

Assistant Professor (Research) SUN, CHUAN

Department of Engineering and Science, Faculty of Innovation Engineering
Macau University of Science and Technology



Office: A305a

Tel.: +853-65810075

E-mail: csun@must.edu.mo

Academic Qualification:

Ph.D. in Power Electronics, The Hong Kong Polytechnic University, Hong Kong SAR, China.

M.Sc. in Information Technology, Macau University of Science and Technology, Macao SAR, China.

B.Eng. in Electronic and Information Engineering, North University of China, Taiyuan, China.

Teaching Area

Algorithm Design and Data Structure

Circuits

Research Area

Power Electronics: Topology Optimization, Advanced Modulation and Control Techniques.

Energy Conversion and Management for Next-Generation Power Systems.

Applications of Artificial Intelligence in Electrical and Control Engineering.

Working Experience

2024-Present: Assistant Professor, Faculty of Innovation Engineering, Macau University of Science and Technology, Macao SAR, China.

2023-2024: Assistant Research Fellow (Postdoctoral Fellow) and Research Associate, College of Electrical Engineering, Sichuan University, Chengdu, China.

2017-2018: Power Electronics Engineer, Hangzhou Livoltek Power Co., Ltd., Hangzhou, China.

Academic Publication (selected)

[1] C. Sun, X. Jiang, L. Cao and K. H. Loo, "Total Suppression of High-Frequency Transient Oscillations in Dual-Active-Bridge Series-Resonant Converter by Trajectory-Switching Modulation," in IEEE Transactions on Power Electronics, vol. 37, no. 6, pp. 6511-6529, June 2022, doi: 10.1109/TPEL.2021.3138150.

[2] C. Sun, X. Jiang, J. Liu, L. Cao, Y. Yang and K. H. Loo, "A Unified Design Approach of Optimal Transient Single-Phase-Shift Modulation for Nonresonant Dual-Active-Bridge Converter With Complete Transient DC-Offset Elimination," in IEEE Transactions on Power Electronics, vol. 37, no. 11, pp. 13217-13237, Nov. 2022, doi:

[3] C. Sun, J. Liu, X. Jiang, L. Cao, Y. Wang, J. Shen and K. H. Loo, "Generalized Multiphase-Shift Transient Modulation for Dual-Active-Bridge Series-Resonant Converter," in IEEE Transactions on Power Electronics, vol. 38, no. 7, pp. 8291-8309, July 2023, doi: 10.1109/TPEL.2023.3267297.

[4] C. Sun and X. Li, "Fast Transient Modulation for a Step Load Change in a Dual-Active-Bridge Converter with Extended-Phase-Shift Control," in Energies, vol. 11, no. 6, p. 1569, June 2018, doi: 10.3390/en11061569.

[5] C. Sun, X. Li and S. Zhou, "Transient current control for a step load change in a dual-active-bridge converter," in Electronics Letters, vol. 54, no. 22, pp. 1290-1292, November 2018, doi: 10.1049/el.2018.6361.

[6] C. Sun, G. Chen, X. Chen, K. H. Loo, S. Hu and X. Li, "A Six-Degree-of-Freedom Trajectory-Switching Modulation Framework for Triple-Phase-Shift-Modulated Dual-Active-Bridge Converters," 2024 IEEE 10th International Power Electronics and Motion Control Conference (IPEMC2024-ECCE Asia), Chengdu, China, 2024, pp. 2958-2963, doi: 10.1109/IPEMC-ECCEAsia60879.2024.10567401.

[7] C. Sun and X. Li, "Instantaneous Current Balance Modulation for Fast Transient Response in a Dual-Active-Bridge Converter," 2018 IEEE International Power Electronics and Application Conference and Exposition (PEAC), Shenzhen, China, 2018, pp. 1-6, doi: 10.1109/PEAC.2018.8590504.

- [8] S. Hu, **C. Sun***, R. Ding and X. Li, "Sinusoidal-Ripple-Current Charging Modulation for Semi-Dual-Active-Bridge AC–DC Converter With Full Soft Switching and Power Factor Correction," in IEEE Transactions on Circuits and Systems II: Express Briefs, vol. 71, no. 1, pp. 326-330, Jan. 2024, doi: 10.1109/TCSII.2023.3303265.
- [9] X. Jiang, **C. Sun**, L. Cao, L. Ngai-Fong and K. H. Loo, "Peer-to-Peer Energy Trading With Energy Path Conflict Management in Energy Local Area Network," in IEEE Transactions on Smart Grid, vol. 13, no. 3, pp. 2269-2278, May 2022, doi: 10.1109/TSG.2022.3141236.
- [10] J. Liu, F. Xu, **C. Sun** and K. H. Loo, "A Soft-Switched Power-Factor-Corrected Single-Phase Bidirectional AC–DC Wireless Power Transfer Converter With an Integrated Power Stage," in IEEE Transactions on Power Electronics, vol. 37, no. 8, pp. 10029-10044, Aug. 2022, doi: 10.1109/TPEL.2022.3156577.
- [11] J. Liu, F. Xu, **C. Sun** and K. H. Loo, "A Compact Single-Phase AC–DC Wireless Power Transfer Converter With Active Power Factor Correction," in IEEE Transactions on Industrial Electronics, vol. 70, no. 4, pp. 3685-3696, April 2023, doi: 10.1109/TIE.2022.3176297.
- [12] J. Liu, C. S. Wong, **C. Sun**, F. Xu, X. Jiang and K. H. Loo, "Software-Reconfigurable Multistage Constant Current Wireless Battery Charging Based on Multiharmonic Power Transmission," in IEEE Transactions on Power Electronics, vol. 38, no. 4, pp. 5586-5597, April 2023, doi: 10.1109/TPEL.2022.3232704.

Patents (selected)

C. Sun and X. Li, "System and method for controlling a converter circuit," U.S. Patent No.: 10,658,936 B2, May 2017.

C. Sun and X. Li, "System and method for controlling a converter circuit," Australian Innovation Patent No.: 2017100494, May 2017.

Professional Certification and Awards

Second Prize in Shanxi Province, National Undergraduate Electronics Design Contest, 2013.

Individual Third Prize and Team Second Prize in the National Finals, 11th China Graduate Electronics Design Team First Prize in South China Division, 12th China Graduate Electronics Design Contest, 2017.

Second-Class Excellent Research Award, Macau University of Science and Technology, 2017.

Professional Society Membership

Member, Institute of Electrical and Electronics Engineers (IEEE).

Member, China Power Supply Society (CPSS).