

## Changhong Zhao: Research group

*System Optimization, Intelligence & Control (SONIC) Laboratory*

- Graduate students:
  - Bohang Fang, BS: UESTC, Chengdu. PhD 2021 –
  - Heng Liang, BE: Nanjing University. PhD 2021 –
  - Yujin Huang, BE: Tsinghua University. PhD 2023 –
  - Runjie Zhang, BS: HIT, Weihai. MPhil 2023 –
- Postdocs:
  - Kaiping Qu, 2/2024 –
  - Wei Lin, 8/2021 – 9/2022. University of Hong Kong, postdoc.
  - Wanjun Huang, 11/2021 – 8/2022. Beihang University.
  - Sidun Fang, 5/2020 – 8/2021. Chongqing University.
- Other research students:
  - Xinyi Chen, 11/2022 – 11/2023, visiting PhD student, Southeast University.
  - Zexin Sun, 5/2022 – 8/2022, graduate RA from Boston University.
  - Jinyan Su, 12/2021 – 5/2022, undergraduate. PhD student, Cornell.
  - Xiaojie Li, 9/2021 – 12/2021, undergraduate. PhD student, NTU, Singapore.
  - Zhenyi Yuan, 6/2021 – 10/2021, graduate RA from UCSD with J. Cortes.
  - Chenxu Wang, 9/2019 – 7/2021, MSc/RA. PhD student, CityU Hong Kong.
  - Tong Wu, 12/2019 – 5/2021, PhD with Angela Zhang. Cornell Tech, postdoc.
  - Xinran Liu, 9/2019 – 5/2020, MSc IE, CUHK. China Southern Power Grid.

## Projects

- RGC General Research Fund 14212822, “Optimizing fast frequency response of distributed energy resources under distribution network constraints,” 1/2023 – 12/2025, USD 95,586.
- RGC Early Career Scheme 24210220, “Optimizing multiphase power flow via exact convex relaxation and distributed feedback design,” 1/2021 – 12/2023, USD 100,190.

## Selected publications

1. W. Huang and C. Zhao, “Deep-learning-aided voltage-stability-enhancing stochastic distribution network reconfiguration,” *IEEE Transactions on Power Systems*, 39(2):2827–2836, 2024.
2. W. Lin, Y. Chen, Q. Li, and C. Zhao, “An AC-feasible linear model in distribution networks with energy storage,” *IEEE Transactions on Power Systems*, 39(1):1224–1239, 2024.

3. Z. Yuan, C. Zhao, and J. Cortés, “Reinforcement learning for distributed transient frequency control with stability and safety guarantees,” *Systems & Control Letters*, 185:105753, 2024.
4. Z. Sun, Z. Yuan, C. Zhao, and J. Cortés, “Learning decentralized frequency controllers for energy storage systems,” *IEEE Control Systems Letters*, 7:3459–3464, 2023.
5. Y. Chen and C. Zhao, “Improved approximation of dispatchable region in radial distribution networks via dual SOCP,” *IEEE Transactions on Power Systems*, 38(6):5585–5597, 2023.
6. Y. Chen, C. Zhao, S. H. Low, and A. Wierman, “An energy sharing mechanism considering network constraints and market power limitation,” *IEEE Transactions on Smart Grid*, 14(2):1027–1041, 2023.
7. S. Fang, C. Wang, Y. Lin, and C. Zhao, “Optimal energy scheduling and sensitivity analysis for integrated power–water–heat systems,” *IEEE Systems Journal*, 16(4):5176–5187, 2022.
8. T. Wu, C. Zhao, and Y. J. A. Zhang, “Privacy-preserving distributed optimal power flow with partially homomorphic encryption,” *IEEE Transactions on Smart Grid*, 12(5):4506–4521, 2021.
9. T. Wu, C. Zhao, and Y. J. A. Zhang, “Distributed AC-DC optimal power dispatch of VSC-based energy routers in smart microgrids,” *IEEE Transactions on Power Systems*, 36(5):4457–4470, 2021.
10. Y. Chen, C. Zhao, S. H. Low, and S. Mei, “Approaching prosumer social optimum via energy sharing with proof of convergence,” *IEEE Transactions on Smart Grid*, 12(3):2484–2495, 2021.
11. X. Zhou, Z. Liu, C. Zhao, and L. Chen, “Accelerated voltage regulation in multi-phase distribution networks based on hierarchical distributed algorithm,” *IEEE Transactions on Power Systems*, 35(3):2047–2058, 2020.
12. E. Weitenberg, Y. Jiang, C. Zhao, E. Mallada, C. De Persis, and F. Dörfler, “Robust decentralized secondary frequency control in power systems: merits and tradeoffs,” *IEEE Transactions on Automatic Control*, 64(10):3967–3982, 2019.
13. S. S. Guggilam, C. Zhao, E. Dall’Anese, Y. C. Chen, and S. V. Dhople, “Optimizing DER participation in inertial and primary-frequency response,” *IEEE Transactions on Power Systems*, 33(5):5194–5205, 2018. **Best Paper and PES Prize Paper Award.**
14. C. Zhao, U. Topcu, N. Li, and S. H. Low, “Design and stability of load-side primary frequency control in power systems,” *IEEE Transactions on Automatic Control*, 59(5):1177–1189, 2014.
15. C. Zhao, U. Topcu, and S. H. Low, “Optimal load control via frequency measurement and neighborhood area communication,” *IEEE Transactions on Power Systems*, 28(4):3576–3587, 2013.