

# Hongxun Hui

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## Research Interests

- **Power System:** Planning, optimization, and control of power systems; energy economics and carbon market.
- **Energy Interdiscipline:** Coupling mechanism of energy and environmentology, building, city planning, etc.
- **Internet of Things:** Power-communication coupling networks; artificial intelligence; three-dimensional transportation.

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## Education

<b>Ph.D., College of Electrical Engineering, Zhejiang University</b> Supervisor: Prof. Yonghua Song (Fellow of Royal Academy of Engineering (UK), IEEE Fellow)	Hangzhou, China 09/2015 – 06/2020
<b>Visiting Scholar, Advanced Research Institute, Virginia Tech</b> Supervisor: Prof. Saifur Rahman (IEEE President, IEEE Fellow)	Arlington, USA 10/2018 – 10/2019
<b>Visiting Scholar, CURENT Research Center, University of Tennessee</b> Supervisor: Prof. Fangxing Li (IEEE Fellow)	Knoxville, USA 06/2019 – 07/2019
<b>B.S., College of Electrical Engineering, Zhejiang University</b> Outstanding Graduates, Overall GPA: 3.88/4.0 (Top 3%)	Hangzhou, China 09/2011 – 06/2015

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## Working Experience

<b>Assistant Professor, University of Macau</b> State Key Laboratory of Internet of Things for Smart City	Macao, China 11/2023 – Present
<b>Research Assistant Professor, University of Macau</b> State Key Laboratory of Internet of Things for Smart City	Macao, China 10/2022 – 11/2023
<b>Post-doctoral Fellow, University of Macau</b> State Key Laboratory of Internet of Things for Smart City	Macao, China 10/2020 – 10/2022

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## Publications

### Books

1. Yi Ding, Yonghua Song, **Hongxun Hui** and Changzheng Shao. Integration of Air Conditioning and Heating into Modern Power Systems. *Springer*; 2019.

### Journal Publications

#### Journal Publications as a main author:

2. **Hongxun Hui**, Yi Ding, Zhenzhi Lin, Pierluigi Siano and Yonghua Song, “Capacity Allocation and Optimal Control of Inverter Air Conditioners in Multi-area Power Systems,” *IEEE Transactions on Power Systems*, vol. 35, no. 1, pp. 332-345, Jan. 2020.
3. **Hongxun Hui**, Pierluigi Siano, Yi Ding, Peipei Yu, Yonghua Song, Hongcai Zhang and Ningyi Dai, “A Transactive Energy Framework for Inverter-based HVAC Loads in a Real-time Local Electricity Market Considering Distributed Energy Resources,” *IEEE Transactions on Industrial Informatics*, vol. 18, no. 12, pp. 8409-21, Dec. 2022.
4. **Hongxun Hui**, Yi Ding, Tao Chen, Saifur Rahman and Yonghua Song, “Dynamic and Stability Analysis of the Power System with the Control Loop of Inverter Air Conditioners,” *IEEE Transactions on Industrial Electronics*, vol. 68, no. 3, pp. 2725-2736, Feb. 2020.
5. **Hongxun Hui**, Yi Ding and Menglian Zheng, “Equivalent Modeling of Inverter Air Conditioners for Providing Frequency Regulation Service,” *IEEE Transactions on Industrial Electronics*, vol. 66, no. 2, pp. 1413-23, Feb. 2019.
6. **Hongxun Hui**, Yi Ding, Qingxin Shi, Fangxing Li, Yonghua Song and Jinyue Yan, “5G Network-based Internet of Things for Demand Response in Smart Grid: A Survey on Application Potential,” *Applied Energy*, vol. 257, pp. 113972, Jan. 2020. (**Highly Cited Paper, Top 1% of the academic field, Essential Science Indicators**)
7. **Hongxun Hui**, Yulin Chen, Shaohua Yang, Hongcai Zhang and Tao Jiang, “Coordination Control of Distributed

Generators and Load Resources for Frequency Restoration in Isolated Urban Microgrids,” *Applied Energy*, vol. 327, p. 120116, Dec. 2022.

8. **Hongxun Hui**, Yi Ding and Yonghua Song, “Adaptive Time-Delay Control of Flexible Loads in Power Systems Facing Accidental Outages,” *Applied Energy*, vol. 275, pp. 115321, Oct. 2020.
9. **Hongxun Hui**, Yi Ding, Yonghua Song and Saifur Rahman, “Modeling and Control of Flexible Loads for Frequency Regulation Services Considering Communication Latency and Detection Error,” *Applied Energy*, vol. 250, pp. 161-74, Sep. 2019.
10. **Hongxun Hui**, Yi Ding, Weidong Liu, You Lin and Yonghua Song, “Operating Reserve Evaluation of Aggregated Air Conditioners”, *Applied Energy*, vol. 196, pp. 218-228, Jun. 2017.
11. **Hongxun Hui**, Yi Ding, Kaining Luan, Tao Chen, Yonghua Song and Saifur Rahman, “Coupon-Based Demand Response for Consumers Facing Flat-Rate Retail Pricing,” *CSEE Journal of Power and Energy Systems*, vol. 10, no. 5, pp. 1887-1900, Sep. 2024.
12. **Hongxun Hui**, Peipei Yu, Hongcai Zhang, Ningyi Dai, Wei Jiang and Yonghua Song, “Regulation Capacity Evaluation of Large-scale Residential Air Conditioners for Improving Flexibility of Urban Power Systems,” *International Journal of Electrical Power & Energy Systems*, Apr. 2022.
13. **Hongxun Hui\***, Tao Chen, Han Wang and Sheng Wang, “Optimal operation and control of smart energy systems,” *Engineering Reports*, vol. 5, no. 10, e12790, Oct. 2023.
14. Jiātu Hong, **Hongxun Hui\***, Hongcai Zhang, Ningyi Dai and Yonghua Song, “Event-triggered Consensus Control of Large-scale Inverter Air Conditioners for Demand Response,” *IEEE Transactions on Power Systems*, vol. 37, no. 6, pp. 4954-4957, Nov. 2022.
15. Jiātu Hong, **Hongxun Hui\***, Hongcai Zhang, Ningyi Dai and Yonghua Song, “Distributed Control of Large-scale Inverter Air Conditioners for Providing Operating Reserve Based on Consensus with Nonlinear Protocol”, *IEEE Internet of Things Journal*, vol. 9, no. 17, pp. 15847-57, Sep. 2022.
16. Kang Xie, **Hongxun Hui\***, Yi Ding, Yonghua Song, Chengjin Ye, Wandong Zheng and Shuiquan Ye, “Modeling and Control of Central Air Conditionings for Providing Regulation Services for Power Systems,” *Applied Energy*, vol. 315, p. 119035, Jun. 2022.
17. Sheng Wang, **Hongxun Hui\***, Yi Ding, Chengjin Ye and Menglian Zheng, “Operational Reliability Evaluation of Urban Multi-Energy Systems with Equivalent Energy Storage,” *IEEE Transactions on Industry Applications*, vol. 59, no. 2, pp. 2186-2201, Mar. 2023.
18. Sheng Wang, Junyi Zhai, **Hongxun Hui\***, “Optimal Energy Flow in Integrated Electricity and Gas Systems with Injection of Alternative Gas,” *IEEE Transactions on Sustainable Energy*, vol. 14, no. 3, pp. 1540-1557, Jul. 2023.
19. Yulin Chen, Donglian Qi, **Hongxun Hui\***, Shaohua Yang, Yurun Gu, Yunfeng Yan, Yi Zheng, Jiangfeng Zhang, “Self-triggered Coordination of Distributed Renewable Generators for Frequency Restoration in Islanded Microgrids: A Low Communication and Computation Strategy,” *Advances in Applied Energy*, vol. 10, p. 100128, Jun. 2023.
20. Sheng Wang, Junyi Zhai, **Hongxun Hui\***, Yi Ding and Yonghua Song, “Operational Reliability of Integrated Energy Systems Considering Gas Flow Dynamics and Demand-Side Flexibilities,” *IEEE Transactions on Industrial Informatics*, vol. 20, no. 2, pp. 1360-1373, Feb. 2024.
21. Sheng Wang, **Hongxun Hui\*** and Pierluigi Siano, “Resilience of Gas Interchangeability in Hydrogen-Blended Integrated Electricity and Gas Systems: A Transient Approach with Dynamic Gas Composition Tracking,” *iEnergy*, vol. 2, no. 2, pp. 143-154, Jun. 2023.
22. Sheng Wang, **Hongxun Hui\*** and Junyi Zhai, “Short-Term Reliability Assessment of Integrated Power-Gas Systems with Hydrogen Injections Using Universal Generating Function,” *IEEE Transactions on Industry Applications*, vol. 59, no. 5, pp. 5760-5773, Sep. 2023.
23. Sheng Wang, **Hongxun Hui\***, Yi Ding and Junyi Zhai, “Decentralized Demand Response for Energy Hubs in Integrated Electricity and Gas Systems Considering Linepack Flexibility,” *IEEE Internet of Things Journal*, vol. 11, no. 7, pp. 11848-11861, Apr. 2024.
24. Sheng Wang, **Hongxun Hui\***, Yi Ding and Yonghua Song, “Long-Term Reliability Evaluation of Integrated Electricity and Gas Systems Considering Distributed Hydrogen Injections,” *Applied Energy*, vol. 356, p. 122374, Feb. 2024.
25. Liya Ma, **Hongxun Hui\***, Sheng Wang and Yonghua Song, “Coordinated optimization of power-communication coupling networks for dispatching large-scale flexible loads to provide operating reserve,” *Applied Energy*, vol. 359, p. 122705, Apr. 2024.
26. Yingcong Sun, **Hongxun Hui\***, Taoyi Qi and Laijun Chen, “Multi-Time Scale Optimization of Urban Micro-Grids Considering High-Penetration of PVs and Heterogeneous Energy Storage Systems,” *IEEE Internet*

*of Things Journal*, vol. 11, no. 14, pp. 24428-24438, Jul. 2024.

27. Sheng Wang, **Hongxun Hui\***, Junyi Zhai and Pierluigi Siano, “Carbon-Embedded Nodal Energy Price in Hydrogen-Blended Integrated Electricity and Gas Systems with Heterogeneous Gas Compositions,” *IEEE Transactions on Sustainable Energy*, vol. 15, no. 3, pp. 1729-1742, Jul. 2024.
28. Taoyi Qi, **Hongxun Hui\*** and Yonghua Song, “Chance Constrained Economic Dispatch of Central Air Conditionings in Large-scale Commercial Buildings Considering Demand Response,” *Energy and Buildings*, vol. 320, p. 114607, Oct. 2024.
29. Ruiwen Liu, **Hongxun Hui\***, Xia Chen and Yonghua Song, “Distributed Frequency Control of Heterogeneous Energy Storage Systems Considering Short-term Ability and Long-term Flexibility,” *IEEE Transactions on Smart Grid*, vol. 15, no. 6, pp. 5693-5705, Nov. 2024.
30. Sheng Wang, **Hongxun Hui\***, Tao Chen and Junyi Zhai, “Multi-Period Operation of Integrated Electricity and Gas Systems with Hydrogen Blending Considering Gas Composition Dynamics,” *Applied Energy*, vol. 377, p. 124563, Jan. 2025.
31. Liya Ma, **Hongxun Hui\*** and Yonghua Song, “Data Valuation-Aware Coordinated Optimization of Power-Communication Coupled Networks Considering Hybrid Ancillary Services,” *IEEE Transactions on Smart Grid*, vol. 16, no. 1, pp. 568-581, Jan. 2025.
32. Lunshu Chen and **Hongxun Hui\***, “Model Predictive Control-based Active/Reactive Power Regulation of Inverter Air Conditioners for Improving Voltage Quality of Distribution Systems,” *IEEE Transactions on Industrial Informatics*, vol. 21, no. 1, pp. 922-931, Jan. 2025.
33. Zhenwei Zhang, **Hongxun Hui\*** and Yonghua Song, “Response Capacity Allocation of Air Conditioners for Peak-Valley Regulation Considering Interaction with Surrounding Microclimate,” *IEEE Transactions on Smart Grid*, vol. 16, no. 2, pp. 1155-1167, Mar. 2025.
34. Peng Ren, Lunshu Chen and **Hongxun Hui\***, “Power-controllable variable refrigerant flow system with flexibility value for demand response,” *Energy*, vol. 313, p. 133820, Dec. 2024.
35. Yonghua Song, Zhenwei Zhang and **Hongxun Hui\***, “Interdisciplinary collaborative perspectives: urban microclimate, urban energy systems, and urban building sectors,” *The Innovation Energy*, vol. 1, no. 4, p. 100053, Nov. 2024.
36. Zhenwei Zhang, **Hongxun Hui\*** and Yonghua Song, “Mitigating the vicious cycle between urban heatwaves and building energy systems in Guangdong–Hong Kong–Macao Greater Bay Area,” *The Innovation Energy*, 2025.
37. Shaohua Yang, **Hongxun Hui\***, Han Wang and Yonghua Song, “Low-altitude economy is coming: How to develop a new-type power system,” *The Innovation Energy*, 2025.
38. Siyu Jiang, **Hongxun Hui\*** and Yonghua Song, “Credible Demand Response Capacity Evaluation For Building HVAC Systems Based on Grey-Box Models,” *Applied Energy*, vol. 395, p. 126144, Oct. 2025.
39. Taoyi Qi, **Hongxun Hui\*** and Yonghua Song, “Exploring the Feasible Regulation Region of Building HVAC Systems Within Hygro-Thermal Comfort”, *IEEE Transactions on Smart Grid*, vol. 16, no. 4, pp. 2926-2939, Jul. 2025.
40. Liya Ma, **Hongxun Hui\***, Peng Liu and Yonghua Song, “Communication Accessibility Oriented Deployment Strategy of Hybrid IoT Terminals for Dispatching Large-scale Flexible Loads in Power Systems,” *IEEE Transactions on Smart Grid*, vol. 16, no. 5, pp. 3857-3872, Sep. 2025.
41. Jian Feng, **Hongxun Hui**, Shaohua Yang and Fen Hou\*, “A Slice Puncturing Scheme of Energy Storage Batteries for Grid Frequency Regulation,” *IEEE Transactions on Smart Grid*, Early Access.
42. Taoyi Qi, **Hongxun Hui**, Wei Feng and Yonghua Song\*, “Flexible Resource Endowment of Urban Buildings Considering Climate Diversity in China,” *Carbon Neutrality*.
43. Zhenwei Zhang, **Hongxun Hui** and Yonghua Song\*, “Microclimate-Interactive Energy Management of Building Clusters: Linking Local Meteorology Effect with Terminal Operation Efficiency,” *CSEE*.
44. Yitang Li, **Hongxun Hui\***, Shaohua Yang, Han Wang and Yunpeng Xiao, “Electrifying Regional Mobility: Planning Intercity Low-Altitude Air Routes for Chinese Cities”, *The Innovation Energy*.

#### ***Journal Publications as the collaborator:***

45. Dunjian Xie, **Hongxun Hui**, Yi Ding and Zhenzhi Lin, “Operating Reserve Capacity Evaluation of Aggregated Heterogeneous TCLs with Price Signals,” *Applied Energy*, vol. 216, pp. 338-47, Apr. 2018.
46. Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Chengjin Ye, Zhenzhi Lin, Jiadong Cui and Peng Wang, “Use of Demand Response for Voltage Regulation in Power Distribution Systems with Flexible Resources,” *IET Generation, Transmission & Distribution*, vol. 14, no. 5, pp. 883-92, Jan. 2020.
47. Kang Xie, **Hongxun Hui** and Yi Ding, “Modeling and Control Strategy of Thermostatically Controlled Loads for

Virtual Energy Storage System,” *Protection and Control of Modern Power Systems*, Oct. 2019.

48. Yi Ding, Dunjian Xie, **Hongxun Hui**, Yan Xu and Pierluigi Siano, “Game-Theoretic Demand Side Management of TCLs for Smoothing Tie-line Power of Microgrids,” *IEEE Transactions on Power Systems*, vol. 36, no. 5, pp. 4089-4101, Sep. 2021.
49. Wenqi Cui, Yi Ding, **Hongxun Hui**, Zhenzhi Lin, Pengwei Du, Yonghua Song and Changzheng Shao, “Evaluation and Sequential Dispatch of Operating Reserve Provided by Air Conditioners Considering Lead-Lag Rebound Effect,” *IEEE Transactions on Power Systems*, vol. 33, no. 6, pp. 6935-50, Nov. 2018.
50. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, “Fast Wasserstein-distance-based Distributionally Robust Chance-constrained Power Dispatch for Multi-zone HVAC Systems,” *IEEE Transactions on Smart Grid*, vol. 12, no. 5, pp. 4016-4028, Sep. 2021.
51. Ge Chen, Hongcai Zhang, **Hongxun Hui**, Ningyi Dai and Yonghua Song, “Scheduling Thermostatically Controlled Loads to Provide Regulation Capacity Based on a Learning-based Optimal Power Flow Model,” *IEEE Transactions on Sustainable Energy*, vol. 12, no. 4, pp. 2459-2470, Oct. 2021.
52. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, “Chance-constrained Regulation Capacity Offering For Hvac Systems Under Non-gaussian Uncertainties With Mixture-model-based Convexification,” *IEEE Transactions on Smart Grid*, vol. 13, no. 6, pp. 4379-4391, Nov. 2022.
53. Yongzhu Hua, Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Weiran Wang, Huibin Qin, Xiangrong Shentu and Jiadong Cui, “Collaborative Voltage Regulation by Increasing/decreasing the Operating Power of Aggregated Air Conditioners Considering Participation Priority,” *Electric Power Systems Research*, vol. 199, pp. 107420, Jun. 2021.
54. Tao Chen, Meng Song, **Hongxun Hui** and Huan Long, “Battery Electrode Mass Loading Prognostics and Analysis for Lithium-ion Battery-based Energy Storage Systems,” *Frontiers in Energy Research*, vol. 9, p. 754317, Oct. 2021.
55. Tao Chen, Ciwei Gao, **Hongxun Hui**, Qiushi Cui and Huan Long, “A Generalized Additive Model-based Data-driven Solution For Lithium-ion Battery Capacity Prediction and Local Effects Analysis,” *Transactions of the Institute of Measurement and Control*, Nov. 2021.
56. Yi Ding, Wenqi Cui, Shujun Zhang, **Hongxun Hui**, Yiwei Qiu and Yonghua Song, “Multi-state Operating Reserve Model of Aggregate Thermostatically-Controlled-Loads for Power System Short-term Reliability Evaluation,” *Applied Energy*, vol. 241, pp. 46-58, May 2019.
57. Xinran Zhuang, Chengjin Ye, Yi Ding and **Hongxun Hui**, “Data-driven Reserve Allocation with Frequency Security Constraint Considering Inverter Air Conditioners,” *IEEE Access*, Aug. 2019.
58. Qingxin Shi, Wenxia Liu, Bo Zeng, **Hongxun Hui** and Fangxing Li, “Enhancing Distribution System Resilience Against Extreme Weather Events: Concept Review, Algorithm Summary, and Future Vision,” *International Journal of Electrical Power & Energy Systems*, vol. 138, p. 107860, Jun. 2022.
59. Shuyang Xu, Xingying Chen, Jun Xie, Saifur Rahman, Jixiang Wang, **Hongxun Hui** and Tao Chen, “Agent-based Modelling of Electricity Market with Residential DR,” *CSEE Journal of Power and Energy Systems*, vol. 7, no. 2, pp. 368-380, Mar. 2021.
60. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, “Deep-Quantile-Regression-Based Surrogate Model for Joint Chance-Constrained Optimal Power Flow with Renewable Generation,” *IEEE Transactions on Sustainable Energy*, vol. 14, no. 1, pp. 657-672, Jan. 2023.
61. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, “Scheduling HVAC loads to promote renewable generation integration with a learning-based joint chance-constrained approach,” *CSEE Journal of Power and Energy Systems*, Early Access, 2023.
62. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui**, Yulin Chen and Ningyi Dai, “Real-time Harmonic Contribution Evaluation Considering Multiple Dynamic Customers”, *CSEE Journal of Power and Energy Systems*, vol. 11, no. 3, pp. 1093-1106, May 2025.
63. Yulin Chen, Keng-Weng Lao, Donglian Qi, **Hongxun Hui**, Shaohua Yang, Yunfeng Yan and Yi Zheng, “Distributed Self-triggered Control for Frequency Restoration and Active Power Sharing in Islanded Microgrids,” *IEEE Transactions on Industrial Informatics*, vol. 19, no. 10, pp. 10635-10646, Oct. 2023.
64. Peipei Yu, Hongcai Zhang, Yonghua Song, **Hongxun Hui** and Ge Chen, “District Cooling System Control for Providing Operating Reserve Based on Safe Deep Reinforcement Learning,” *IEEE Transactions on Power Systems*, vol. 39, no. 1, pp. 40-52, Jan. 2024. **(Highly Cited Paper, Top 1% of the academic field, Essential Science Indicators)**
65. Peipei Yu, Hongcai Zhang, Yonghua Song, **Hongxun Hui** and Chao Huang, “Frequency Regulation Capacity Offering of District Cooling System: An Intrinsic-motivated Reinforcement Learning Method,” *IEEE Transactions on Smart Grid*, vol. 14, no. 4, pp. 2762-2773, Jul. 2023.



66. Hongyi Li, **Hongxun Hui** and Hongcai Zhang, "Consensus-based Energy Management of Microgrid with Random Packet Drops," *IEEE Transactions on Smart Grid*, vol. 14, no. 5, pp. 3600-3613, Sep. 2023.
67. Yongzhu Hua, Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Jiadong Cui and Lihuan Shao, "Use of Inverter-Based Air Conditioners to Provide Voltage Regulation Services in Unbalanced Distribution Networks," *IEEE Transactions on Power Delivery*, vol. 38, no. 3, pp. 1569-1579, Jun. 2023.
68. Hongyi Li, **Hongxun Hui** and Hongcai Zhang, "Decentralized Energy Management of Microgrid Based on Blockchain-Empowered Consensus Algorithm with Collusion Prevention," *IEEE Transactions on Sustainable Energy*, vol. 14, no. 4, pp. 2260-2273, Oct. 2023.
69. Shiquan Shan, Siqi Jia, Haojin Wu, Qi Zhang, **Hongxun Hui** and Zhijun Zhou, "New Solar-biomass Assisted Thermophotovoltaic System and Parametrical Analysis," *Green Energy and Resources*, vol. 1, no. 2, p. 100019, Jun. 2023.
70. Shaohua Yang, Keng-Weng Lao, Yulin Chen and **Hongxun Hui**, "Resilient Distributed Control against False Data Injection Attacks for Demand Response," *IEEE Transactions on Power Systems*, vol. 39, no. 2, pp. 2837-2853, Mar. 2024. **(Highly Cited Paper, Top 1% of the academic field, Essential Science Indicators)**
71. Hongyi Li, **Hongxun Hui** and Hongcai Zhang, "Blockchain-Assisted Virtual Power Plant Framework for Providing Operating Reserve with Various Distributed Energy Resources," *iEnergy*, vol. 2, no. 2, pp. 133-142, Jun. 2023.
72. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui** and Yulin Chen, "A Robustness-enhanced Frequency Regulation Scheme for Power System Against Multiple Cyber and Physical Emergency Events," *Applied Energy*, vol. 350, p. 121725, Nov. 2023.
73. Ji Zhang, Zhixiang Zhang, Shiqiao Zhou, **Hongxun Hui**, Ning Mei and Han Yuan, "Performance Enhancement of the Combined Power-refrigeration Cycle Using a Liquid-gas-gas Ejector for Ocean Thermal Energy Conversion," *Energy Conversion and Management*, vol. 296, p. 117688, Nov. 2023.
74. Tianyun Xu, Tao Chen, Ciwei Gao and **Hongxun Hui**, "Intelligent Home Energy Management Strategy with Internal Pricing Mechanism Based on Multi-Agent Artificial Intelligence-of-Things," *IEEE Systems Journal*, vol. 17, no. 4, pp. 6045-6056, Dec. 2023.
75. Taoyi Qi, Chengjin Ye, **Hongxun Hui** and Yuming Zhao, "Fast Frequency Regulation Utilizing Non-Aggregate Thermostatically Controlled Loads Based on Edge Intelligent Terminals," *IEEE Transactions on Smart Grid*, vol. 15, no. 4, pp. 3571-3584, Jul. 2024.
76. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui** and Yulin Chen, "Secure Distributed Control for Demand Response in Power Systems Against Deception Cyber-Attacks with Arbitrary Patterns," *IEEE Transactions on Power Systems*, vol. 39, no. 6, pp. 7277-7290, Nov. 2024.
77. Lingxiang Yao, Zhiwen Guan, Yang Wang, **Hongxun Hui**, Shuyu Luo, Chuyun Jia, Xingxing You and Xianyong Xiao, "Evaluating the Feasibility of Concentrated Solar Power as a Replacement for Coal-fired Power in China: A Comprehensive Comparative Analysis," *Applied Energy*, vol. 377, p. 124396, Jan. 2025.
78. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui**, Jinshuo Su and Sheng Wang, "Secure Frequency Regulation in Power System: A Comprehensive Defense Strategy Against FDI, DoS, and Latency Cyber-attacks," *Applied Energy*, vol. 379, p. 124772, Feb. 2025.
79. Yifan Jiang, Qingqing Wu, Wen Chen and **Hongxun Hui**, "Energy-Aware UAV-Enabled Target Tracking: Online Optimization With Location Constraints," *IEEE Transactions on Vehicular Technology*, vol. 74, no. 4, pp. 6668-6673, Apr. 2025.
80. Xinyi Yang, Tao Chen, Yuanshi Zhang, Ciwei Gao, Xingyu Yan, **Hongxun Hui** and Xiaomeng Ai, "The Optimal Operation Strategy of an Energy Community Aggregator for Heterogeneous Distributed Flexible Resources," *IEEE Open Access Journal of Power and Energy*, vol. 12, pp. 157-170, 2025.
81. Keyi Kang, Heping Jia, **Hongxun Hui** and Dunnan Liu, "Two-stage Optimization Configuration of Shared Energy Storage for Multi-distributed Photovoltaic Clusters in Rural Distribution Networks Considering Self-consumption and Self-sufficiency," *Applied Energy*, vol. 394, p. 126174, Sep. 2025.
82. Yujun Lin, Linfang Yan, **Hongxun Hui**, Qiufan Yang, Jianyu Zhou, Yin Chen, Xia Chen and Jinyu Wen, "Optimal Energy Management for Residential House Aggregators with Uncertain User Behaviors Using Deep Reinforcement Learning," *IEEE Transactions on Industry Applications*, Early Access.

#### **Journal Publications in Chinese:**

83. Yi Ding, **Hongxun Hui**, Zhenzhi Lin, Menglian Zheng, Xinyao Qu and Wenqi Cui, "Design of Business Model and Market Framework Oriented to Active Demand Response," *Automation of Electric Power Systems*, vol. 41, no. 14, Jul. 2017. **(TOP 5 Highly Cited Papers of this Journal in 3 Years)** 丁一, 惠红勋, 林振智, 等. 面向电力需求侧主动响应的商业模式及市场框架设计[J]. 电力系统自动化, 2017, 41(14): 2-9.
84. Xunhu Yin, Yi Ding, **Hongxun Hui**, Minglei Bao, Lizhong Xu, Xueyong Tang and Maosheng Sang, "Design of

Demand Response Mechanism in Initial Electricity Spot Market Considering Response Behaviors of Customers,” *Automation of Electric Power Systems*, vol. 45, no. 23, pp. 94-103, Jun. 2021. 尹逊虎,丁一,惠红勋,等. 初期现货市场下考虑用户响应行为的需求响应机制设计[J]. 电力系统自动化, 2021, 45(23): 94-103.

85. Yi Ding, Kaining Luan and **Hongxun Hui**, “Energy Saving and Emission Reduction From the Glowworm Project—Coupon-based Demand Response Demonstration in Flat Rate Market,” *IEEE Spectrum*, vol. 78, pp. 76-78, Jan. 2019. (Invited Paper) 丁一,栾开宁,惠红勋. 节能减排,从“萤火虫”开始——基于积分机制的电力需求响应示范[J]. 科技纵览, 2019, 78(1): 76-78.
86. Han Wang, Xiaoyuan Xu, Zheng Yan, **Hongxun Hui** and Xiaotao Fang, “Theoretical Methods and Application Prospects for Uncertainty Quantification in Distribution Network Operation Under the Influence of Stochastic Source-load,” *Journal of Global Energy Interconnection*, vol. 5, no. 3, pp. 233-244, May. 2022. 王晗,徐潇源,严正,等. 随机源-荷影响下配电网运行不确定性量化理论方法与应用展望[J]. 全球能源互联网, 2022, 5(3): 230-241.
87. Sheng Wang, Jian Tan, Wenbo Shi, Fenghua Zou, Guang Chen, Linyu Wang, **Hongxun Hui** and Lei Guo, “Practices of the New Power System in the UK and Inspiration for the Development of Provincial Power Systems in China,” *Integrated Intelligent Energy*, vol. 44, no. 7, pp. 19-32, Jul. 2022. (**Excellent Paper Award of the Integrated Smart Energy Conference**) 王盛, 谈健, 史文博, 邹风华, 陈光, 王林钰, 惠红勋, 郭磊. 英国新型电力系统建设经验以及对我国省级电网发展启示[J]. 综合智慧能源, 2022, 44(7): 19-32.
88. Taoyi Qi, **Hongxun Hui**, Lizhong Xu, Xiang Ma and Yi Ding, “Modeling and Control of Generalized Demand Response in Micro-grids Based on GridLAB-D,” *Distribution & Utilization*, vol. 37, no. 7, pp. 3-10, Aug. 2020. 漆淘懿,惠红勋,徐立中,等. 基于 GridLAB-D 的微电网广义需求响应建模与控制[J]. 供用电, 2020, 37(7): 3-10.
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92. Weidong Liu, **Hongxun Hui**, Lijun Zhang, Chenbo Xu, Yikai Sun and Yi Ding, “Analysis on Peak Load Regulation Potential and Evaluation Model of Residential Loads,” *Southern Power System Technology*, vol. 10, suppl. 1, pp. 256-263, Dec. 2016. 刘卫东,惠红勋,张立军,徐晨博,孙轶恺,丁一. 居民负荷调峰潜力分析与评估模型[J]. 南方电网技术, 2016, 10(1): 256-263.
93. Yi Ding, Huahua Wu, **Hongxun Hui** and Jun Zhang, “Analysis and Related Suggestions on Power Market Mechanism of Demand Side Response in China,” *Southern Power System Technology*, vol. 10, no. 3, pp. 24-31, Mar. 2016. 丁一,吴华华,惠红勋,张俊. 适合需求侧主动响应的中国电力市场机制的思考与建议[J]. 南方电网技术, 2016, 10(3): 24-31.
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95. Tong Wu, **Hongxun Hui\*** and Hongcai Zhang, “Review of Commercial Air Conditioners for Participating in Urban Grid Regulation,” *Electric Power*, vol. 56, no. 7, pp. 1-11, 2023. 吴桐, 惠红勋, 张洪财. 商业建筑空调系统参与城市电网负荷调控综述[J]. 中国电力, 2023, 56(7): 1-11.
96. Yule Sun, Taoyi Qi, Yuming Zhao, Chengjin Ye and **Hongxun Hui**, “Research on Location and Capacity Determination of Charging Stations under the Coupling of Road and Electrical Networks Considering V2G Potential of Electric Vehicles,” *Integrated Intelligent Energy*, vol. 46, no. 1, Jan. 2024. (**Excellent Paper Award of the Integrated Smart Energy Conference**) 孙雨乐, 漆淘懿, 赵宇明, 叶承晋, 惠红勋. 路网耦合下计及电动汽车 V2G 潜力的充电站选址定容研究[J]. 综合智慧能源, 2024, 46(1): 1-10.
97. Taoyi Qi, **Hongxun Hui\***, Chengjin Ye, Yi Ding, Yuming Zhao and Yonghua Song, “Bidding Mechanism Design for Building Virtual Power Plant to Participate in Demand Response Markets,” *Automation of Electric Power Systems*, vol. 48, no. 18, pp. 14-24, Sep. 2024. 漆淘懿, 惠红勋, 叶承晋, 等. 建筑虚拟电厂参与需求响应市场的报量报价机制设计[J]. 电力系统自动化, 2024, 48(18): 14-24.

98. Xiaotian Liu, Taoyi Qi and **Hongxun Hui\***, “Performance Evaluation and Market Clearing Method for Load Aggregator Demand Response towards Precise Regulation,” *Power System Protection and Control*. 刘小天,漆淘懿,惠红勋. 面向精准调控的负荷聚合商响应性能评价与市场出清方法[J]. 电力系统保护与控制.
99. Nan Wang, Zhenghao Gao, Siyu Jiang, Daixu Xie, Houpeng Hu, Zerui Chen and **Hongxun Hui\***, “Multi-Time-Scale Deep Learning Method for Commercial Building Non-Intrusive Load Disaggregation,” *Southern Power System Technology*, Early Access. 王楠,高正浩,蒋思宇,解戴旭,胡厚鹏,陈泽瑞,惠红勋.基于多时间尺度深度学习的商业建筑非侵入式负荷分解方法[J].南方电网技术,2025,xx(xx):1-10.

### International Conferences

100. **Hongxun Hui**, Peipei Yu, Hongcai Zhang, Ningyi Dai, Wei Jiang and Yonghua Song, “Regulation Capacity Evaluation of Large-scale Heterogeneous Residential Air Conditioning Loads,” *IEEE Sustainable Power and Energy Conference (iSPEC)*, Nanjing, China, pp. 1-6, Nov. 2021. **(Best Paper Award)**
101. **Hongxun Hui**, Qifan Yang, Ningyi Dai, Hongcai Zhang, Yi Ding and Yonghua Song, “Anticipatory Control of Flexible Loads for System Resilience Enhancement Facing Accidental Outages,” *13th International Conference on Power System Technology (PowerCon 2021)*, Haikou, China, pp. 1-6, Nov. 2021.
102. **Hongxun Hui**, Yi Ding, Shihai Yang, “Modeling and Analysis of Inverter Air Conditioners for Primary Frequency Control Considering Signal Delays and Detection Errors,” *Energy Procedia*, vol. 158, pp. 4003-4010, Feb. 2019.
103. **Hongxun Hui**, Yi Ding, Yonghua Song and Saifur Rahman, “Modelling and Dynamic Performance Analysis of the Power System Under Unit Contingency Shutdown Accidents Considering DR,” *Energy Proceedings*, vol. 3, pp. 1-6, Aug. 2019.
104. **Hongxun Hui**, Yi Ding, Kaining Luan and Daoqiang Xu, “Analysis of 815 Blackout in Taiwan and the Improvement Method of Contingency Reserve Capacity Through DLC,” *IEEE PES General Meeting*, Portland, USA, 2018.
105. **Hongxun Hui**, Xing Jiang, Yi Ding, Yonghua Song and Li Guo, “Demonstration of Friendly Interactive Grid Under the Background of Electricity Market Reform in China,” *EEEIC/I&CPS Europe*, pp. 1-5. IEEE, Milan, Italy, 2017.
106. **Hongxun Hui**, Weidong Liu and Yi Ding, “Quantitative Analysis of Air Conditioner Aggregation for Providing Operating Reserve,” *Energy Procedia*, vol. 104, pp. 50-55, Dec. 2016.
107. Peipei Yu, **Hongxun Hui\***, Hongcai Zhang\*, Chao Huang and Yonghua Song, “Frequency Regulation Capacity Offering of District Cooling System based on Reinforcement Learning,” *IEEE PES General Meeting*, Denver, USA, 2022.
108. Yanqi Liu, **Hongxun Hui**, Hongcai Zhang and Liang Gao, “Risk Assessment of Offshore Wind Farm Outages Under Typhoon Conditions,” *IEEE PES General Meeting*, Denver, USA, 2022.
109. Xinyao Qu, **Hongxun Hui**, Yi Ding and Kaining Luan, “Optimal Control of Intelligent Electricity Consumption for Residential Customers Considering Demand Response,” *Energy Procedia*, vol. 145, pp. 510-515, Jul. 2018.
110. Sheng Wang, **Hongxun Hui**, Yi Ding and Chengzhi Zhu, “Cooperation of Demand Response and Traditional Power Generations for Providing Spinning Reserve,” *Energy Procedia*, vol. 421, pp. 2035-2041, Dec. 2017.
111. Xinyao Qu, **Hongxun Hui**, Shengchun Yang, Yaping Li and Yi Ding, “Price Elasticity Matrix of Demand in Power System Considering Demand Response Programs,” *IOP Conf. Series: Earth and Environmental Science*, vol. 121, no. 5, Feb. 2018.
112. Wenqi Cui, Yi Ding, **Hongxun Hui** and Maozhen Li, “Two-stage Payback Model for the Assessment of Curtailment Services Provided by Air Conditioners,” *Energy Procedia*, vol. 142, pp. 2050-2056, Dec. 2017.
113. Haiyue Yu, Kang Xie, **Hongxun Hui**, Yi Ding, “Review of Flexible Loads for Participating in Frequency Regulation,” *IEEE Conf. on Energy Internet and Energy System Integration*, Wuhan, China, pp. 1-5, Oct. 2020.
114. Yulin Chen, Xing Huang, Keng-Weng Lao, Shaohua Yang, **Hongxun Hui**, Donglian Qi, “A Zeno-Free Distributed Self-Triggered Secondary Control Scheme for Islanded Microgrids,” *2022 IEEE/IAS Industrial and Commercial Power System Asia (I&CPS Asia)*, pp. 848-853, Jul. 2022.
115. Sheng Wang, **Hongxun Hui\***, “Operational Risk for Integrated Power and Gas Systems Considering Varying Hydrogen Concentrations with High Penetration of Wind,” *IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies*, Male City Maldives, pp. 1-5, Mar. 2023.
116. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui**, Yulin Chen, “A Resilient Controller for Frequency Regulation of Power Grids Against Cyber Attacks,” *IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies*, Male City Maldives, pp. 1-5, Mar. 2023.
117. Tong Wu, **Hongxun Hui\***, Hongcai Zhang, “Hardware-in-the-loop Towards Frequency Regulation Service by HVACs with Real-time Digital Simulator,” *2023 8th Asia Conference on Power and Electrical Engineering (ACPEE 2023)*, Tianjin, China, pp. 1-5, Apr. 2023.



118. Zifei Wang, Hongyi Li, **Hongxun Hui\***, Hongcai Zhang, “A Local Energy Market for Industrial Parks Considering Carbon Emission Quota,” *2023 8th Asia Conference on Power and Electrical Engineering (ACPEE 2023)*, Tianjin, China, pp. 1-5, Apr. 2023.
119. Zhenwei Zhang and **Hongxun Hui\***, “Energy-saving Potential Assessment of Building Energy System Considering Climate Impacts,” *2023 IEEE Sustainable Power and Energy Conference (iSPEC)*, Chongqing, China, 2023, pp. 1-5.
120. Hongyi Li, **Hongxun Hui\*** and Hongcai Zhang, “Consensus-based Coordination of Battery Energy Storage Systems for Frequency Regulation Service,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 4768-4773.
121. Lunshu Chen, **Hongxun Hui\***, Zhonghang Li and Shan He, “Hardware-in-the-Loop and Field Demonstration Towards Voltage Regulation in Distribution System Considering Adjustable Inverter Air Conditioners,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 3842-3847.
122. Kexin Wang, Hongyi Li, Zifei Wang, Shan He, Silin Chen, Jing Wang and **Hongxun Hui\***, “Blockchain-Based Carbon Emission Accounting Method for Multi-Energy Systems,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 2121-2126.
123. Yuming Zhao, Tong Wu, Silin Chen and **Hongxun Hui\***, “HIL-based Distributed Control of Inverter-Air-Conditioner for Power System Frequency Regulation,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 3616-3621.
124. Taoyi Qi and **Hongxun Hui\***, “Bidding Mechanism of Aggregated Buildings with Various Flexible Loads Participating in Demand Response Market,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 4391-4397.
125. Zifei Wang, Hongyi Li, Yuting Qi and **Hongxun Hui\***, “Distributed Settlement Mechanism Design for Carbon Market Based on Blockchain-Enabled Edge Intelligence,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 2110-2115.
126. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui** and Yulin Chen, “Decoupling-based Withdrawal Scheme to Enhance Resilience of Multi-agent Energy Storage Systems under Contingencies,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 5271-5276.
127. Jiayu Hong, Guo-Qiang Zeng, **Hongxun Hui** and Yulin Chen, “Distributed Self-Triggered Control of Thermostatically Controlled Loads for Providing Ancillary Services,” *2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2)*, Hangzhou, China, 2023, pp. 5347-5351.
128. Liya Ma, **Hongxun Hui\*** and Yonghua Song, “Incentive Mechanism Design for Electricity Data Trading With Data Valuation-Aware Contract,” *2024 IEEE Power & Energy Society General Meeting (PESGM)*, Seattle, WA, USA, 2024, pp. 1-5.

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## Teaching and Invited Talks

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### Teaching

1. Advanced Topics in Internet of Things, Department of Electrical and Computer Engineering, University of Macau, 2023/2024-2ed Semester.
2. Introduction to Internet of Things, Department of Electrical and Computer Engineering, University of Macau, 2022/2023-2ed Semester; 2023/2024-1st Semester; 2024/2025-1st Semester
3. Power System Operation and Control (Teaching Assistant of Prof. Yi Ding and Prof. Pierluigi Siano), College of Electrical Engineering, Zhejiang University, 2016.

### Invited Talks

1. Data Valuation-Based Coordinated Optimization of Integrated Energy Systems With Large-scale Flexible Resources, Young Scientist Workshop of the Advancing Integrated Industrial Energy Systems for Decarbonization: From Research to Real-world Implementation, the 16th International Conference on Applied Energy (ICAE2024), Niigata City, Japan, Sep. 2, 2024. **[Panel Speaker]**
2. Interactive Regulation Technologies of High-density Building Loads Participating in Urban Power Grid in Guangdong-Hong Kong-Macao Greater Bay Area, China Electrotechnical Society Young Professional Webinar, Online, Aug. 24, 2024.
3. Interactive Regulation Technologies of High-density Building Loads Participating in Urban Power Grid in Guangdong-Hong Kong-Macao Greater Bay Area, Electric Power Information and Communication Technology Conference, Beijing, China, Aug. 15, 2024. **[Keynote Speaker]**
4. Control of Demand side Resources for Improving Power System Flexibility, Shenzhen Institute of Advanced



Technology, Chinese Academy of Sciences, Shenzhen, China, Aug. 12, 2024.

5. Digital Twin and Intelligent Operation of High-load-density Urban Power Grid, The 12th (2024) Symposium on Civil Engineering Monitoring and Control for Teachers and Students of Cross Strait Universities, Hangzhou, China, Aug. 8, 2024. **[Keynote Speaker]**
6. Research on the Power Communication Coupling System for the Control of Massive Flexible Resources in Modern Power System, Conference on Empowering High Quality Development of New Energy with New Quality Productivity, Lanzhou, China, Apr. 15, 2024. **[Panel Speaker]**
7. Dynamic Dependence of Power & Communication Networks, IOTSC Series Talk, Macau, China, May 17, 2024.
8. Distributed Control and Hardware-in-the-loop of Flexible Demand-side Resources in VPP, the 7th IEEE Conference on Energy Internet and Energy System Integration (EI2), Hangzhou, China, Dec. 15, 2023.
9. Control of Demand-side Resources for Improving Power System Flexibility, IEEE Sustainable Power and Energy Conference (iSPEC2023), Chongqing, China, Nov. 29, 2023.
10. Distributed Control of Large-scale Thermostatically Controlled Loads for Improving Flexibility in Urban Power Systems, *Southeast University*, Nanjing, China, Aug. 15, 2022.
11. Regulation Capacity Evaluation of Large-scale Heterogeneous Residential Air Conditioning Loads, *IEEE Sustainable Power and Energy Conference (iSPEC)*, Nanjing, China, Dec. 23, 2021.
12. Anticipatory Control of Flexible Loads for System Resilience Enhancement Facing Accidental Outages, *International Conference on Power System Technology (POWERCON)*, Haikou, China, Dec. 8, 2021.
13. Real-time Local Electricity Market Considering High-Penetration Distributed Energy Resources, *the 13th International Conference on Applied Energy (ICAE 2021)*, Thailand, Nov. 29, 2021. **[Panel Speaker]**
14. Adaptive Control of Flexible Loads for Enhancing the Power System Resilience Facing Accidental Outages, *the 5th IEEE Conference on Energy Internet and Energy System Integration (EI2 2021)*, Taiyuan, China, Oct. 2021. **[Outstanding Speaker]**
15. How to Write an Academic Paper, *Southeast University*, Nanjing, China, Jul. 28, 2021.
16. Control of Thermostatically Controlled Loads for Providing Regulation Services in Power Systems, *International Conference on Renewable Energy*, Rome, Italy, Nov. 2020. **[Plenary Speaker]**
17. Equivalent Modeling and Control of Inverter Air Conditioners for Providing Frequency Regulation Service, *the 4th IEEE Conference on Energy Internet and Energy System Integration (EI2 2020)*, Wuhan, China, Oct. 2020. **[Outstanding Presentation]**
18. Modelling and Dynamic Performance Analysis of the Power System Under Unit Contingency Shutdown Accidents Considering DR, *International Conference on Applied Energy*, Västerås, Sweden, Aug. 2019.
19. Modeling and Analysis of Inverter Air Conditioners for Primary Frequency Control Considering Signal Delays and Detection Errors, *International Conference on Applied Energy*, Hong Kong, China, Aug. 2018.
20. Demonstration of Friendly Interactive Grid Under the Background of Electricity Market Reform in China, *IEEE IEEEIC17 and I&CPS Europe*, Milan, Italy, Jun. 2017.
21. Electricity Distribution Pricing Mechanism in China. *IEEE PES General Meeting*, Boston, USA, Jul. 2016.
22. Quantitative Analysis of Air Conditioner Aggregation for Providing Operating Reserve, *Low-carbon Cities & Urban Energy*, Jinan, China, Jun. 2016.

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## Research Projects

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1. Energy Consumption Characteristics Analysis and Demand Response Capacity Configuration of High-density Building Air Conditioning Loads in the Guangdong-Hong Kong-Macao Greater Bay Area Under High Humidity Heat Microclimate Conditions (2025-2027), Supported by Natural Science Foundation of China, Project No. 52407075, Principal Investigator (PI). 粤港澳大湾区高密度建筑空调负荷在高湿热微气象下的能耗特性分析与响应容量配置, 国家自然科学基金(青年科学基金项目), 主持
2. Low carbon and high reliability urban power distribution system demonstration project (2024-2029), Supported by National Energy Administration, Project No. 2024ZD0800700, Principal Investigator (PI). 低碳高可靠城市配电系统示范工程, 智能电网国家科技重大专项, 子课题负责人
3. Multi edge load resource modeling and collaborative frequency regulation strategy based on lightweight data (2025-2027), Supported by Natural Science Foundation of Guangdong Province of China, Project No. xx, Principal Investigator (PI). 基于轻量化数据的多元边端负荷资源建模与协同调频策略, 广东省自然科学基金(面上项目), 主持
4. Data Valuation and Secure High-efficiency Communication for the Regulation of Large-scale Flexible Resources in Digital Power Systems (2024-2026), Supported by Natural Science Foundation of Guangdong Province of China, Project No. 2414050004006, Principal Investigator (PI). 面向数字电网规模化灵活资源调控的数据价

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值量化与安全高效传输, 广东省自然科学基金(面上项目), 主持

5. Regulation Technologies of Flexible Resources in Power-Communication Deep Coupling Network (2023-2026), Supported by Science and Technology Development Fund, Macao, China, Project No. 0117/2022/A3, Principal Investigator (PI). 电力-通信深度耦合网络下灵活资源调控关键技术研究, 澳门科学技术发展基金, 主持
6. Dynamic modeling and coordinated control of multi condition green hydrogen ammonia synthesis system for on-site consumption of renewable energy (2024-2025), Supported by State Key Laboratory of Power System Operation and Control (Tsinghua University) (No. SKLD24KM11), Principal Investigator (PI). 面向可再生能源就地消纳的多工况绿色氢氨合成系统动态建模与协调控制, 新型电力系统运行与控制全国重点实验室开放基金(清华大学), 主持
7. Regulation Technologies of Large-scale Demand-side Resources in Urban Power Systems Considering High-penetration Renewable Energies (2022-2023), Supported by Key Laboratory of Modern Power System Simulation and Control & Renewable Energy Technology, Ministry of Education (Northeast Electric Power University) (No. MPSS2022-10), Principal Investigator (PI). 含高比例新能源的城市电网海量需求侧资源调控技术研究, 现代电力系统仿真控制与绿色电能新技术教育部重点实验室, 主持[结题, 验收评审结果为优秀 (2022 年度共 10 项课题, 获评唯一“优秀”结题项目)]
8. Economic Dispatch of Central Air Conditionings for Commercial Buildings in Macao Considering Demand Response (2025-2026), Supported by University of Macau, Project No. MYRG-GRG2024-00112-IOTSC, Principal Investigator (PI). 计及需求响应的澳门商业建筑中央空调经济调度方法研究, 澳门大学, 主持
9. Research on the Regulation Technology of Massive Demand Side Resources in Urban Power Grids with High Proportion of Renewable Energy (2023-2025), Supported by University of Macau, Project No. SRG2023-00063-IOTSC, Principal Investigator (PI). 高比例新能源城市电网大规模需求侧资源调节技术研究, 澳门大学, 主持
10. Key technologies and applications of network-load-storage interaction of virtual power station in smart city (2022-2024), Supported by Science and Technology Development Fund, Macao, China, Co-Principal Investigator (Co-PI). 智慧城市虚拟电厂灵活互动关键技术研究及应用, 澳门科学技术发展基金, 联合主持
11. Cooperative Control of Flexible Loads in Power Systems with High Penetration of Renewable Energies (2018–2019), Supported by Zhejiang University, Academic Rising Star Program (No. 2018025), Principal Investigator (PI). 含高渗透率新能源电力系统中灵活负荷的协同控制与市场机制研究, 浙江大学博士研究生学术新星培养计划(自然科学类), 主持[结题]
12. Friendly Interactive Smart Grid Between Supply-Side and Demand-Side (2016–2020), Supported by Ministry of Science and Technology of China (No. 2016YFB0901100). 城区用户与电网供需友好互动系统, 国家重点研发计划, 国家科技部, 参与[结题]

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## Professional Services and Honors

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### Professional Services

- **Associate Editor**, Jan. 2024 - Dec. 2025, *Protection and Control of Modern Power Systems*
- **Associate Editor**, Jan. 2024 - Dec. 2025, *Engineering Reports*
- **Young Editorial Board Member**, Oct. 1, 2022 - Oct. 1, 2024, *Applied Energy*
- **Young Editorial Board Member**, Jul. 1, 2022 - Jun. 30, 2024, *Engineering Reports*
- **Guest Editor**, *Engineering Reports*, Optimal operation and control of smart energy systems
- **Guest Editor**, *Integrated Intelligent Energy*, Optimization, Control and Cyber-Security of Integrated Energy System; Power System Demand-Side Load Regulation Technologies based on IoTs
- **Member of a Council**: *IEEE PES China Electric Vehicle Technical Committee*, *Technical Sub-Committee on Integration of Electric Vehicle and Energy Transportation System* (2020-2023)
- **Journal Reviewers**: *IEEE Transactions on Industrial Electronics* (Since 2017), *International Journal of Electrical Power & Energy Systems* (Since 2017), *Applied Energy* (Since 2018), *Journal of Modern Power Systems and Clean Energy* (Since 2018), *IEEE Transactions on Sustainable Energy* (Since 2019), *IEEE Transactions on Power Systems* (Since 2019), *IEEE Transactions on Smart Grid* (Since 2019), *IEEE Access* (Since 2019), *CSEE Journal of Power & Energy Systems* (Since 2019), *Journal of Electrical Engineering & Technology* (Since 2019), *International Transactions on Electrical Energy Systems* (Since 2019), *Renewable & Sustainable Energy Reviews* (Since 2019), *Economic Alternatives* (Since 2019), *IET Energy Systems Integration* (Since 2019), *IEEE Transactions on Industry Applications* (Since 2019), *IEEE Transactions on Circuits and Systems I: Regular Papers* (Since 2019)
- **Vice President**: IEEE Industry Applications Society Student Branch Chapter in Zhejiang University (2018-2020)

### Selected Honors & Rewards

- Excellent Peer Reviewer Award, *CSEE Journal of Power and Energy Systems*, Feb. 2024.

- Best Paper Award, 7th IEEE Conference on Energy Internet and Energy System Integration (EI2), Dec. 2023.
- The First Prize, Integrated Smart Energy Conference (2023 综合智慧能源大会优秀论文), Jul. 2023.
- Highly Cited Review Paper Award, by the Journal Applied Energy, Aug. 2022.
- Excellent Paper Award, Integrated Smart Energy Conference (2022 综合智慧能源大会优秀论文), Jul. 2022.
- Silver Medal of the International Exhibition of Inventions Geneva (Invention: A Smart Terminal for Reactive Power V2G towards Voltage Regulation of Power System), Switzerland, Mar. 2022.
- Silver Medal of the International Exhibition of Inventions Geneva (Invention: A Smart Air Conditioner Controller for Harmonizing Fluctuating Renewable Energies in the Power System), Switzerland, Mar. 2022.
- Winning Prize, the 1st China Postdoctoral Innovation & Entrepreneurship Competition, 2022.
- Best Paper Award of the 3rd IEEE Conference on Sustainable Power and Energy, 2021.
- The First Prize and the only Best Innovation Award at a national competition on artificial intelligence (AI) application in power dispatching, Oct. 2021.
- The Second Prize and the only Best Innovation Award at a national competition on artificial intelligence (AI) application in power dispatching, Jan. 2021.
- National Scholarship, 2019. (The first ranking among 58 Ph.D. students in the major of power systems)
- First Batch of the Academic Rising Star Program, ZJU, 2018.
- Wang Guo Song Scholarship, 2019. (The highest honor in College of EE, 4 students among 180 Ph.D. students)
- Tang Lixin Scholarship, 2017. (The first and only winner in College of EE)
- Excellent Postgraduate Students' Award in ZJU and Zhejiang Province, 2020.
- Postgraduate Students' Scholarship, 2020.
- Outstanding Reviewer Award from Journal of Modern Power Systems and Clean Energy, 2018.
- Award of Honor for Graduate, 2016, 2017, 2018, 2019.
- Graduate of Merit/Triple A graduate, 2016, 2019.
- Outstanding Graduates of Zhejiang University, 2015.
- Excellent Honor in Edison Class, Zhejiang University, 2015.
- Scholarship for Excellence in Research and Innovation, 2015.
- Bosch Scholarship, 2015.
- Meritorious, Interdisciplinary Contest in Modeling (ICM), Consortium for Mathematics and Its Application, 2014.
- First Price, 7th Science Contest on Energy Saving & Emission Reduction, 2014.
- Fifth (5/149) and Best Design Award, 9th University Student Robot Contest (My Super Shopper), 2014.
- Third Price, 7th Intelligent Car Competition of Zhejiang University, 2014.
- First-Class Scholarship for Outstanding Merits/Students, 2012.
- Outstanding Student Leader Awards, 2012, 2014.
- Excellent Student Awards, 2012, 2013, 2014.

#### Supervision Students' Honors (指导学生获奖情况)

Time	Award	Student Name
2024	2024 First Prize Poster Award for the 4th Macao International Conference on Smart City Technologies (2024 年度唯一一等奖)	Taoyi Qi
2024	2024 Merit Prize Poster Award for the 4th Macao International Conference on Smart City Technologies	Lunshu Chen
2024	2024 FST MSc Graduate Dean's Honors List Award - The Best of Department of Electrical and Computer Engineering (澳门大学科技学院硕士研究生院长荣誉榜, 电机及电脑工程系最优秀硕士研究生奖[2024 年度唯一获奖者])	Lunshu Chen
2024	2024 FST MSc Graduate Dean's Honors List Award (澳门大学科技学院硕士研究生院长荣誉榜)	Kexin Wang
2023	The National First Prize Award at the 18th "Challenge Cup National College Students" Extracurricular Academic Science and Technology Contest (第十八届“挑战杯”全国大学生课外学术科技作品竞赛全国一等奖)	Lunshu Chen, Kexin Wang, Jiayu Zhang, Xiaotian Liu, Jiahe Li, Kecheng He
2023	The Outstanding Award in 2023 Guangdong "Zongchuang Cup" Entrepreneurship and Innovation Competition (2023 年广东“众	Xiaotian Liu, Lunshu Chen

	创杯” 创业创新大赛优胜奖)	
2023	The Second Prize Award in 2023 “Winning in Guangzhou” and the Guangdong Hong Kong Macao Bay Area Student Entrepreneurship Competition (2023 年第十二届 “赢在广州” 暨粤港澳大湾区大学生创业大赛第二名)	Lunshu Chen, Kexin Wang, Xinxin Cheng
2023	The Third Prize in Macau Award at the 2023 Suzhou (Changshu) National Innovation and Entrepreneurship Competition (2023 年苏州 (常熟) 全国创新创业大赛澳门赛区三等奖)	Lunshu Chen, Kexin Wang, Xinxin Cheng
2023	The Outstanding Award in Macau at the 2023 Bank of China Trophy One Million Dollar Macao Regional Entrepreneurship Competition (2023 年中银杯百万奖金澳门区创业比赛澳门赛区优胜奖)	Lunshu Chen, Kexin Wang, Xinxin Cheng, Jiangge Zhu, Zhaoxi Liu
2023	The Excellent Oral Presentation Award at the 2023 8 <sup>th</sup> Asia Conference on Power and Electrical Engineering (ACPEE 2023)	Tong Wu
2023	The Excellent Oral Presentation Award at the 2023 8 <sup>th</sup> Asia Conference on Power and Electrical Engineering (ACPEE 2023)	Zifei Wang
2023	First Prize Poster Award for Macao Conference on Smart City Technologies 2023 (2023 年度唯一一等奖)	Zhenwei Zhang
2022	The Best Oral Presentation Award at the 2022 International Conference on Frontiers of Energy and Environment Engineering (CFEEE 2022)	Tong Wu