

# HAOYU WANG

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## RESEARCH INTERESTS

- Power electronics.
- Plug-in electric vehicles.
- Datacenter power conversion.
- Battery management systems.
- Ac/dc converters and dc/dc converters.
- Wireless power transfer.
- Pulsed power supply in fusion energy systems.
- Power electronic interfaces for energy harvesting.

## EDUCATION

**Ph.D. (Dist. Diss.)** Electrical Engineering Univ. Maryland, College Park 08/2014  
Thesis: Highly efficient SiC based onboard chargers for plug-in electric vehicles  
Advisor: Alireza Khaligh

**M.Sc.** Electrical Engineering Univ. Maryland, College Park 06/2012

**B.E. (Highest Hons.)** Electrical Engineering Zhejiang Univ., Hangzhou, China 06/2009

## WORKING EXPERIENCES

**Affiliated Professor**, *Institute of Carbon Neutrality*, ShanghaiTech Univ., China  
*Center for Ultimate Energy (CUE)* 03/2022 - present

**Director**, *Sch. Inform. Sci. Technol.*, ShanghaiTech Univ., China  
*Center for Intelligent Power & Energy Systems (CiPES)* 09/2019 - present

**Tenured Associate Prof. (early promotion)**, *Sch. Inform. Sci. Technol.*, ShanghaiTech Univ., China  
*Power Electronics And Renewable Energies Laboratory (PEARL)* 04/2020 - present

**Tenure-Track Assistant Prof.**, *Sch. Inform. Sci. Technol.*, ShanghaiTech Univ., China  
*Power Electronics And Renewable Energies Laboratory (PEARL)* 09/2014 - 03/2020

**System Engineer Intern**, *GeneSiC Semiconductor, Inc.* Dulles, VA 05/2012 - 08/2012

**Research Assistant**, *Elect. Comput. Eng. Dpt.*, Univ. Maryland, College Park  
*Maryland Power Electronics Laboratory (MPEL)*, supervised by Alireza Khaligh 12/2011 - 08/2014  
*Microsystems Laboratory*, supervised by Robert W. Newcomb 09/2009 - 11/2011

**Research Assistant**, *Col. Elect. Eng.*, Zhejiang Univ., Hangzhou, China  
*Analog and Mixed-Signal IC Design Laboratory*, supervised by Xiaobo Wu 01/2008 - 06/2009

## HONORS AND SCHOLARSHIPS

- 2021-2022 **World's Top 2% Most-Cited Scientists-Career List**, Elsevier& Stanford Univ.
- 2019-2022 **World's Top 2% Most-Cited Scientists-Single Year List**, Elsevier& Stanford Univ.
- 2021 **Outstanding CCP Affairs Employee**, Shanghai Education & Health Commission
- 2020 **Key Teaching Reform Project**, Shanghai Municipal Government
- 2020 **1st-class Award for Teaching & Education**, Chinese Academy of Sciences
- 2020 **Rising Star Talent**, Shanghai Municipal Government
- 2019 **Excellent Faculty Adviser**, Social Engagement, ShanghaiTech Univ.
- 2019 **Finalist**, IEEE IAS TSC prize award, IEEE Energy Convers. Conf. Expo. (ECCE)
- 2019 **Outstanding Presentation**, IEEE Appl. Power Electron. Conf. Expo. (APEC)
- 2018 **Excellent Course**, "Intro. Inform. Sci. Technol.", Shanghai Municipal Government
- 2017 **Key Course**, "Intro. Inform. Sci. Technol.", Shanghai Education Commission
- 2017 **Outstanding Faculty Award**, ShanghaiTech Univ.
- 2017 **Excellence in Teaching Award**, Sch. Inform. Sci. Technol., ShanghaiTech Univ.
- 2016 **Sailing Talent**, Shanghai Municipal Government
- 2014 **PSMA Travel Grant**, IEEE Appl. Power Electron. Conf. (APEC)
- 2014 **Distinguished Dissertation Fellowship**, ECE department, Univ. Maryland
- 2013 **Jacob K. Goldhaber Travel Grant**, Graduate School, Univ. Maryland
- 2013 **Finalist**, Proposal Contest, NineSigma Inc.
- 2012 **Finalist**, Qualcomm Innovation Fellowship, Qualcomm Inc. USA
- 2009-2013 **CSC Fellowship**, China Scholarship Counsel
- 2009 **Chu Kochen Certificate of Distinguished Honors**, Zhejiang Univ.
- 2009 **Outstanding Bachelor Thesis Award**, Zhejiang Univ.
- 2009 **Outstanding Graduate Award**, Zhejiang Univ.
- 2006-2008 **Top Academic Records Scholarships**, Zhejiang Univ.

## TEACHING EXPERIENCES

**Instructor**, Sch. Inform. Sci. Technol., ShanghaiTech Univ., China 09/2014 - present

- 2022 Fall MSE2125 *Intro. Energy Sci. Technol.*, 21 under, 113 graduates, ongoing.
- 2022 Fall EE270 *Model. Ctrl. Power Electron. Conv.*, MOOC.
- 2022 Spring SI100B *Intro. Infor. Sic. Technol.*, 109 undergraduates.
- 2021 Fall EE270 *Model. Ctrl. Power Electron. Conv.*, 8 under, 9 graduate students, 4.73/5.
- 2021 Fall MSE2125 *Intro. Energy Sci. Technol.*, 19 under, 103 graduates, 4.58/5.
- 2021 Spring SI100B *Intro. Infor. Sci. Technol.*, 165 undergraduates, 4.50/5.
- 2020 Fall EE270 *Model. Ctrl. Power Electron. Conv.*, 6 under, 6 graduate students, 5/5.
- 2020 Fall MSE2125 *Intro. Energy Sci. Technol.*, 60 under, 97 graduate students, 4.83/5.
- 2020 Spring EE111 *Electric Circuits*, 69 undergraduates, 4.22/5.
- 2019 Fall EE270 *Model. Ctrl. Power Electron. Conv.*, 4 under, 14 graduate students, 4.82/5.
- 2019 Spring EE112 *Analog Integrated Circuits I*, 13 undergraduates, 4.72/5.
- 2018 Spring EE112 *Analog Integrated Circuits I*, 60 undergraduates, 4.53/5.
- 2017 Fall EE270 *Power Electronics*, 7 graduate students, 4.63/5.
- 2017 Spring EE270 *Power Electronics*, 10 undergraduates, 7 graduate students, 4.67/5.
- 2016 Fall EE112 *Analog Integrated Circuits I*, 39 undergraduates, 4.79/5.
- 2016 Spring EE270 *Power Electronics*, 8 graduate students, 4.67/5.
- 2016 Spring SI100B *Intro. Inform. Sci. Technol.*, 296 undergraduates, 4.31/5.
- 2015 Fall EE212 *Analog Integrated Circuits*, 25 graduate students, 4.39/5.

- 2015 Summer SI101 *Course Design*, 5 undergraduates.
- 2015 Spring EE270 *Power Electronics*, 19 graduate students, 4.67/5.
- 2015 Spring SI100 *Intro. Inform. Sci. Technol.*, 204 undergraduates, 4.33/5.
- 2014 Fall EE220 *Semiconductor Devices*, 22 graduate students, 4.40/5.

**Teaching Assistant**, Elect. Comput. Eng. Dpt., Univ. Maryland, College Park 09/2010 - 06/2013

- 2013 Spring ENEE498R *Special Topics in Renewable Energy*
- 2012 Fall ENEE417 *Microelectronics Design Laboratory*
- 2011 Fall ENEE303 *Analog and Digital Electronics*
- 2011 Spring ENEE307 *Electronics Circuits Design Laboratory*

## RESEARCH/TEACHING GRANTS

- [G1] 2023/1-2023/12, **PI**, “Ultra-high step-up ratio PV dc/dc converter for 800V electric vehicles,” **Industrial Grant**, Vitestco Technologies, Shanghai, 560k CNY.
- [G2] 2022/1-2022/10, **PI**, “High step-down ratio micro dc/dc converter for 800V electric vehicles,” **Industrial Grant**, Vitestco Technologies, Shanghai, 220k CNY.
- [G3] 2021-2025, **PI**, “Electronic and information engineering,” **Excellent Master Program Cultivation Project**, Shanghai Municipal Government, 5M CNY.
- [G4] 2020/4-2023/12, **PI**, “GaN-based ultra compact highly integrated onboard power conversion technologies for electric vehicles,” **Tenured Faculty Career Development Grant**, ShanghaiTech University, 2.25M CNY.
- [G5] 2021/1-2024/12, **PI**, “Topology and control of reconfigurable bridge based bidirectional on-board charger adapted to an ultra-wide gain range,” **NSFC General Grant**, National Science Foundation of China, 600k CNY, Grant # 52077140
- [G6] 2020/5-2023/4, **PI**, “Bidirectional resonant dc/dc converter adapted to an ultra-wide gain range,” **Rising Star Program**, Shanghai Municipal Government, 400k CNY, Grant # 20QA1406700
- [G7] 2017/1-2019/12, **PI**, “Topology integration and control of PEV hybrid energy management systems,” **NSFC Young Professional Grant**, National Science Foundation of China, 210k CNY, Grant # 51607113
- [G8] 2016/6-2019/5, **PI**, “PEV battery/ultracap hybrid energy storage systems based on topological reuse,” **Shanghai Sailing Program**, Shanghai Municipal Government, 200k CNY, Grant # 16YF1407600
- [G9] 2014/9-2020/3, **PI**, “Design and optimization of PEV energy management systems,” **Faculty Start-up Grant**, ShanghaiTech University, 2M CNY, Grant # F-0203-14-010
- [G10] 2007/12-2008/12, **PI**, “Design of an ultra-low power switch-mode power management IC,” **National Undergraduate Innovative Research Grant**, Ministry of Education of China, 15k CNY

## JOURNAL PAPERS

\*supervised student/postdoc, † corresponding author.

- [J1] Y. Gao, M. Fu, **H. Wang**, and J. Liang<sup>†</sup> “A 2-D inductive power transfer network for powering reconfigurable closely neighboring IoT devices,” *IEEE Access*, in press.
- [J2] Y. Jiang, H. Li, Y. Liu, J. Liang, **H. Wang**, and M. Fu<sup>†</sup>, “Multi-constraint design of single-switch resonant converters based on extended impedance method,” *IEEE J. Emerg. Sel. Topics Power Electron.*, in press.
- [J3] P. Zhao, X. Ji, **H. Wang**, and M. Fu<sup>†</sup>, “H5-bridge-based bowl-shape wireless charger for multiple loads,” *IEEE Trans. Ind. Electron.*, in press.
- [J4] L. Gao, L. Teng, M. Fu, **H. Wang**, and J. Liang<sup>†</sup>, “A switched-mode self-sensing solution for piezoelectric synchronous electric charge extraction (SECE),” *IEEE Trans. Ind. Electron.*, in press.

- [J5] G. Zheng, C. Qi, Y. Liu, J. Liang, **H. Wang**, and M. Fu, “Uniform and simplified small-signal model for inductive power transfer systems,” *IEEE Trans. Power Electron.*, in press.
- [J6] L. Wang\*, **H. Wang**<sup>†</sup>, M. Fu, J. Liang, and Y. Liu, ‘A three-port energy router for grid-tied PV generation systems With optimized control methods,” *IEEE Trans. Power Electron.*, vol. 38, no. 1, pp. 1218-1231, Jan. 2023.
- [J7] Z. Wei\*, **H. Wang**<sup>†</sup>, Y. Lu, D. Shu, G. Ning, and M. Fu, “Bidirectional constant current string-to-cell battery equalizer based on L2C3 resonant topology,” *IEEE Trans. Power Electron.*, vol. 38, no. 1, pp. 666-677, Jan. 2023.
- [J8] J. Liang\*, M. Fu, J. Liang, and **H. Wang**<sup>†</sup>, and M. Fu, “Overview of voltage regulator modules in 48V bus-based data center power systems,” *CPSS Trans. Power Electron. Appl.*, vol. 7, no. 3, pp. 283-299, Sept. 2022.
- [J9] X. Yang and **H. Wang**, “Editorial for the special issue on next generation datacenter power conversion technologies,” *CPSS Trans. Power Electron. Appl.*, vol. 7, no. 3, pp. 227-228, Sept. 2022.
- [J10] L. Wang\*, **H. Wang**<sup>†</sup>, M. Fu, Z. Xie, and J. Liang, “Three-port power electronic interface with decoupled voltage regulation and MPPT in electromagnetic energy harvesting systems,” *IEEE Trans. Ind. Appl.*, vol. 58, no. 2, pp. 2144-2154, Mar./Apr. 2022.
- [J11] L. Wang\*, **H. Wang**<sup>†</sup>, B. Xue, and M. Zhou, “H5-bridge based single-input-dual-output *LLC* converter with wide output voltage range,” *IEEE Trans. Ind. Electron.*, vol. 69, no. 7, pp. 7008-7018, Jul. 2022.
- [J12] D. Shu\*, **H. Wang**<sup>†</sup>, and M. Zhou, “Universal control scheme to achieve seamless dynamic transition of dual-active-bridge converters using zero-current prediction,” *IEEE Trans. Ind. Electron.*, vol. 69, no. 6, pp. 5826-5834, Jun. 2022.
- [J13] M. Zhou\*, D. Shu, and **H. Wang**<sup>†</sup>, “An H5-bridge based laddered *CLLC* DCX with variable dc-link for PEV charging applications,” *IEEE Trans. Power Electron.*, vol. 37, no. 4, pp. 4249-4260, Apr. 2022.
- [J14] Z. Wei\*, F. Peng, and **H. Wang**<sup>†</sup>, “An *LCC* based string-to-cell battery equalizer with simplified constant current control,” *IEEE Trans. Power Electron.*, vol. 37, no. 2, pp. 1816-1827, Feb. 2022.
- [J15] F. Peng\*, Y. Lu, M. Zhou, and **H. Wang**<sup>†</sup>, “Hierarchical modular battery equalizer with open-loop control and mitigated recovery effect,” *CPSS Trans. Power Electron. Appl.*, vol. 6, no. 4, pp. 310-319, Dec. 2021.
- [J16] D. Shu\* and **H. Wang**<sup>†</sup>, “Light load performance enhancement technique for *LLC*-based PEV charger through circuit reconfiguration,” *IEEE Trans. Transp. Electrification*, vol. 7, no. 4, pp. 2104-2113, Dec. 2021.
- [J17] D. Shu\* and **H. Wang**<sup>†</sup>, “An ultra-wide output range *LLC* resonant converter based on adjustable turns ratio transformer and reconfigurable bridge,” *IEEE Trans. Ind. Electron.*, vol. 68, no. 8, pp. 7115-7124, Aug. 2021.
- [J18] K. Yue, Y. Liu<sup>†</sup>, P. Zhao, M. Fu, and **H. Wang**, “Dynamic state estimation enabled health indicator for parametric fault detection in power electronic circuits,” *IEEE Access*, vol. 9, pp. 33224-33234, 2021.
- [J19] J. Deng\* and **H. Wang**<sup>†</sup>, “A hybrid-bridge and hybrid modulation based dual-active-bridge converter adapted to wide voltage range,” *IEEE J. Emerg. Sel. Topics Power Electron.*, vol. 9, no. 1, pp. 910-920, Feb. 2021.
- [J20] X. Li, L. Teng, H. Tang, J. Chen, **H. Wang**, Y. Liu, M. Fu, and J. Liang<sup>†</sup>, “ViPSN: a vibration-powered IoT platform,” *IEEE Internet Things J.*, vol. 8, no. 3, pp. 1728-1739, Feb. 2021.
- [J21] B. Xue\*, **H. Wang**<sup>†</sup>, J. Liang, Q. Cao, and Z. Li, “Phase-shift modulated interleaved *LLC* resonant converter with ultra wide output voltage range,” *IEEE Trans. Power Electron.*, vol. 36, no. 1, pp. 493-503, Jan. 2021.
- [J22] O. Abdel-Rahim\*<sup>†</sup> and **H. Wang**, “A new high gain dc-dc converter with model-predictive-control based MPPT technique for photovoltaic systems,” *CPSS Trans. Power Electron. Appl.*, vol. 5, no. 2, pp. 189-198, Jun. 2020.
- [J23] O. Abdel-Rahim\* and **H. Wang**<sup>†</sup>, “Five-level one-capacitor boost multilevel inverter,” *IET Power Electron.*, vol. 13, no. 11, pp. 2245-2251, Aug. 2020.

- [J24] C. Li\*, M Zhou, and **H. Wang**<sup>†</sup>, “An H5-bridge based asymmetric *LLC* resonant converter with an ultra-wide voltage gain range,” *IEEE Trans. Ind. Electron.*, vol. 67, no. 11, pp. 9503-9514, Nov. 2020.
- [J25] T. Chen\*, O. Abdel-Rahim, F. Peng, and **H. Wang**<sup>†</sup>, “An improved finite control set-MPC based power sharing control strategy for islanded ac microgrids,” *IEEE Access*, vol. 8, pp. 52676-52686, 2020.
- [J26] F. Peng\*, **H. Wang**<sup>†</sup>, and Z. Wei, “An *LLC* based highly efficient S2M and C2C hybrid hierarchical battery equalizer,” *IEEE Trans. Power Electron.*, vol. 35, no 6, pp. 5928-5937, Jun. 2020.
- [J27] X. Lu\* and **H. Wang**<sup>†</sup>, “Optimal sizing and energy management for cost-effective hybrid energy storage systems,” *IEEE Trans. Ind. Inform.*, vol. 16, no. 5, pp. 3407-3416, May 2020.
- [J28] Z. Li\*, B. Xue, and **H. Wang**<sup>†</sup>, “An interleaved secondary-side modulated *LLC* resonant converter for wide output range applications,” *IEEE Trans Ind. Electron.*, vol. 67, no. 2, pp. 1124-1135, Feb. 2020.
- [J29] R. He, M. Fu<sup>†</sup>, P. Zhao, Y. Liu, **H. Wang**, and J. Liang, “Decomposition and synthesis of high-order compensated inductive power transfer systems for improved output controllability,” *IEEE Trans. Microw. Theory Techn.*, vol. 67, no. 11, pp. 4514-4523, Nov. 2019.
- [J30] J. Deng\*, **H. Wang**<sup>†</sup>, and M. Shang, “A ZVS three-port dc/dc converter for high-voltage bus based photovoltaic systems,” *IEEE Trans. Power Electron.*, vol. 34, no. 11, pp. 10688-10699, Nov. 2019.
- [J31] **H. Wang**<sup>†</sup>, M. Shang, and D. Shu, “Design considerations of efficiency enhanced *LLC* PEV charger using reconfigurable transformer,” *IEEE Trans. Veh. Technol.*, vol. 68, no. 9, pp. 8642-8651, Sept. 2019.
- [J32] F. Peng\*, **H. Wang**<sup>†</sup>, and L. Yu, “Analysis and design considerations of efficiency enhanced hierarchical battery equalizer based on bipolar CCM buck-boost units,” *IEEE Trans. Ind. Appl.*, vol. 55, no. 4, pp. 4053-4063, Jul./Aug. 2019.
- [J33] L. Yu\* and **H. Wang**<sup>†</sup>, “A novel dual-input ZVS dc/dc converter for low-power energy harvesting applications,” *IEEE J. Emerg. Sel. Topics Power Electron.*, vol. 7, no. 2, pp. 1197-1206, Jun. 2019.
- [J34] C. Li\*, **H. Wang**<sup>†</sup>, and M. Shang, “A five-switch bridge based reconfigurable *LLC* converter for deeply depleted PEV charging applications,” *IEEE Trans. Power Electron.*, vol. 34, no. 5, pp. 4031-4035, May. 2019.
- [J35] X. Lu\*, Y. Chen, M. Fu, and **H. Wang**<sup>†</sup>, “Multi-objective optimization based real-time control strategy for battery/ultracapacitor hybrid energy management systems,” *IEEE Access*, vol. 7, pp. 11640-11650, 2019.
- [J36] X. Lu\* and **H. Wang**<sup>†</sup>, “A highly efficient multifunctional power electronic interface for PEV hybrid energy management systems,” *IEEE Access*, vol. 7, pp. 8964-8974, 2019.
- [J37] Z. Li\*, S. Dusmez, and **H. Wang**<sup>†</sup>, “A novel soft-switching secondary-side modulated multi-output dc/dc converter with extended ZVS range,” *IEEE Trans. Power Electron.*, vol. 34, no. 1, pp. 106-116, Jan. 2019.
- [J38] M. Shang\* and **H. Wang**<sup>†</sup>, “A voltage quadrupler rectifier based pulsewidth modulated *LLC* converter with wide output range,” *IEEE Trans. Ind. Appl.*, vol. 54, no. 6, pp. 6159-6168, Nov./Dec. 2018.
- [J39] M. Shang\*, **H. Wang**<sup>†</sup>, and Q. Cao, “Reconfigurable *LLC* topology with squeezed frequency span for high-voltage bus-based photovoltaic applications,” *IEEE Trans. Power Electron.*, vol. 33, no. 5, pp. 3688-3692, May 2018.
- [J40] **H. Wang**<sup>†</sup> and Z. Li, “A PWM *LLC* type resonant converter adapted to wide output range in PEV charging applications,” *IEEE Trans. Power Electron.*, vol. 33, no. 5, pp. 3791-3801, May 2018. ([ESI highly cited paper as of 2020](#)).
- [J41] L. Yu\*, **H. Wang**<sup>†</sup>, and A. Khaligh, “A discontinuous conduction mode single stage step-up rectifier for low voltage energy harvesting applications,” *IEEE Trans. Power Electron.*, vol. 32, no. 8, pp. 6161-6169, Aug. 2017.
- [J42] **H. Wang**<sup>†</sup>, M. Shang, and A. Khaligh, “A PSFB based integrated PEV onboard charger with extended ZVS range and zero duty cycle loss,” *IEEE Trans. Ind. Appl.*, vol. 53, no. 1, pp. 585-595, Jan./Feb. 2017.
- [J43] C. Shi, **H. Wang**, S. Dusmez, and A. Khaligh<sup>†</sup>, “A SiC-based high-efficiency isolated onboard PEV charger with ultra-wide dc link voltage range,” *IEEE Trans. Ind. Appl.*, vol. 53, no. 1, pp. 501-511, Jan./Feb. 2017.

- [J44] C. Shi, A. Khaligh<sup>†</sup>, and **H. Wang**, “Interleaved SEPIC power factor pre-regulator using coupled inductors in discontinuous conduction mode with wide output voltage,” *IEEE Trans. Ind. Appl.*, vol. 52, no. 4, pp. 3461-3471, Jul./Aug. 2016.
- [J45] **H. Wang**, S. Dusmez, and A. Khaligh<sup>†</sup>, “Maximum efficiency point tracking technique for *LLC* based PEV chargers through variable dc link control,” *IEEE Trans. Ind. Electron.*, vol. 61, no. 11, pp. 6041-6049, Nov. 2014.
- [J46] **H. Wang**, S. Dusmez, and A. Khaligh<sup>†</sup>, “Design and analysis of a full bridge *LLC* based PEV charger optimized for wide output battery voltage range,” *IEEE Trans. Veh. Technol.*, vol. 64, no. 3, pp. 1603-1613, May 2014. (ESI highly cited paper as of 2021)
- [J47] C. Chen, Y. Tang, **H. Wang**, and Y. Wang<sup>†</sup>, “A review of fabrication options and power electronics for flapping-wing robotic insects,” *Int. J. Adv. Robot. Sys.*, vol. 10, no. 151, pp. 1-12, Mar. 2013.
- [J48] **H. Wang**, A. Hasanzadeh, and A. Khaligh<sup>†</sup>, “Conductive charging of electrified vehicles,” *IEEE Electr. Mag.*, vol. 1, no. 2, pp. 46-58, Dec. 2013. (Invited)
- [J49] **H. Wang**, Y. Tang, and A. Khaligh<sup>†</sup>, “A bridgeless boost rectifier for low-voltage energy harvesting applications,” *IEEE Trans. Power Electron.*, vol. 28, no. 11, pp. 5206-5214, Nov. 2013.
- [J50] **H. Wang**, Y. Zhou, H. Chen, and X. Wu<sup>†</sup>, “Design of multi-mode quasi-resonant fly-back SMPS,” *Mech. & Elect. Eng. Mag.*, vol. 29, no. 7, pp. 77-81, Jul. 2009. (Chinese)

## CONFERENCE PROCEEDINGS

\*supervised student/postdoc, <sup>†</sup> corresponding author.

- [C1] Z. Wei\*, Y. Lu, B. Xu, L. Liu, H. Yang, and **H. Wang**<sup>†</sup>, “An integrated charging equalizer based on *LLC* resonant dc-dc converter-based for series-connected battery string in plug-in hybrid electric vehicles,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Orlando, FL, Mar. 2023.
- [C2] Y. Zhuge\*, and **H. Wang**<sup>†</sup>, “Overview of machine learning-enabled battery state estimation methods,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Orlando, FL, Mar. 2023.
- [C3] L. Wang\*, J. Liang, and **H. Wang**<sup>†</sup>, “A multi-phase series capacitor trans-inductor voltage regulator with high switching frequency and fast dynamic response,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Orlando, FL, Mar. 2023.
- [C4] H. Zhang\*, L. Wang, and **H. Wang**<sup>†</sup>, “Stacked-bridge-based three-level DAB converter in 800V dc micro-grids,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Orlando, FL, Mar. 2023.
- [C5] K. Yue, Y. Liu<sup>†</sup>, X. Zhang, and **H. Wang**, “State estimation based foreign object detection in wireless power transfer systems,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Orlando, FL, Mar. 2023.
- [C6] Y. Zhuge\*, F. Zhao, and **H. Wang**<sup>†</sup>, “Avalanche transistor-based nanosecond pulse generator in plasma-jet-driven magneto-inertial fusion systems,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Orlando, FL, Mar. 2023.
- [C7] F. Hu, H. Yang<sup>†</sup>, **H. Wang**, and M. Fu, “An active clamping current-fed three port converter for fuel cell/supercapacitor hybrid energy storage systems,” in *Proc. IEEE Ann. Conf. IEEE Ind. Electron. Soc. (IECON)*, Brussels, Belgium, Oct. 2022.
- [C8] Z. Li\*, J. Liang, and **H. Wang**<sup>†</sup>, “Weight judgement based thermal balancing strategy for interleaved Buck converters,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Detroit, MI, Oct. 2022.
- [C9] K. Zhao, M. Fu<sup>†</sup>, G. Ning, R. He, H. Yang, and **H. Wang**, “A novel driving scheme for inductive power transfer systems using decoupled transmitter coils,” in *Proc. Int. Power Electron. Conf. (IPEC-ECCE Asia)*, Himeji, Japan, May 2022, pp. 161-166.
- [C10] Y. Lu\*, **H. Wang**<sup>†</sup>, H. Yang, S. Chen, and W. Liu, “An RLS based battery modeling method to compensate for recovery effect in battery balancing,” in *Proc. Int. Power Electron. Conf. (IPEC-ECCE Asia)*, Himeji, Japan, May 2022, pp. 1940-1945.
- [C11] Z. Li\*, M. Zhou, and **H. Wang**<sup>†</sup>, “Temperature sensorless thermal management strategy for interleaving power converters,” in *Proc. Int. Power Electron. Conf. (IPEC-ECCE Asia)*, Himeji, Japan, May 2022, pp. 466-470.

- [C12] J. Liang\* and **H. Wang**<sup>†</sup>, “Light load efficiency Boost technique for switched tank converters based on hybrid ZVS-ZCS control,” in *Proc. Int. Power Electron. Conf. (IPEC-ECCE Asia)*, Himeji, Japan, May 2022, pp. 2231-2235.
- [C13] R. He\*, **H. Wang**<sup>†</sup>, and B. Xue, “Automatic resonant frequency tracking scheme for *LLC* resonant converter based on adaptive extended state observer,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Houston, TX, Mar. 2022, pp. 22-26.
- [C14] Z. Wei\*, **H. Wang**<sup>†</sup>, Y. Lu, G. Ning and M. Fu, “Bidirectional constant current S2C battery equalizer based on fixed-frequency L2C3 resonant converter,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Houston, TX, Mar. 2022, pp. 52-57. (Won the PSMA travel grant).
- [C15] B. Xue\*, **H. Wang**<sup>†</sup>, R. He, P. Zhao, M. Fu, and Y. Liu, “A ZVS pulsewidth modulation scheme for active class-E rectifier based IPT systems,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Houston, TX, Mar. 2022, pp. 1122-1127. (Won the PSMA travel grant).
- [C16] M. Zhou\*, L. Yu, and **H. Wang**<sup>†</sup>, “A SiC-Based highly integrated bidirectional AC/DC converter for PEV charging applications,” in *Proc. IEEE Int. Power Electron. Appl. Symp. (PEAS)*, Shanghai, China, Nov. 2021, pp. 363-367. (Won the best presenter award).
- [C17] Y. Lu\*, Z. Wei, and **H. Wang**<sup>†</sup>, “A bidirectional cell-to-buffer battery equalizer at boundary conduction mode with constant on-time control,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Vancouver, BC, Oct. 2021, pp. 1405-1412.
- [C18] M. Zhou\* and **H. Wang**<sup>†</sup>, “Design methodology to reduce the intra-winding capacitance of spiral winding transformer in *LCC* converters,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Vancouver, BC, Oct. 2021, pp. 5542-5548.
- [C19] J. Liang\* and **H. Wang**<sup>†</sup>, “A merged H-bridge based switched tank converter for front-end voltage regulator modules,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Vancouver, BC, Oct. 2021, pp. 1995-2000.
- [C20] K. Yue, Y. Liu<sup>†</sup>, P. Zhao, M. Fu, **H. Wang** and J. Liang, “Coupling coefficient and load estimation for wireless power transfer systems with transmitter side input current,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Phoenix, AZ, Jun. 2021, pp. 709-713.
- [C21] G. Zheng, K. Zhao, P. Zhao, **H. Wang**, J. Liang and M. Fu<sup>†</sup>, “Reduced-order model for inductive power transfer systems,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Phoenix, AZ, Jun. 2021, pp. 2393-2398.
- [C22] L. Gao, L. Teng, J. Liang<sup>†</sup>, **H. Wang**, Y. Liu, and M. Fu, “A self-sensing synchronous electric charge extraction (SECE) solution for piezoelectric energy harvesting enhancement,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Phoenix, AZ, Jun. 2021, pp. 1393-1397.
- [C23] L. Wang\*, **H. Wang**, Y. Liu, J. Liang, and M. Fu<sup>†</sup>, “A fully ZVS dual-active-bridge based three-port converter with high integration,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Phoenix, AZ, Jun. 2021, pp. 1410-1415.
- [C24] L. Wang\*, M. Fu, and **H. Wang**<sup>†</sup>, “A three-port power electronic interface to harvest the maximum power in electromagnetic energy harvesting systems,” in *Proc. Int. Power Electron. Motion Control Conf. (IPEMC-ECCE Asia)*, Nanjing, China, Nov. 2020, pp. 1475-1481.
- [C25] X. Li, H. Tang, Y. Zhu, **H. Wang**, and J. Liang<sup>†</sup>, “Power solution of a vibration-powered sensor node,” in *Proc. Int. Power Electron. Motion Control Conf. (IPEMC-ECCE Asia)*, Nanjing, China, Nov. 2020, pp. 2513-2519.
- [C26] S. Wang, J. Liang, **H. Wang**, and M. Fu<sup>†</sup>, “An induced voltage source model for capacitive power transfer,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, New Orleans, LA, Mar. 2020, pp. 846-851.
- [C27] Z. Wei\*, F. Peng, and **H. Wang**<sup>†</sup>, “A string-to-cell battery equalizer based on fixed frequency *LCC* resonant converter,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, New Orleans, LA, Mar. 2020, pp. 1450-1455. (Won the PSMA travel grant).
- [C28] M. Zhou\* and **H. Wang**<sup>†</sup>, “Optimal design of reconfigurable H5 bridge based *LLC* converter with ultra-wide input voltage range and synchronous rectification,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, New Orleans, LA, Mar. 2020, pp. 2073-2080.



- [C29] O. Abdel-Rahim\* and **H. Wang**<sup>†</sup>, “A seven-level boost inverter for medium power PV applications,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, New Orleans, LA, Mar. 2020, pp. 3316-3321.
- [C30] D. Shu\* and **H. Wang**<sup>†</sup>, “An adjustable turns ratio transformer based *LLC* converter adapted to ultra-wide output voltage range,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, New Orleans, LA, Mar. 2020, pp. 860-864.
- [C31] J. Deng\* and **H. Wang**<sup>†</sup>, “Hybrid modulated bidirectional resonant dc/dc converter for high-voltage bus-based energy storage systems,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Baltimore, MD, Sept. 2019, pp. 4256-4261.
- [C32] K. Yue, Y. Liu<sup>†</sup>, R. He, M. Fu, and **H. Wang**, “Model-based parametric fault detection in power electronics circuits,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Baltimore, MD, Sept. 2019, pp. 2933-2938.
- [C33] K. Zhao, J. Liang<sup>†</sup>, and **H. Wang**, “Series synchronized triple bias-flip (S-S3BF) interface circuit for piezoelectric energy harvesting,” in *Proc. Int. Symp. Circuits Systems (ISCAS)*, Sapporo, Japan, May 2019.
- [C34] U. Khalid\*, D. Shu, and **H. Wang**<sup>†</sup>, “Hybrid modulated reconfigurable bidirectional *CLLC* converter for V2G enabled PEV charging applications,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Anaheim, CA, Mar. 2019, pp. 3232-3238.
- [C35] Q. Cao\*, Z. Li, B. Xue, and **H. Wang**<sup>†</sup>, “Fixed frequency phase shift modulated *LLC* resonant converter adapted to ultra wide output voltage range,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Anaheim, CA, Mar. 2019, pp. 817-822. (Won the outstanding presentation award).
- [C36] C. Li\* and **H. Wang**<sup>†</sup>, “A wide gain range *LLC* resonant converter based on reconfigurable bridge and asymmetric resonant tanks,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Anaheim, CA, Mar. 2019, pp. 3281-3286.
- [C37] J. Deng\*, **H. Wang**<sup>†</sup>, and M. Shang, “An integrated three-port dc/dc converter for high voltage bus-based photovoltaic systems,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Portland, OR, Sept. 2018, pp. 5948-5953.
- [C38] F. Peng\*, **H. Wang**<sup>†</sup>, and L. Yu, “A hierarchical ZVS battery equalizer based on bipolar CCM buck-boost units,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Portland, OR, Sept. 2018, pp. 2122-2126. (Shortlist paper for the IEEE IAS TSC prize award).
- [C39] Q. Cao\*, Z. Li, and **H. Wang**<sup>†</sup>, “Wide voltage gain range *LLC* dc/dc topologies: state-of-the-art,” in *Proc. Int. Power Electron. Conf. (IPEC-ECCE Asia)*, Niigata, Japan, May 2018, pp. 100-107.
- [C40] X. Lu\*, Y. Chen, and **H. Wang**<sup>†</sup>, “Multi-objective optimization based real-time control for PEV hybrid energy management systems,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, San Antonio, TX, Mar. 2018, pp. 969-975. (Won the PSMA travel grant).
- [C41] M. Shang\* and **H. Wang**<sup>†</sup>, “*LLC* converter with reconfigurable voltage multiplier rectifier for high voltage and wide output range applications,” in *Proc. Annu. Conf. IEEE Ind. Electron. Soc. (IECON)*, Beijing, China, Nov. 2017, pp. 1279-1285.
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- [C43] L. Yu\* and **H. Wang**<sup>†</sup>, “Modeling, analysis and design of a dual-input ZVS dc/dc converter,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Tampa, FL, Mar. 2017, pp. 1492-1497.
- [C44] Z. Li\* and **H. Wang**<sup>†</sup>, “Design of a secondary side regulated *LLC* based integrated PEV onboard charger with full ZVS range,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Tampa, FL, Mar. 2017, pp. 1394-1400.
- [C45] C. Li\* and **H. Wang**<sup>†</sup>, “Coupled inductor based ZVS high step-up dc/dc converter in photovoltaic applications,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Tampa, FL, Mar. 2017, pp. 1298-1303.



- [C46] M. Shang\* and **H. Wang**<sup>†</sup>, “A *LLC* type converter based on PWM voltage quadrupler rectifier with wide output voltage,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Tampa, FL, Mar. 2017, pp.1720-1726.
- [C47] M. Shang\* and **H. Wang**<sup>†</sup>, “A ZVS integrated single-input-dual-output converter for high step-up applications,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Milwaukee, WI, Sept. 2016, pp. 1-6.
- [C48] L. Yu\* and **H. Wang**<sup>†</sup>, “A single-stage ac/dc converter for low voltage energy harvesting,” in *Proc. IEEE Energy Convers. Congr. Expo. (ECCE)*, Milwaukee, WI, Sept. 2016, pp. 1-6.
- [C49] Z. Li\* and **H. Wang**<sup>†</sup>, “Comparative analysis of high step-down ratio isolated dc/dc topologies in PEV applications,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Long Beach, CA, Mar. 2016, pp. 1329-1335.
- [C50] **H. Wang**<sup>†</sup>, “A pulse width modulated *LLC* type resonant topology adapted to wide output voltage range,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Long Beach, CA, Mar. 2016, pp. 1280-1285.
- [C51] **H. Wang**<sup>†</sup>, “A phase shift full bridge based reconfigurable PEV onboard charger with extended ZVS range and zero duty cycle loss,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Long Beach, CA, Mar. 2016, pp. 480-486.
- [C52] **H. Wang**<sup>†</sup>, “A hybrid ZVS resonant converter with reduced circulating current and improved voltage regulation performance,” in *Proc. IEEE Transp. Electrification Conf. Expo., (ITEC)*, Dearborn, MI, Jun. 2015, pp. 1-8.
- [C53] **H. Wang** and A. Khaligh<sup>†</sup>, “Interleaved SEPIC PFC converter using coupled inductors in PEV battery charging applications,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Charlotte, NC, Mar. 2015, pp. 586-591.
- [C54] I. Farneth, M. Satinu, **H. Wang**, and A. Khaligh<sup>†</sup>, “Phase-shifted ZVS full-bridge front-end dc/dc converter employing an RCD snubber circuit,” in *Proc. IEEE Transp. Electrification Conf. Expo., (ITEC)*, Dearborn, MI, Jun. 2014, pp. 1-6.
- [C55] **H. Wang**, S. Dusmez, and A. Khaligh<sup>†</sup>, “A novel approach to design EV battery chargers using SEPIC PFC stage and optimal operating point tracking technique for *LLC* converter,” in *Proc. IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Dallas, TX, Mar. 2014, pp. 1683-1689. (Won the PSMA travel grant).
- [C56] **H. Wang**, S. Dusmez, and A. Khaligh<sup>†</sup>, “Design consideration for a Level-2 on-board EV charger based on interleaved boost PFC and *LLC* resonant converters,” in *Proc. IEEE Transp. Electrification Conf. Expo., (ITEC)*, Dearborn, MI, Jun. 2013, pp. 1-8.
- [C57] **H. Wang** and A. Khaligh<sup>†</sup>, “Comprehensive analysis of isolated dc-dc converters for plug-in hybrid electric vehicle battery charging applications,” in *Proc. IEEE Transp. Electrification Conf. Expo., (ITEC)*, Dearborn, MI, Jun. 2013, pp. 1-7.
- [C58] **H. Wang** and R. W. Newcomb<sup>†</sup>, “A composite CMOS pair and an adjoint,” in *Proc. IEEE Int. Midwest Symp. Circuits Systems (MWSCAS)*, Seattle, WA, Sept. 2010, pp. 438-440.

## PATENTS

\*supervised student/postdoc

- [P1] D. Shu\* and **H. Wang**, “High power density onboard charger for next generation 800V electric vehicles,” China Patent Disclosure(202210747334.X), filed on Jun., 2022.
- [P2] D. Shu\* and **H. Wang**, “High power density onboard charger for next generation 800V electric vehicles and thereof,” China Patent Disclosure(202210434128.3), filed on Apr., 2022.
- [P3] D. Shu\* and **H. Wang**, “A method to mitigate twice grid frequency ripples of onboard charger for next generation 800V electric vehicles,” China Patent Disclosure(202210434873.8), filed on Apr., 2022.
- [P4] Z. Wei\* and **H. Wang**, “A bidirectional L2C3 resonant converter,” China Patent Disclosure(2022101099269), filed on Jan. 29th, 2022.

- [P5] M. Zhou\* and **H. Wang**, “A reconfigurable battery balancing system based on photovoltaic energy harvesting,” China Patent Disclosure(202111096861.0), filed on Sept. 16th, 2021.
- [P6] D. Shu\* and **H. Wang**, “A light-load performance enhanced *LCC* resonant converter,” China Patent Disclosure(202110365380.9), filed on Apr. 5th, 2021.
- [P7] D. Shu\* and **H. Wang**, “A phase shift modulation method to improve the dynamic performance of dual-active-bridge converters,” China Patent (ZL 2020 1 1526153.1), Dec. 22th, 2020.
- [P8] **H. Wang** and M. Zhou, “Ultra-wide gain range bidirectional dc/dc converter with fixed and variable dc bus voltages,” China Patent(ZL 2020 1 0163521.4), Mar. 10th, 2020.
- [P9] F. Peng\* and **H. Wang**, “An accurate battery balancing circuit with simple control and zero recovery effect,” China Patent Disclosure(201911117552.X), filed on Nov. 3rd, 2019.
- [P10] **H. Wang** and Z. Wei, “A battery balancing circuit based on *LCC* resonant topology and thereof,” China Patent Disclosure(201911094153.6), filed on Oct. 22nd, 2019.
- [P11] **H. Wang** and F. Peng, “A hybrid hierarchical battery equalizer based on *LLC* and Buck-Boost topologies” China Patent Disclosure(201911051745.X), filed on Oct. 22nd, 2019.
- [P12] **H. Wang**, C. Li, and M. Shang, “A reconfigurable H5 bridge inverter and uni/bi-directional isolated resonant dc/dc converters based on this inverter,” China Patent(ZL 2019 1 0069148.3), Jan. 24th, 2019.
- [P13] **H. Wang** and Z. Li, “A novel isolated resonant converter with ultra-wide voltage regulation range,” China Patent(ZL 2018 1 0727323.9), Jul. 4th, 2018.
- [P14] **H. Wang** and M. Shang, “Novel voltage multiplier rectifier based resonant power converters,” China Patent(ZL 2017 1 0435858.4), Jun. 9th, 2017.

## INVITED TALKS

- [T1] “Sensorless current zero-crossing detection technique for GaN based CRM totem-pole PFC rectifiers,” invited talk, *China Advanced Semiconductor Technology and Application Show*, Suzhou, China, Nov. 2022.
- [T2] “Next-generation datacenter power conversion technologies,” invited talk, *the 8th Symposium for Young Scholars in Electrical Engineering Discipline*, Wenzhou, Zhejiang, Nov. 2022.
- [T3] “48V bus-based datacentre voltage regulator modules: topology, control, and magnetic integration,” Educational Seminar, *IEEE Int. Power Electron. Appl. Conf & Expo.*, Guangzhou, China, Nov. 2022.
- [T4] “Voltage regulator module in 48V bus-based data center power systems: architecture, topology, and magnetic integration,” *IEEE Ind. Electron. Soc. Webinar*, Nov. 2022.
- [T5] “Overview of voltage regulator module in 48V bus-based data center power systems,” invited talk, *Huawei Technologies*, Mar. 2022.
- [T6] “Opportunities and challenges for new energy vehicles in carbon neutrality era,” invited webinar, *State Grid Training Program*, Hebei, China, Feb. 2022.
- [T7] “Opportunities and challenges for new energy vehicles in carbon neutrality era,” invited talk, *Symposium of Carbon Neutrality Institute*, ShanghaiTech University, Shanghai China, Dec. 2021.
- [T8] “Wide gain range dc/dc conversion technologies for PEV charging applications,” invited talk, *the 5th frontier technological forum on transportation electrification*, Shanghai, China, May. 2021.
- [T9] “Conductive charging of electrified vehicles: state-of-the-art and trends,” invited talk, *the energy storage innovative technology forum*, Shanghai, China, Apr. 2021.
- [T10] “Topologies and control strategies of dc/ dc converters in EV charging systems,” invited talk, Online Symposium on “Power electronic challenges and solutions for the integration of Electric vehicle charging network”, *IIT Varanasi, India*, Mar. 2021.
- [T11] “Conductive charging of electrified vehicles: challenges and opportunities,” invited keynote talk, *the 2020 7th International Forum on Electrical Engineering and Automation*, Sept. 2020.
- [T12] “Conductive charging of electrified vehicles: challenges and opportunities,” *IEEE Power Electron. Soc. Webinar*, Jul. 2020.

- [T13] “Topology integration and control of PEV hybrid energy management systems,” *Zhejiang University*, Aug. 2018.
- [T14] “Wide voltage gain range *LLC* converters,” *Jilin University*, Jun. 2018.
- [T15] “Transportation electrification: conductive charging of plug-in electric vehicles,” *Tianjin University*, Sept. 2017.
- [T16] “Key technologies in transportation 2.0,” *School of Information Science and Technology, ShanghaiTech University*, Jun. 2017.
- [T17] “Towards ultra-compact, highly efficient PEV onboard chargers,” *Department of Electronics Engineering, Tsinghua University*, Jan. 2014.
- [T18] “A SiC based ultra-compact, highly efficient *LLC* multi-Resonant battery charger for PEVs,” *Annual Science & Engineering Technology Conference/Defense Tech Exposition, Inner Harbor, MD*, Apr. 2013.

## EXTERNAL SERVICES

### *Journal Editorial Board*

- **Guest Editor**, *IEEE J. Emerg. Sel. Topics Power Electron.* 01/2023 - 12/2023  
Special Issue: Advanced charging technologies for next-generation electric vehicles
- **Guest Associate Editor**, *IEEE Open J. Power Electron.* 01/2022 - 12/2022  
Special Issue: Bidirectional dc/dc converter and emerging applications
- **Guest Editor-in-Chief**, *CPSS Trans. Power Electron. Appl.* 01/2022 - 12/2022  
Special Issue: Next generation datacenter power conversion technologies
- **Associate Editor**, *IEEE Trans. Ind. Electron.* 07/2020 - present
- **Associate Editor**, *IEEE Trans. Transp. Electrification* 03/2018 - present
- **Associate Editor**, *CPSS Trans. Power Electron. Appl.* 03/2018 - present
- **Guest Associate Editor**, *CPSS Trans. Power Electron. Appl.* 01/2018 - 12/2018  
Special Issue: Vehicle Electrification

### *Societies and Associations*

- **Senior Member**, Institute of Electrical and Electronics Engineers (IEEE) 09/2012 - present
- **Senior Member**, China Power Supply Society (CPSS) 10/2016 - present
- **Senior Member**, China Automation Society (CAS) 02/2022 - present
- **Member**, IEEE Power Electronics Society (PELS) 09/2014 - present
- **Member**, IEEE Industrial Electronics Society (IES) 10/2017 - present
- **Member**, IEEE Industry Application Society (IAS) 10/2020 - present
- **Member**, IEEE PEELS Emerging Power Electronic Technologies TC 03/2017 - present
- **Member**, IEEE PEELS Electrified Transportation Systems TC 03/2016 - present
- **Member**, IEEE IES Energy Storage TC 10/2017 - present
- **Member**, CPSS Academic Affairs Committee 09/2022 - present
- **Member**, CPSS Standardization Affairs Committee 01/2022 - present
- **Member**, CPSS DC Power Supply Committee 11/2019 - present
- **Member**, CPSS Transportation Electrification Committee 11/2019 - present
- **Member**, CPSS Young Professional Committee 12/2018 - 10/2021
- **Member**, CAS Energy Storage Committee 02/2022 - present
- **Member**, Shanghai Power Supply Society 11/2018 - present
- **Vice President**, Zhejiang Univ. Alumni Association, DC Metropolitan Area 09/2012 - 08/2014
- **President**, Chinese Students and Scholars Association, Univ. Maryland 06/2010 - 06/2011

### *Conference Organizing Committees*

- 2023 *IEEE Appl. Power Electron. Conf. Expo.* (APEC 2023), Orlando, FL  
Track Chair: Renewable Energy Systems.
- 2022 *PCIM Asia 2022*, Shanghai, China  
Session Chair: WBG Devices.
- 2022 *IEEE Int. Power Electron. Appl. Conf. Expo.* (PEAC 2022), Guangzhou, China  
Track Chair: Power Electronics for Datacenter and Telecom (Storages).
- 2022 *Annu. ShanghaiTech Symp. Inform. Sci. Technol.* (ASSIST 2022), Shanghai, China  
Program Chair  
Session Chair: Advanced Power Conversion Techniques
- 2022 “GaN Systems Cup” *the 8th College Power Electron. Appl. Design Comp.*, Hefei, China  
Technical Program Committee Member
- 2022 *IEEE Appl. Power Electron. Conf. Expo.* (APEC), Houston, TX  
Track Chair: Renewable Energy Systems.  
Session Chair: Energy Storage Systems & Grids.
- 2021 *IEEE Int. Power Electron. Appl. Symp.* (PEAS), Shanghai, China  
Session Chair: Magnetics, Passive Integration, Magnetics for Wireless and EMI  
Session Chair: Power Electronics for Electric Vehicles, Railway, Marine, Airplane, etc.
- 2021 *the 5th Frontier Technol. Forum Transp. Electrification*, Shanghai, China  
Session Chair: motor drive and charging of PEVs.
- 2021 *IEEE Appl. Power Electron. Conf. Expo.* (APEC), Phoenix, AZ  
Track Chair: Renewable Energy Systems.  
Session Chair: Renewable Energy System Control.
- 2021 “GaN Systems Cup” *the 7th College Power Electron. Appl. Design Compet.*, Wuhan, China  
Technical Program Committee Member
- 2020 *IEEE 9th Int. Power Electron. Motion Ctrl. Conf.* (IPEMC2020-ECCE Asia), Nanjing, China  
Session Chair: power electronics topologies, devices, and reliability.
- 2020 NSFC project progress meeting, Chongqing, China  
Session Chair: power electronics topologies, devices, and reliability.
- 2020 *IEEE Appl. Power Electron. Conf. Expo.* (APEC), New Orleans, LA  
Track Chair: Renewable Energy Systems  
Session Chair: Microgrid systems
- 2019 *the 23rd China Power Supply Soc. Conf.* (CPSSC), Shenzhen, China  
Program Committee Member: Charging and motor drive of plug-in electric vehicles  
Session Chair: EV charging I; Multi-level converters
- 2019 *the 13th Symp. Power Electron. & Electrical Drives* (SPEED), Xi’an, China  
Session Chair: DC/DC converter and control I
- 2019 *Int. Conf. Vibration Energy Harvesting Appl.* (VEH), Shanghai, China  
Local Organizing Chair
- 2019 *IEEE Appl. Power Electron. Conf. Expo.* (APEC), Anaheim, CA  
Track Chair: Renewable Energy Systems  
Session Chair: Microgrid applications
- 2018 *Int. Power Electron. Conf.* (IPEC2018-ECCE Asia), Niigata, Japan  
Session Chair: *LLC* converters
- 2018 *IEEE Appl. Power Electron. Conf. Expo.* (APEC), San Antonio, TX  
Track Chair: Renewable Energy Systems  
Session Chair: Three-Phase AC-DC Converters; Renewable Energy Topics
- 2018 *ShanghaiTech Workshop Emerg. Dev., Circuits & Systems* (SWEDCS), Shanghai, China  
Publicity Chair
- 2017 *the 22nd China Power Supply Soc. Conf.* (CPSSC), Shanghai, China  
Session Chair: Soft-Switching Power Converters; LED Driver Technologies II

- 2017 *IEEE Ann. Conf. IEEE Ind. Electron. Soc. (IECON)*, Beijing, China  
Session Chair: DC/DC Converters; High Voltage and Multilevel Converters
- 2017 *IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Tampa, FL  
Track Chair: Renewable Energy Systems  
Session Chair: AC Renewable Energy; Batteries for Renewable Energy
- 2017 *ShanghaiTech Workshop Emerg. Dev., Circuits & Systems (SWEDCS)*, Shanghai, China  
Publicity Chair  
Session Chair: Smart Power Conversion.
- 2016 *Vehicular Technology Conference*, Montréal, Canada  
Technical Program Committee member
- 2016 *IEEE Transp. Electrifi. Conf. Expo. (ITEC)*, Dearborn, MI  
Special Session Organizer: Power Electronic Converters and Drives
- 2016 *IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Long Beach, CA  
Track Chair: Renewable Energy Systems  
Session Chair: Renewable Energy System II
- 2015 *IEEE Appl. Power Electron. Conf. Expo. (APEC)*, Charlotte, NC  
Session Chair: Renewable Wind I; Photovoltaics
- 2015 *IEEE Transp. Electrifi. Conf. Expo. (ITEC)*, Dearborn, MI  
Track Chair: Converter/Inverter Design and Control I

#### **Research Grants Review**

- 2022 Reviewer: National Scholarship for Excellent Self-funded Oversea Student
- 2020 External reviewer: postdoctoral program, Estonian Research Council
- 2018 Reviewer: Youth Program, National Natural Science Foundation of China

#### **Conference Review**

- 2022 IEEE International Power Electronics Conference (ECCE-Asia)
- 2020 - 2021 IEEE International Symposium on Circuits and Systems (ISCAS)
- 2018, 2022 IEEE International Power Electronics and Application Conference and Exposition(PEAC)
- 2014 - 2023 IEEE Applied Power Electronics Conference and Exposition(APEC)
- 2016 - 2022 IEEE Energy Conversion Congress and Exposition(ECCE)
- 2018 Review Panel Member, IEEE International Future Energy Challenge
- 2018, 2019 Annual Conference of the IEEE Industrial Electronics Society (IECON)

#### **Journal Review**

- IEEE Transactions on Power Electronics 11/2012 - present
- IEEE Transactions on Industrial Electronics 06/2013 - present
- IEEE Transactions on Vehicular Technology 09/2013 - present
- IEEE Transactions on Energy Conversion 06/2014 - present
- IEEE Transactions on Industry Applications 05/2016 - present
- IEEE Transactions on Transportation Electrification 08/2016 - present
- IEEE Journal of Emerging and Selected Topics in Power Electronics 10/2017 - present
- IEEE Internet of Things Journal 08/2017 - present
- IEEE Transactions Industrial Informatics 03/2018 - present
- IEEE Transactions on Very Large Scale Integration Systems 07/2018 - present
- IEEE Open Journal of Power Electronics 10/2019 - present
- IEEE Transactions on Electromagnetic Compatibility 09/2022 - present
- CPSS Transactions on Power Electronics and Applications 07/2018 - present

- IET Electrical Systems in Transportation 06/2018 - present
- IET Power Electronics 12/2021 - present
- Joule 6/2022 - present

#### Volunteer

- IEEE Transp. Electrification Conf. Expo. (ITEC), Dearborn, MI 06/2013

### INTERNAL SERVICES

#### University Committees

- **Member** ShanghaiTech CCP Committee 10/2021 - present
- **Member** ShanghaiTech EHS Committee 10/2021 - present
- **Member** ShanghaiTech Labor Union 11/2016 - 10/2020
- **Member** ShanghaiTech Curriculum & Teaching Committee (replace X. Yuan) 01/2017 - 04/2017
- **Member** ShanghaiTech United CCP Branch 10/2015 - 07/2017

#### School Committees

- **Secretary** SIST CCP Committee 07/2020 - present
- **Chair** SIST Public Relations Committee 11/2021 - present
- **Chair** SIST EHS Committee 11/2021 - present
- **Member** SIST Faculty Search Committee 09/2019 - present
- **Member** SIST Executive Committee 09/2019 - present
- **Member** SIST Degree Committee 09/2020 - present
- **Member** SIST Tenure Promotion Committee 09/2020 - present
- **Co-Chair** SIST Recruitment and Admission Committee 09/2018 - 11/2020
- **Chair** SIST Public Relations Committee 08/2016 - 08/2018
- **Member** SIST Research Management Committee 09/2016 - 08/2017
- **Member** SIST Curriculum and Teaching Committee 09/2014 - 04/2017
- **Co-Chair** SIST Curriculum and Teaching Committee 02/2016 - 04/2017

### SUPERVISION

#### PhD Students

- **Bo Xue** PhD Student, 09/2018 - present  
*Education Background:* B.S. Hefei Univ. Technol.  
*Research Interest:* Accurate time domain modeling of wireless power transfer systems.  
*Honor:* 2021, **PSMA Travel Grant**, IEEE Appl. Power Electron. Conf.(APEC)
- **Dongdong Shu** PhD Student, 09/2018 - present  
*Education Background:* B.S. Northwestern Polytech. Univ.  
*Research Interest:* Bidirectional power conversion, vehicle to grid technology.  
*Honor:* 2022, **National Scholarship** from Chinese Central Government.
- **Mingde Zhou** PhD Student, 09/2019 - present  
*Education Background:* B.S. Shandong Univ.  
*Research Interest:* Wide gain range isolated dc/dc converters.  
*Honor:* 2021, **Best Presenter Award**, IEEE Power Electron. Appl. Symp.(PEAS)
- **Liang Wang** PhD Student, 09/2019 - present  
*Education Background:* B.S. Harbin Engineering Univ.  
*Research Interest:* Power management circuits for smart IoT sensors, three-port power conversion.



- **Jiawei Liang** PhD Student, 09/2020 - present  
*Education Background:* B.S. ShanghaiTech Univ.  
*Research Interest:* Data center point-of-load converters.
- **Yiqing Lu** PhD Student, 09/2020 - present  
*Education Background:* B.S. Zhejiang Univ.  
*Research Interest:* Battery management systems.  
*Honor:* 2021, **Excellent Popular Science Video Award**, 4th Innov. & Entr. Conf., ShanghaiTech Univ.

### Master Students

- **Runhui He** Master Student, 09/2020 - present  
*Education Background:* B.S. Hefei Univ. Technol.  
*Research Interest:* Solid state transformers for next-generation data center.
- **Zehui Li** Master Student, 09/2021 - present  
*Education Background:* B.S. Shanghai Univ.  
*Research Interest:* Thermal management for parallel power electronic modules.
- **Yingjian Zhuge** Master Student, 09/2021 - present  
*Education Background:* B.S. Zhejiang Univ.  
*Research Interest:* Ultra-high voltage pulsed power supply.
- **Yuchong Peng** Master Student, 09/2022 - present  
*Education Background:* B.S. Central South Univ.  
*Research Interest:* Battery balancing and modeling.
- **Qishan Pan** Master Student, 09/2022 - present  
*Education Background:* B.S. Zhejiang Univ.  
*Research Interest:* Power electronics for electric vehicles.
- **Chuhan Peng** Master Student, 09/2022 - present  
*Education Background:* B.S. Zhejiang Univ.  
*Research Interest:* Soft switching ac/dc and dc/dc converters.
- **Haoyu Zhang** Master Student, 09/2022 - present  
*Education Background:* B.S. ShanghaiTech Univ.  
*Research Interest:* Bidirectional power conversion for dc microgrids.
- **Yilin Wang** Master Student, 09/2022 - present  
*Education Background:* B.S. Shanghai Ocean Univ.  
*Research Interest:* Battery management systems.

### Undergraduate Students

- **Chenxi Li** Undergraduate Student, 09/2022 - present  
*Education Background:* B.S. ShanghaiTech Univ.  
*Research Interest:* TBD.
- **Yihan Wu** Undergraduate Student, 09/2022 - present  
*Education Background:* B.S. ShanghaiTech Univ.  
*Research Interest:* TBD.

### Visiting Students

### Postdoctoral Researcher

### Master Alumni

- **Zhengqi Wei** Master, 09/2019 - 06/2022  
*Education Background:* B.S. Shaanxi Normal Univ.  
*Thesis:* Optimal design and realization of constant current equalizing structure for series-connected battery strings

*Ph.D. Program:* Hong Kong City Univ.

*Honor:* 2021, **PSMA Travel Grant**, IEEE Appl. Power Electron. Conf. (APEC)

*Honor:* 2021, **Excellent Popular Science Video Award**, 4th Innov. & Entr. Conf., ShanghaiTech Univ.

*Honor:* 2021, **National Scholarship** from Chinese Central Government.

*Honor:* 2020, **PSMA Travel Grant**, IEEE Appl. Power Electron. Conf. (APEC)

- **Faxiang Peng** Master, 09/2017 - 06/2020  
*Education Background:* B.S. Xi'an Univ. Technol.  
*Thesis:* Optimal design and realization of hybrid and hierarchical equalizing structure for series-connected battery strings.  
*First Employment:* Intel, Shanghai.  
*Honor:* 2020, **Distinguished Graduate** from ShanghaiTech Univ.  
*Honor:* 2020, **Featured Student** in SIST official website[[link](#)]  
*Honor:* 2020, **China Telecom Fly Young Scholarship**, only winner in ShanghaiTech Univ.  
*Honor:* 2020, **Finalist**, IEEE IAS TSC prize award, IEEE Energy Convers. Conf. Expo. (ECCE)  
*Honor:* 2018, **Outstanding Teaching Assistant**, School Inform. Sci. Technol., ShanghaiTech Univ.  
*Honor:* 2017, **Second Prize**, National Graduate Electronic Design Contest, Shanghai Division
- **Junyun Deng** Master, 09/2017 - 06/2020  
*Education Background:* B.S. Huazhong Univ. Sci. & Technol.  
*Thesis:* Control modulation and magnetic optimization of efficient isolated bidirectional dc/dc converter adapted to wide voltage range.  
*Ph.D. Program:* University of Twente, Netherlands.  
*Honor:* 2020, **Distinguished Graduate** from ShanghaiTech Univ.  
*Honor:* 2019, **National Scholarship** from Chinese Central Government
- **Tianhao Chen** Master, 09/2017 - 06/2020  
*Education Background:* B.S. Southeast Univ.  
*Thesis:* Improved finite control set MPC based strategy for islanded microgrids.  
*First Employment:* Fudan Microelectronics Group, Shanghai.
- **Xiaoying Lu** Master, 09/2016-06/2019  
*Education Background:* B.S. Chongqing Univ. Posts & Telecom.  
*Thesis:* Optimization and control of hybrid energy storage systems in plug-in electric vehicles.  
*First Employment:* Cisco Systems, Shanghai.  
*Honor:* 2019, graduate with the **Highest Distinction** from Shanghai Municipal Government  
*Honor:* 2019, **Featured Student** in ShanghaiTech official website[[link](#)]  
*Honor:* 2018, **PSMA Travel Grant**, IEEE Appl. Power Electron. Conf. (APEC)  
*Honor:* 2017, **Huawei Cup & First Prize**, National Graduate Mathematical Modeling Contest[[link](#)]  
*Honor:* 2017, **Second Prize**, National Graduate Electronic Design Contest, Shanghai division
- **Cheng Li** Master, 09/2016-06/2019  
*Education Background:* B.S. Univ. Electron. Sci. & Technol. China  
*Thesis:* H5-bridge based *LLC* resonant converter for ultra-wide voltage gain range applications  
*First Employment:* Hesai Photonics Technology, Shanghai.  
*Honor:* 2019, graduate with the **Highest Distinction** from Shanghai Municipal Government  
*Honor:* 2019, **Featured Student** in SIST official website[[link](#)]
- **Zhiqing Li** Master, 09/2015-06/2018  
*Education Background:* B.S. Southeast Univ.  
*Thesis:* Secondary-side modulated resonant converters for plug-in electric vehicles.  
*First Employment:* Analog Devices, Shanghai.
- **Ming Shang** Master, 09/2015-06/2018  
*Education Background:* B.S. China Univ. Petroleum  
*Thesis:* Optimized *LLC* topologies adapted to wide voltage gain range.  
*First Employment:* Inovance Technology, Suzhou.  
*Honor:* 2018, graduate with the **Highest Distinction** from Shanghai Municipal Government  
*Honor:* 2018, **Featured Student** in ShanghaiTech official website[[link](#)]  
*Honor:* 2017, **National Scholarship** from Chinese Central Government

- **Liang Yu** Master, 09/2015-06/2018  
*Education Background:* B.S. Southeast Univ.  
*Thesis:* SiC-based PEV onboard integrated totem-pole PFC converter.  
*First Employment:* Envision Energy, Shanghai.  
*Honor:* 2018, graduate with the **Highest Distinction** from the Univ. of Chinese Academy of Sciences  
*Honor:* 2018, **Featured Student** in SIST official website[[link](#)]  
*Honor:* 2017, **National Scholarship** from Chinese Central Government  
*Honor:* 2017, **Best Research Report Award** in Forum of SIST Elect. and Electron. Eng.

#### **Bachelor Alumni**

- **Haoyi Zhu** Bachelor, 09/2014-06/2018  
*Thesis:* Automatic battery equalizer based on coupled buck-boost half-bridge converter.  
*First Employment:* FFT Group, Shanghai.
- **Qi Cao** Bachelor, 09/2014-06/2018  
*Thesis:* A fixed-frequency phase-shift *LLC* resonant converter with wide output range adapted to deeply depleted PEV battery charging.  
*Graduate School:* University of Pennsylvania, USA.
- **Jiacheng Huang** Bachelor, 09/2014-06/2018  
*Thesis:* High efficiency isolated bidirectional dc-dc converter for residential energy storage systems.  
*Graduate School:* University of California, San Diego, USA.
- **Dong Jiao** Bachelor, 09/2014-06/2018  
*Thesis:* Energy management strategy for grid-tied micro-grids and hardware-in-the-loop validation.  
*PhD. Program:* Virginia Tech, USA.  
*Honor:* 2017, **Third Prize**, National Undergraduate Electronic Design Contest, Shanghai Division

#### **Postdoc Alumni**

- **Omar Abdelrahim** Postdoc, 04/2019 - 03/2020  
*Education Background:* Ph.D, Utsunomiya Univ. Japan  
*Research Project:* Model predictive control based grid-connected converters.  
*Employment:* Assistant Professor, Aswan University, Egypt.
- **Ji Hu** Postdoc, 03/2017-03/2019  
*Education Background:* Ph.D., Univ. of Warwick, U.K.  
*Research Project:* Reliability evaluation of wide band-gap power devices.  
*Employment:* Start-up business.

#### **Visiting Student Alumni**

- **Umar Khalid** Visiting Student, 09/2017-06/2018  
*Education Background:* Master, Shanghai Jiaotong Univ.  
*Research Project:* Bidirectional resonant dc/dc converters for wide voltage gain range applications.  
*Ph.D. Offer:* Florida State Univ, USA.