BEI LIU

School of Control Science and Engineering, Shandong University, Jinan, P.R. China
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Education

M. Eng. in Control Engineering **Sep. 2021 - Present**
School of Control Science and Engineering, Shandong University *Jinan, China*
***Advisor**: Prof. Xiangyang Xing*
***Core Courses**: Linear System Theory, Optimization method*

B. Eng. in Automation **Sep. 2017 - Jul. 2021**
School of Control Science and Engineering, Shandong University *Jinan, China*
***Core Courses**: Principles of Automatic Control, Power Electronic Technology, Measurement and Transformation Technology, Modern Control Theory*

Publications

[1] **Bei Liu**, Xiangyang Xing, Rui Zhang, Chang Liu, Chuangping Wen, "Modelling and Design of LCL-Filtered T-Type Inverters for Common-Mode Resonance Current Suppression in High-Power Applications," ***IEEE International Power Electronics and Application Symposium* (PEAS)**, Guangzhou, China, 2023.

[2] Chuangping Wen, Xiangyang Xing, Chang Liu, Lantao Xing, Rui Zhang and **Bei Liu**, "An Improved Model Predictive Control for A Novel Flying-Capacitor Five-Level Converter with Reduced Switching Devices," ***IEEE Journal of Emerging and Selected Topics in Power Electronics* (JESTPE)**, 2023.

[3] Chang Liu, Chenghui Zhang, Xiangyang Xing, Rui Zhang, **Bei Liu**, Frede Blaabjerg, "A Model Predictive Control Method of Switching Loss Reduction and Common Mode Voltage Elimination," in preparation.

[4] Chang Liu, Chenghui Zhang, Xiangyang Xing, **Bei Liu**, Chuangping Wen, "A Generic and Simplified Model Predictive Control of Eliminating Common-mode Voltage for Multilevel Converters," in preparation.

Research Experiences

Research Interest: Power System, Digital Control, Grid-Connected Converter Control, Stability Analysis

Project: Stability Analysis and Improvement of High-Power Three-Level Photovoltaic Grid-Connected Power Generation System

- Designed a model-free delay compensation method for the modified *LCL* filter based non-isolated T-type three-level grid-connected inverter. Analyzed the principle of common-mode current suppression controller instability in high-power applications.
- Theoretical analysis and framework design, simulation implementation.
- Accepted by *IEEE International Power Electronics and Application Symposium* (PEAS) 2023.

Project: Advanced Model Predictive Control of High-Power Multilevel Converters

- Designed an improved model predictive control for a novel flying-capacitor five-level converter with reduced switching devices.
- Analyzed the principle of operation of the flying-capacitor five-level topology, implemented model predictive control (MPC) for system modeling.

- Conducted simulations on MATLAB/Simulink and experiments on a dSPACE platform.
- Accepted by *IEEE Journal of Emerging and Selected Topics in Power Electronics* (JESTPE), 2023.

Patents

[1] Xiangyang Xing, **Bei Liu**, Rui Zhang, Chang Liu, "A stability control method and system for a high-power photovoltaic grid-connected inverter system", Chinese Patent, Application Number: 202211622839X.

Internship Experience

Internship at Shanghai Baolai Scientific Development Company **Jun. 2022 - Oct. 2022**
Position: *Testing Engineering* *Shanghai, China*

- Conducted validation of the product principles, assembled circuits and fine-tuned parameters.
- Authored the experimental manuals and compiled technical diagrams for documentation.

Honors

Special Freshman Scholarship, Shandong University **Sep. 2021**

Academic Scholarship, Shandong University (3 times) **Sep. 2017 - Sep. 2023**

Additional Relevant Experiences

Oxford Prospects Program **Aug. 2023**
University of Oxford *Oxford, UK*
STEM lectures attending.

Teaching Assistant **Sep. 2022 - May.2023**
Shandong University *Jinan, China*
Responsible for undergraduate student power electronic experiment teaching, including experimental prototype setups and verifications.

Skills

English: IELTS Overall 7.0 (L: 7.5 R: 7.0 W: 6.0 S: 7.0) **Languages**: Python, MATLAB
Technologies/Frameworks: Visio, Matlab/Simulink, Rtlab, dSPACE, Altium Designer, CCS

Leadership

Secretary of the Youth League Branch of the Class **Oct. 2017 - Jun. 2021**

Responsible for the daily affairs and activities of the class together with the monitor.