# XIN QIN

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## EDUCATION

**University of Cambridge** *September 2021 - Present*
PhD in Information Engineering
Supervisor: Prof. Ioannis Lestas

**Columbia University** *August 2020 - July 2021*
Admitted PhD student in Earth and Environmental Engineering
Advisor: Prof. Bolun Xu

**Tsinghua University** *August 2017 - June 2020*
MSc in Electrical Engineering
Supervisor: Prof. Hongbin Sun

**Harbin Institute of Technology** *August 2013 - June 2017*
BEng in Electrical Engineering

## WORKING

**Research Assistant**, Tsinghua-UC Berkeley Shenzhen Institute *July 2020 - June 2021*
Research Topic: Electricity market, energy system operation
Advisor: Prof. Ye Guo

**Research Assistant** (Remote), Columbia University *June 2020 - August 2021*
Research Topic: Electricity market, energy storage control
Advisor: Prof. Bolun Xu

## RESEARCH INTEREST

My research interests include **power system control and optimization**, **energy storage and electricity markets**, and **multi-energy systems**.

## PUBLICATIONS

**Published Journal Articles:**

- **X. Qin**, B. Xu, I. Lestas, Y. Guo, H. Sun. The Role of Electricity Market Design for Energy Storage in Cost-Efficient Decarbonization. *Joule*, 2023. (Accepted, **IF: 46.048**)
- N. Zheng, **X. Qin**, D. Wu, G. Murtaugh, B. Xu. Energy Storage State-of-Charge Market Model. *IEEE Transactions on Energy Markets, Policy and Regulation*, 2023.
- **X. Qin**, Y. Guo, X. Shen, H. Sun. Increasing flexibility of combined heat and power systems through optimal dispatch with variable mass flow. *IEEE Transactions on Sustainable Energy*, 2022.
- **X. Qin**, X. Shen, H. Sun, et. al. Combined Electric and Heat System Testbeds for Power Flow Analysis and Economic Dispatch. *CSEE Journal of Power and Energy Systems*, 2021.
- **X. Qin**, H. Sun, Y. Guo. Asynchronous Economic Dispatch for Combined Heat and Power Systems. *IEEE Open Access Journal of Power and Energy*, 2020.
- **X. Qin**, H. Sun, X. Shen, Y. Guo, et. al. A Generalized Quasi-Dynamic Model for Electric-Heat Coupling Integrated Energy System with Distributed Energy Resources. *Applied Energy*, 2019.

**Selected Conference Papers:**

- R. Shi, X. Zhang, **X. Qin**, H. Sun. Optimal Heat Flow in District Heat Networks with Tree Topology: A Convex Approach. *2020 IEEE PES General Meeting*, IEEE, 2020.
- **X. Qin**, X. Zhang, X. Shen, Y. Xu, M. Shahidehpour, H. Sun. Distributed Optimal Frequency Control for Integrated Energy Systems with Electricity and Heat. *2019 IEEE PES General Meeting*, IEEE, 2019.
- **X. Qin**, X. Shen, H. Sun, et al. A Quasi-Dynamic Model and Corresponding Calculation Method for Integrated Energy System with Electricity and Heat. *Energy Procedia (the 10th International Conference on Applied Energy)*, 2019, 158: 6413-6418.

## SELECTED AWARDS

**CSEE JPES Excellent Paper Award**, CSEE Journal of Power and Energy Systems *2023*
**Li Memorial Fellowship**, Columbia University *2020*
**Columbia University TA/RA Scholarships**, Columbia University *2020*
**National Scholarship for Postgraduates**, Ministry of Education of China *2019*
**Excellent Comprehensive Scholarship**, Tsinghua University *2018*
**Best Paper Candidate**, the 10th International Conference on Applied Energy *2018*
**Outstanding Contribution Award** for Voluntary Work, IEEE Power and Energy Society *2017*
**Excellent Graduate**, Harbin Institute of Technology *2017*
**First Class People's Scholarship** (several times), Harbin Institute of Technology *2014-2017*
**National Scholarship for Undergraduates**, Ministry of Education of China *2014*

## INDUSTRIAL PROJECTS / ENGINEERING APPLICATION WORK

**Design and develop algorithms for power flow analysis and optimal dispatch**
*Role: Participant and researcher* *March 2017 - June 2021*

- Supported by the National Key R&D Programs of China (2018YFB0905000 and 2016YFB0901300) and the National Natural Science Foundation of China (51537006).
- Conducted research on nonlinear power flow calculation and economic dispatch for integrated energy systems, and contributed to industrial implements. Example: Innovated combined heat and power dispatch methods to help Guangzhou Pearl Industrial Park reduce operational costs and carbon emissions.

**Design Integrated Energy Management Systems (I-EMS) for Jilin Provincial Power Grid**
*Role: Participant and developer* *March 2019 - June 2020*

- Supported by State Grid Corporation of China, $1.08 million.
- Designed optimal dispatch frameworks and communication mechanisms for the provincial power dispatch center in Jilin province, China.

**Design and develop nonlinear power flow analysis module for I-EMS**
*Role: Module leader* *November 2017 - June 2020*

- Supported by China Power International Development Limited, $2.90 million.
- Designed and developed algorithms for dynamic power flow calculation, and deployed the I-EMS software in Beike Technology Park, China.

## INVITED PRESENTATION

**Invited Talks:**

- Impact of Market Bidding and Dispatch Model over Energy Storage Utilization. *2022 Federal Energy Regulatory Commission (FERC) Technical Conference*, Washington, DC, US, June 2022. (Presenter: Prof. Bolun Xu)
- Agent-based Storage Valuation and Market Participation Analysis. *2021 FERC Technical Conference*, Washington, DC, US, June 2021. (Presenter: Prof. Bolun Xu)
- Distributed Optimal Frequency Control for Integrated Energy Systems with Electricity and Heat. *2019 IEEE PES General Meeting*, Atlanta, US, August 2019.
- A Quasi-Dynamic Model and Corresponding Calculation Method for Integrated Energy System with Electricity and Heat. *10th International Conference on Applied Energy*, Hong Kong, China, August 2018.
- Heating Network Quasi-Dynamic Model of Multi-Energy Flow System Based on Forward Method. *2017 IEEE Conference on Energy Internet and Energy System Integration*, Beijing, China, November 2017.

**Invited Journal Articles:**

- Combined Electric and Heat System Testbeds for Power Flow Analysis and Economic Dispatch. *CSEE Journal of Power and Energy Systems*, 2019.
- Asynchronous Economic Dispatch for Combined Heat and Power Systems. *IEEE Open Access Journal of Power and Energy (OAJPE)*, Invited by Editor-in-Chief, 2020.

## EXTRACURRICULAR ACTIVITIES

**Teaching:**

**Supervisor**, 3F2 Systems and control, University of Cambridge *2023 Lent*

**Supervisor**, 3F1 Signals and systems, University of Cambridge *2022 Michaelmas*

**Demonstrator**, 3F2 Systems and Control, University of Cambridge *2022 Lent*

**Teaching Assistant**, Introduction of Smart Grid, Tsinghua University *2019 Spring*
Evaluation: A (Highest)

**Teaching Assistant**, Operations Research and Statistics, Tsinghua University *2018 Fall*
Evaluation: A (Highest)

**Volunteering and Social Work:**

- **Committee Member**, UK Tsinghua Association *2021*
- **Volunteer for IEEE PES Energy Internet Coordinating Committee (EICC)**, Prepared the materials for founding EICC and contacted related technical committees for support *2020*
- **Volunteer for Defending Typhoon**, Helped clean campus after typhoon Mangosteen *2018*

**Voluntary Presenter at Tsinghua External Advisory Board Conference**, Presented my research work for Tsinghua international advisors from MIT, Stanford, UC Berkeley *2018*

**Volunteer Team Leader at IEEE Conference on Energy Internet and Energy System Integration**, Led a team of 6 people to serve for the keynote speech with 800+ audiences. *2017*

## PROFESSIONAL ENGAGEMENT

Reviewer for IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, CSEE Journal of Power and Energy Systems, IET Renewable Power Generation; IEEE PES General Meeting, and IEEE Conference on Energy Internet and Energy System Integration