

XIN QIN

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EDUCATION

University of Cambridge PhD in Information Engineering Supervisor: Prof. Ioannis Lestas	<i>September 2021 - Present</i>
Columbia University Admitted PhD student in Earth and Environmental Engineering Advisor: Prof. Bolun Xu	<i>August 2020 - July 2021</i>
Tsinghua University MSc in Electrical Engineering Supervisor: Prof. Hongbin Sun	<i>August 2017 - June 2020</i>
Harbin Institute of Technology BEng in Electrical Engineering	<i>August 2013 - June 2017</i>

WORKING

Research Assistant , Tsinghua-UC Berkeley Shenzhen Institute Research Topic: Electricity market, energy system operation Advisor: Prof. Ye Guo	<i>July 2020 - June 2021</i>
Research Assistant (Remote), Columbia University Research Topic: Electricity market, energy storage control Advisor: Prof. Bolun Xu	<i>June 2020 - August 2021</i>

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)
- 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

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