# Associate Professor Li, Xiao Dong

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*Prospective graduate students with background in electrical/electronic engineering and control, plus strong capabilities in English writng/reading, are welcome to apply for graduate study. Also, diligence and perseverance are highly recognized qualities. Limited research assistant (RA) position with MOP8000-12000/month salary may be provided for competitive candidates.*

## Academic Qualification:

Ph.D., University of Victoria, BC, Canada
M.A.Sc., University of Victoria, BC, Canada
B.Eng., Shanghai JiaoTong University, Shanghai, China

## Teaching Area

CE102 Analog Electronics Circuit
CE001 Electric Circuit Analysis
MIIC05 Advanced Topics in Electronics Engineering

## Research Area

Powe Electronics: high-frequency converter topology, control and applications in renewable generation

## Working Experience

2009 - now: Lecturer/Assistant Professor/Associate Professor, Macau University of Science and Technology

2002-2009: Research Associate, University of Victoria, British Columbia, Canada
1994-2001: Electrical Engineer, HuaDian HongWan Diesel Power Co., ZhuHai, China

## Research Grants

PI, FDCT: 067/2011/A
PI, FDCT: 094/2013/A3
PI, FDCT: 004/2015/A1
PI, FDCT: 060/2017/A
PI, FDCT: 0065/2019/A2

## Patents:

**Xiaodong Li**, Song Hu, "Battery charger with power factor correction", **US patent no.: 9,515,504 B2**, Australian Innovation Patent, No.2015100179.
**Xiaodong Li**, "SYSTEM AND METHOD FOR CONTROLLING A CONVERTER CIRCUIT", **US patent no.: 9,935,462 B2**, Australian Innovation Patent, No.2016100074
**Xiaodong Li**, "CONVERTER CIRCUIT AND OPERATING METHOD THEREOF", Australian Innovation Patent, No.2016100186
**Xiaodong Li**, "Semi-Dual-Active-Bridge Converter System and Methods Thereof", **US patent no.: 9,748,853 B1**, Australian Innovation Patent, No.2016101962

Chuan Sun**, Xiaodong Li**, "Systems and method for controlling a converter circuit", Australian Innovation Patent, No.2017100494

## Academic Publication Citation Information:

https://scholar.google.com/citations?user=5witSqUAAAAJ&hl=zh-CN

## Refereed Journal Papers:

G. Chen, **X. Li,** S. Zhou, "Unified Boundary Control With Phase Shift Compensation for Dual Bridge Series Resonant DC-DC Converter", ***IEEE ACESS*** , vol.8, p. 131137 - 131149, 2020.

S. Zhou, **X. Li,** Z.Zhong **and** X. Zhang, "Wide ZVS operation of a semi dual-bridge resonant converter under variable-frequency-phase-shift control", ***IET Power Electronics*** , 13(9), p. 1746

M. Lu, **X. Li and** G. Chen, "A Hybrid Control of a Semi Dual-Active-Bridge DC-DC Converter with Minimum Current Stress", ***IEEE Transactions on Power Electronics*** , 35(3),pp.3085-3096, 2020.

Y. Tang, **X. Li,** S. Zhou, C. Sun, G. Chen, "Comprehensive study of fast load modulation with volt-second balance in a dual-active-bridge converter", ***IET Power Electronics*** , 12(6), pp: 1357-1367, 2019

S. Hu, **X. Li,** A.K.S. Bhat, "Operation of a Bidirectional Series-Resonant Converter With Minimized Tank Current and Wide ZVS Range", ***IEEE Transactions on Power Electronics*** , 34(1), pp: 904-915, 2019

S-Z. Zhou, **X. Li**, G. Chen, S. Hu, "A piecewise control strategy for a bidirectional series resonant converter", ***Electronics*** , 2018, 7(12), 374.

C. Sun, **X. Li** and S.-Z. Zhou, "Transient current control for a step load change in a dual-active-bridge converter", ***Electronics Letters*** , 2018, 54(22), pp.1290-1292.

M. Lu, **X. Li**, "Performance Evaluation of a Semi-Dual-Active-Bridge with PPWM plus SPS Control", ***Electronics*** , 2018, 7(9), 184.

Y.-F. Zhang, **X. Li**, C. Sun and Z.-H. He, "Improved Step Load Response of a Dual-Active-Bridge DC-DC Converter", ***Electronics*** , 2018, 7(9), 185.

C. Sun, **X. Li**, "Fast Transient Modulation for a Step Load Change in a Dual-Active-Bridge Converter with Extended-Phase-Shift Control". ***Energies,*** 2018, 11(6), 1569.

**X. Li**, S. Hu, C. Sun and Y.-F. Zhang, "Asymmetric double-side modulation for fast load transition in a semi-dual-active-bridge converter", ***IET Power Electronics*** , 10(13), pp:1698-1704, 2017.

S.-T. Lin, **X. Li**, C. Sun and Y. Tang, "Fast transient control for power adjustment in a dual-active-bridge converter", ***Electronics Letters*** ,53(16), 2017, pp.1130-1132.

S. Hu, **X. Li**, "Performance evaluation of a semi-dual-bridge resonant dc/dc converter with secondary phase-shifted control", ***IEEE Transactions on Power Electronics*** ,32(10), 2017, pp.7727-7738.

S. Hu, **X. Li**, M. Lu and B.-Y. Luan, "Operation Modes of a Secondary-Side Phase-Shifted Resonant Converter", ***Energies*** , 2015, 8(12): 12314-12330.

H.-Y. Li, **X. Li**, M. Lu and S. Hu, "A Linearized Large Signal Model of an LCL-Type Resonant Converter", ***Energies*** , 2015, 8(3): 1848-1864.

G.-Y. Hu, **X. Li** and B.-Y. Luan, "A Generalized Approach for the Steady-State Analysis of Dual-Bridge Resonant Converters", ***Energies*** , 2014, 7(12): 7915-7935.

**X. Li** and A.K.S. Bhat, “Grid connection using a high-frequency isolated dc/ac module for hybrid power systems”, Electric Power Components and Systems, 42(12): 1334-1343, 2014.

**X. Li**, "A LLC-type dual-bridge resonant converter: analysis, design, simulation and experimental results," ***IEEE Transactions on Power Electronics*** , 29(8), pp:4313-4321, 2014.

**X. Li** and A.K.S. Bhat, “A Comparison Study of High-Frequency Isolated DC/AC Converter Employing an Unfolding LCI for Grid-Connected Alternative Energy Applications”, ***IEEE Transactions on Power Electronics*** , 29(8), pp:3930-3941, 2014

**X. Li** and A.K.S. Bhat, “A Fixed-Frequency Series-Parallel Resonant Converter with Capacitive Output Filter: Analysis, Design, Simulation and Experimental Result”, ***Electric Power Components and Systems*** , 42(7):746-754, 2014.

**X. Li** and Y.-F. Li, “An optimized phase-shift modulation for fast transient response in a dual-active-bridge converter," ***IEEE Transactions on Power Electronics*** ,29(6), pp:2661-2665, June 2014.

**X. Li** and A.K.S. Bhat, “A Utility-interfaced phase-modulated High-Frequency Isolated Dual LCL dc/ac Converter”, ***IEEE Transactions on Industrial Electronics*** , 59(2), pages: 1008-1019, 2012

**X. Li**, A.K.S. Bhat, “Analysis and Design of High-Frequency Isolated Dual-Bridge Series Resonant dc/dc Converter”, ***IEEE Transactions on Power Electronics ,*** 25(4), pages: 850-862, 2010

**X. Li**, Q. Wu, S. Nandi, “Performance Analysis of a Three-phase Induction Machine with Inclined Static Eccentricity”, ***IEEE Transactions on Industry Applications*** ,43(2), pages:531-541, 2007

S. Nandi, H. Toliyat, **X. Li**, “Condition Monitoring and Fault Diagnosis of Electrical Machines - A Review”, ***IEEE Transactions on Energy Conversion*** , 20(4), pages:719-729, 2005

## International Conference Papers:

26. S. H, **X. Li**, “ An unbalanced PWM control strategy for the full-bridge series resonant converter", IEEE International Conference on Industrial Electronics and Applications **(ICIEA)**, Xi'an, China, June 4-6, 2019

25. C. Sun, **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, Nov. 4-6, 2018

24. S.-Z. Zhou, C. Sun, S. Hu, G. Chen, **X. Li**, “ Improved Load Transient Response of a Dual Active Bridge Converter", International Power Electronics Conference, **IPEC-ECCE ASIA**, Niigata, Japan, May 20-24, 2018

23. S. Hu, **X. Li** and A. K.S . Bhat, “A comparative study of phase-shift control schemes in a bidirectional series resonant converter”, International Future Electrical and Electronics Conference, **IFEEC-ECCE ASIA**, Kaohsiung, Taiwan, June.3-7, 2017

22. B.-Y. Luan, S. Hu,Y.-F. Zhang and **X. Li,** “Steady-state analysis of a series resonant converter with modified PWM control”, IEEE International Conference on Industrial Electronics and Applications **(ICIEA)**, Siem Reap, Cambodia, June.18-20, 2017

21. S. Hu, Y.-F. Zhang and **X. Li,** "A Dual-Asymmetric PWM Control Strategy for Full Bridge DC-DC Converters", IEEE International Conference on Industrial Electronics and Applications**(ICIEA)**, Siem Reap, Cambodia, June.18-20, 2017

20. M. Lu, S. Hu, S.-Z. Zhou, Y. Tang and **X. Li,** "The steady-state operation map of a semi-dual-active-bridge converter", IEEE International Conference on Industrial Electronics and Applications**(ICIEA)**, Siem Reap, Cambodia, June.18-20, 2017

19. M. Lu, S. Hu, Y. Tang, S.-Z. Zhou and **X. Li,** "A novel control strategy based on modified gating scheme for a dual-active-bridge converter", IEEE International Conference on Industrial Electronics and Applications **(ICIEA)**, Siem Reap, Cambodia, June.18-20, 2017

18. S. Hu, M. Lu, B.-Y. Luan and **X. Li,** "Discontinuous-current mode operation of a semi-dual-bridge resonant converter", IEEE International Conference on Industrial Technology(**ICIT**), Taipei,Mar.14-17, 2016

17. B.-Y. Luan and **X. Li**,"A new control strategy to reduce circulation current for a bidirectional resonant converter", IEEE the 8th **IPEMC-ECCE ASIA**, Hefei, May 23-25, 2016

16. S. Hu, M. Lu and **X. Li**, "Continuous-current mode operation of a semi-dual-bridge resonant converter",pp.246-252, the 9th **ICPE-ECCE Asia**, Seoul, June 1-5, 2015.

15. Y.-J. Zhang, M. Lu and **X. Li**, "A Two-stage control scheme of a dual-bridge series resonant converter",pp.508-514, the 9th **ICPE-ECCE Asia**, Seoul, June 1-5, 2015.

14. **X. Li**，H.-Y. Li，G.-Y. Hu, "Modeling of the Fixed-Frequency Resonant LLC DC/DC Converter with Capacitive Output Filter", the 5th IEEE Energy Conversion Congress and Exposition **(ECCE)**, Denver, Colorado, USA, September 15-19, 2013.

13. **X. Li**，H.-Y. Li，G.-Y. Hu, Y. Xue , "A Bidirectional Dual-Bridge high-Frequency Isolated Resonant DC/DC Converter", the 8th IEEE Conference on Industrial Electronics and Applications (**ICIEA**), pp: 49-54, Melbourne, Australia, June 19-21, 2013.

12. D. P. Devakumar, A. Rathore and **X. Li**, "Interleaved Zero-voltage-switching Active-clamped Current-fed Full-bridge Isolated Dc/Dc Converter for Fuel Cell Applications: A Case Study Analysis", the 3rd IEEE International Conference on Sustainable Energy Technologies (**ICSET'12**), pp: 23 - 29, Kathmandu, Nepal, Sep. 2012

11. **X. Li** and A. Rathore, "Steady-state analysis of a dual-bridge LLC inverter", the 7th IEEE Conference on Industrial Electronics and Applications(**ICIEA**), pp: 769 - 774, Singapore, July 4-6 2012

10. A. Rathore and **X. Li**, "Comparison of Zero-voltage-switching Current-fed Full-bridge and Half-bridge Isolated DC/DC Converters with Active-clamp", 9th IEEE International Conference on Power Electronics and Drive Systems(**PEDS**), pages: 133-138, Singapore, Dec. 5-8 2011

9. **X. Li** and A. Rathore, "A General Study of Soft-Switching Ranges of Dual-Bridge Resonant Converters Using A Modified Complex AC Analysis Approach", the 6th International Conference on Industrial Electronics and Applications(**ICIEA**), pp:316-321, June 21-23, Beijing, 2011

8. S. Sun, **X. Li** and A. Rathore, "Design and Performance Evaluation of a Dual-Bridge Series-Parallel Resonant Converter", Proceedings of the 3rd International Conference on Power Electronics and Intelligent Transportation Systems **(PEITS**), pages: 179-182, ShenZhen, China, Nov. 2010

7. C. Zhao, **X. Li** and A. Rathore, "Modified Complex Ac analysis of a LC-LC Resonant Converter with Secondary Switching", the 3rd International Conference on Power Electronics and Intelligent Transportation Systems (**PEITS**), pp:183-186, ShenZhen, China, Nov. 2010

6. S. Nandi, **X. Li** and T. Ilamparithi, "Recent Developments in the Modeling and Analysis of Induction Machines with Non-uniform Air-gap using the Modified Winding Function Approach", 1st International Conference on Advances on Energy Conversion Technologies (**ICAECT**), Manipal, India, Jan. 7-10, 2010

5. **X. Li**, "Fundamental Analysis of a Dual-Bridge LCL Resonant Converter with Output Variation", 2nd Conference on Power Electronics and Intelligent Transportation System **(PEITS)**, pages: 270-273, Shenzhen, China, Dec.19-20, 2009

4. **X. Li**, A.K.S. Bhat, “Multi-Cell Operation of a High-Frequency Isolated DC/AC Converter for Grid-Connected Wind Generation Applications”, Fourth International Conference on Industrial and Information Systems (**ICIIS**), pp.169-174, Peradeniya, Sri Lanka, Dec.29-31, 2009

3. **X. Li**, A.K.S. Bhat, “A Phase-Modulated High-Frequency Isolated Dual LCL DC/AC Converter”, in IEEE Energy Conversion Congress & Exhibition (**ECCE**), San Jose, USA, Sep. 2009

2. **X. Li**, A.K.S. Bhat, “Ac equivalent circuit analysis for high-frequency isolated dual bridge series resonant dc/dc converter”, in IEEE 39th Power Electronics Specialist Conference (**PESC**), pages: 350-357, Island of Rhodes, Greece, June, 2008

1. **X. Li**, S. Nandi, “Performance Analysis of A 3-phase Induction Machine with Inclined Static Eccentricity”, in IEEE International Electric Machines and Drives Conference (**IEMDC**), pages: 1606-1613, San Antonio, TX, USA, May 15-18, 2005

## Personal Awards

**IPS**(Industrial Postgraduate Scholarship) from **NSERC** (National Science and Engineering Research Council of Canada), 2006

IEEE Power Engineering Society (**PES**) Best Paper Prize, 2007

**BOC** Excellent Research Award, Macau University of Science and Technology, 2013

## Student Awards

The 11th China Graduate Electronics Design Contest, First-class award in South China Division, Second-class award in Final Tournament, 2016
The 12th China Graduate Electronics Design Contest, First-class award in South China Division, 2017
The 14th China Graduate Electronics Design Contest, First-class award in Final Tournament, 2019
Dr. Song Hu, Graduate Research Award of Macau Science and Technology Award, 2018

## Professional Society Membership

Senior Member, Institute of Electrical and Electronics Engineers (**IEEE**)
Board member/Treasurer, **IEEE Macau Section**