

Yongheng Wang

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EDUCATION

The University of Hong Kong

September 2024 - Now

PhD Student, Electrical Engineering

Core Courses: *Control Method in Modern Power Systems, Dynamics of Power Systems*

Tsinghua University

September 2021 - June 2024

Mphil, Electrical Engineering

Core Courses: *Optimization Method in Modern Power Systems, Large-scale Renewable Generation Integration Operation and Control, Dynamics of Power Systems, Modern Power Electronics*

South China University of Technology

September 2017 - June 2021

BE, Electrical Engineering and Automation

Core Courses: *Analysis of Power System, Principle of Automatic Control, Power Electronics, Circuit Principle, Electromagnetic Field, Analog and Digital Electronics, Signal and System, Electrical Machinery*

PUBLICATIONS

- [J1] **Y. Wang**, X. Shen and Y. Xu, "Joint Planning of Active Distribution Network and EV Charging Stations Considering Vehicle-to-Grid Functionality and Reactive Power Support", **CSEE Journal of Power and Energy Systems**, 2023, Published, IF=7.10
- [J2] **Y. Wang** and X. Shen, "Integrated Planning of Multi-Charging Facilities and Urban Distribution Network for Autopilot EVs", **IEEE Transactions on Power System**, 2024, Under Review, IF=6.60
- [J3] C. Wei, **Y. Wang** and X. Shen, "Synergistic Planning of photovoltaic Energy Storage-Charging Stations and Hydrogen Refueling Stations Considering Carbon Emission Flows", **Automation of Electric Power Systems**, 2023, In Chinese, Published
- [J4] W. Zheng, M. Zhong, D. Guo, **Y. Wang**, et al, "Simulation Analysis of Transient Thermal Effect of Ground Wire-suspension Clamp System Wound by Aluminium Armour Tape", **Guangdong Electric Power**, 2020, In Chinese, Published
- [C1] G. Liu, **Y. Wang**, et al, "Coordinated Planning of Active Distribution Network and V2G Charging Stations Considering the Load Characteristics of V2G Stations", **2022 IEEE 6th Conference on Energy Internet and Energy System Integration (EI2)**, Chengdu, China, 2022, Published (The first student author)
- [C2] G. Liu, W. Chen, **Y. Wang**, et al, "Co-Planning of ADN and EV Charging Stations Considering EV Spatial Migration and Sequential Charging Characteristics", **2023 8th Asia Conference on Power and Electrical Engineering (ACPEE)**, Tianjin, China, 2023, Published
- [P1] X. Shen, **Y. Wang**, et al, "Method for Joint Planning of Active Distribution Network and V2G Charging Stations", **Chinese Patent 202310630383.X**, 2023, Under Substantive Examination (The first student author)
- [P2] G. Liu, W. Zheng, **Y. Wang**, et al, "Experimental Device for Simulating Different Contact States of Plum Blossom Contacts by Adjusting the Insertion Depth of Static Contacts", **Chinese Patent ZL201911315956.X**, 2021, Published
- [P3] X. Shen, W. Chen, **Y. Wang**, et al, "Method for Collaborative Planning of New Energy Vehicle Charging Stations Considering Carbon Emission Flow", **Chinese Patent 202311022600.3**, 2023, Under Substantive Examination
- [P4] W. Tang, Y. Zhao, C. Zhong, X. Zhao, X. Shen, **Y. Wang**, et al, "Method for Optimal Location and Sizing of Wind, Solar, and V2G Charging Stations in Distribution Networks Based on Improved Beetle Antennae Search Particle Swarm Algorithm", **Chinese Patent 35082119900201004.X**, 2022, Under Substantive Examination (The first student author)

RESEARCH EXPERIENCE

Integrated Planning of Multi-Charging Facilities (MTCF) and Urban Distribution Network

September 2022 - July 2024

National Natural Science Foundation of China (52007123)

- Carried out literature review on *EV charging stations* planning in urban distribution network.

- Proposed a *two-step equivalence relaxation approach* for MTCF.
- Proposed a *dynamic traffic network model* for autopilot EVs.
- Proposed a *stochastic planning* model for urban distribution network based on *spatio-temporal uncertainty* of EVs.
- Calculated and compared the *costs of results* in different case setting and anticipated *congested traffic hubs*.

Joint Planning of Active Distribution Network (ADN) and EV Charging Stations (EVCS)

September 2021 - August 2022

National Natural Science Foundation of China (52007123)

- Constructed a *comprehensive model* for ADN and EVCS considering *vehicle-to-grid* and *reactive power support*.
- Transformed the *holistic problem* (large-scale MISOCP) into two *sub-problems* (MILP and MISOCP), to improve solution efficiency.
- Modelled multiple *distributed generation resources* (DGRs), including energy storage systems, photovoltaic, capacitor banks, static var compensation, and on-load tap changer.
- Analyzed the planning results of *reactive power support of EVs* and *multiple DGRs* in detail.

Simulation Analysis of Transient Thermal Effect of Ground Wire-suspension Clamp System

September 2019 - June 2020

National Natural Science Foundation of China (51977083)

- Build three-dimensional *electromagnetic thermal coupling simulation model* of ground wire-suspension clamp system wound by aluminium armour tape.
- Calculated and analyzed the *current density distribution* and *temperature distribution* of the ground wire-suspension clamp system under the action of power frequency short-circuit current.
- Analyzed the effects of different *bolt torques* on the temperature of heating bottleneck point of the ground wire.

PROJECT EXPERIENCE

Research for the Interaction Between Large-scale EVs and Power Grids

September 2021 - July 2024

China Southern Power Grid Technology Fund (090000KK52210132)

- **Main Works:** *Draft* research proposal, feasibility report, technical guidelines and bid document; *Analyze* the real data of different types of EVs and *propose* a comprehensive planning model; *Report* regularly at monthly meetings.

PROFESSIONAL EXPERIENCE

Guangzhou Power Supply Bureau of the Southern Power Grid Customer Service Center

June 2018 - September 2018

- Collected feedback from electricity users in different regions of the power grid and composed a research report.
- Coordinated with the maintenance department to promptly communicate information about faulty power lines and schedule regular maintenance.

Shenzhen Power Supply Bureau of Southern Power Grid Shenzhen Electric Power Research Institute

April 2022 - December 2022

- Researched the business models of EVs, the spot market in Guangdong Province, and the electricity market clearance policies, and wrote a comprehensive review.
- Participated in two scientific and technological projects: "Development of Multi-type User Plug-and-Play Smart Interactive Terminals" and "Research and Demonstration of Key Technologies for Large-scale EVs and Grid Interaction". Assisted with conducting research and organizing literature materials.
- Assisted the department with administrative tasks such as modifying demonstration project architecture diagrams, filling in document information, and collecting data.

CONTEST EXPERIENCE

- **Second Prize** of 2019 National College Students Mathematical Contest in Modeling in Guangdong Province (Top 20%)

April 2019

- **Third Prize** of 12th National College Students Energy Saving and Emission Reduction Contest in Guangdong Province (Top 25%) August 2019
- **Winner Prize** of 13th College Students Industrial Design Contest of Energy Saving and Emission Reduction in South China University of Technology (Top 30%) May 2020
- **Third Prize** of 9th Professional Practice at Tsinghua University (Top 10%) March 2024

AWARDS

- **National Scholarship** (Top 2%) 2019 - 2020
- **National Inspirational Scholarship** (Top 5%) 2018 - 2019
- **First Prize Scholarship of Tsinghua University** (Top 5%) 2022 - 2023
- **Kang Dewei Innovation Scholarship** (Top 10%) 2017 - 2018
- **Outstanding Graduate of Tsinghua University** (Top 2%) 2023 - 2024
- **Outstanding Graduation Thesis of Tsinghua University** (Top 5%) 2023 - 2024
- **Outstanding Graduate of SCUT** (Top 5%) 2021 - 2022
- **Outstanding Student Leader** (Top 5%) 2019 - 2020
- **Outstanding Member of Student Union** (Top 5%) 2018 - 2019
- **Outstanding Intern in Power Grid** (Top 5%) 2018 - 2019
- **Outstanding Speaker of "Youth Speaks"** (Top 10%) 2018 - 2019
- **Best Poster Award** of International Workshop on Learning and Information Theory (Top 2%) 2023

LEADERSHIP EXPERIENCE

Tsinghua University Student Union	
Member, Practice Department	March 2022 - December 2022
Tsinghua Shenzhen International Graduate School	
Monitor, Electrical Engineering Class 21	October 2021 - August 2022
South China University of Technology Student Union	
Secretary, Department of Manpower and Liaison	May 2018 - July 2019
Student Innovation and Entrepreneurship Club of SCUT	
Member, Outreach Practice Department	March 2018 - August 2018
Art Group of SCUT	
Leader, Host Team	July 2017 - June 2019

SKILLS AND INTERESTS

Programming:	Matlab, Python, C++
Software:	Microsoft Office, Latex, Photoshop
Language:	English, Chinese

REFERENCE

Prof. Wenhua Tang, IET Fellow, IEEE Senior Member
 South China University of Technology
 E-mail: wenhutang@scut.edu.cn

Associate Prof. Libao Shi, IEEE Senior Member
 Tsinghua University
 E-mail: shilb@sz.tsinghua.edu.cn

Assistant Prof. Xinwei Shen, IEEE Senior Member
 Tsinghua University
 E-mail: sxw.tbsi@sz.tsinghua.edu.cn