. T. Dong, R. Zhao, C. R. H. McRae, R. W. Simmonds, C. J. Palmstrøm, and D. P. Pappas. "Towards Merged-Element Transmons Using Silicon Fins: The FinMET". *Applied Physics Letters* 121, no. 6 (August 8, 2022): 64001. https://doi.org/10.1063/5.0104950

Howard, Joel, Alexander Lidiak, Casey Jameson, Bora Basyildiz, Kyle Clark, **TZ**, Mustafa Bal, et al. "Demonstrating Two-Qubit Entangling Gates at the Quantum Speed Limit Using Superconducting Qubits", June 25, 2022. https://doi.org/10.48550/arXiv.2206.07716

Long, Junling, **TZ**, Mustafa Bal, Ruichen Zhao, George S. Barron, Hsiang-sheng Ku, Joel A. Howard, et al. "A Universal Quantum Gate Set for Transmon Qubits with Strong ZZ Interactions", March 23, 2021. https://doi.org/10.48550/arXiv.2103.12305

McRae, C. R. H., A. McFadden, R. Zhao, H. Wang, J. L. Long, **TZ**, S. Park, M. Bal, C. J. Palmstrøm, and D. P. Pappas. "Cryogenic Microwave Loss in Epitaxial Al/GaAs/Al Trilayers for Superconducting Circuits". *Journal of Applied Physics* 129, no. 2 (January 14, 2021): 25109. https://doi.org/10.1063/5.0029855

Zhao, R., S. Park, **TZ**, M. Bal, C.R.H. McRae, J. Long, and D.P. Pappas. "Merged-Element Transmon". *Physical Review Applied* 14, no. 6 (December 1, 2020): 64006. https://doi.org/10.1103/PhysRevApplied.14.064006