

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 Advisor: 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:

- 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*, 2022. (Accepted)
- **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, 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, IEEE PES General Meeting, and IEEE Conference on Energy Internet and Energy System Integration