

# TECHNICAL PROGRAM SCHEDULE

## REMOTE Q/A SESSIONS

authors are featured in a special program that will take place the week after the Detroit event, from Oct 17-19, 2022. Meet the authors live on Zoom to ask them question you have on their papers. Check out the Zoom links for the live sessions on the Virtual Platform: [ecce2022.vfairs.com](https://ecce2022.vfairs.com)

Some parts of the world are currently on Covid lockdown. Some of our ECCE2022 attendees are facing travel restrictions. We understand! Papers from these

**Monday, October 17**

**9:00AM–9:55AM**

### Remote Q/A Session R01 | Control, Analysis and Modeling of Renewable Energy Systems

*Link available on virtual platform*

**Chairs:** Ngoc Ha Pham, Meiqin Mao

#### Parametric Broadband Excitation for Real-time Condition Monitoring of Monocrystalline Photovoltaic Modules Using Impedance Spectroscopy [#321]

Linda Shelembe and Paul Barendse  
*University of Cape Town, South Africa*

#### Analysis of Switch-mode Converter Inductor Current Ripple Excitation of a Monocrystalline PV module Using Impedance Spectroscopy for Condition Monitoring [#322]

Linda Shelembe and Paul Barendse  
*University of Cape Town, South Africa*

#### Quantitative Evaluation of Different Voltage Lift Techniques in DC-DC Converters for Renewable Energy Systems [#559]

Xinying Li, Yan Zhang, Jinjun Liu and Yihai Li  
*Xi'an Jiaotong University, China*

#### A Perturbation and Observation Based Sawtooth Carrier Modulation Strategy of Parallel Converters [#32]

Xi Liu, Chenghui Zhang and Xiangyang Xing  
*Shandong University, China*

#### A ZVS Based Bidirectional Equalizer for Battery Equalization [#939]

Rui Ling, Zhibin Dai, Xinchu He, Dongxue Li and Jiquan Zhao  
*Chongqing University, China; Vicor Corporation, United States*

#### A Non-uniform Planar Coil In Electro-magnetic Vibration Energy Harvesting [#72]

Xianchao Liu, Han Peng, Kai Gao, Wang Shaojing and Xu Peng  
*Huazhong University of Science and Technology, China; State Grid Shanghai Electric Power Research Inst, China*

#### Prediction of I-V Characteristics for Bifacial PV Modules via an Alpha-beta Single Double-diode Model [#901]

Dou Hong, Jieming Ma, Ka Lok Man, Huiqing Wen and Prudence Wong  
*Xi'an Jiaotong-Liverpool University, China; University of Liverpool, United Kingdom Power Loss*

#### Reduction for PV Emulator Using Transistor-based PV Model [#97]

Habes Ali Khawaldeh, Mohammad Al-soeidat, Dylan Lu and Li Li  
*University of Technology Sydney, Australia*

#### Energy Storage Minimization Control in Grid-Connected Photovoltaic Virtual Synchronous Generator [#100]

Yuguang Hou, Jia Liu, Xuwen Li and Jinjun Liu  
*Xi'an Jiaotong University, China*

### Remote Q/A Session R02 | Grid Inverters and Applications

*Link available on virtual platform*

**Chairs:** Ahmed Abuhussein, Pallavi Bharadwaj

#### LTP Modeling and Harmonic Analysis of Discrete Universal SOGI-FLL [#468]

Haoyang Zheng, Zeng Liu, Kaiwen Feng, Jinjun Liu and Houkai Zhang  
*Xi'an Jiaotong University, China*

#### Design and FPGA Implementation of a Real-time Simulation Platform for an MMC-H DC Transformer [#821]

Liye Wu, Yichao Sun, Carlos Teixeira, Brendan McGrath, Donald Holmes and Yufan Li  
*Nanjing Normal University, China; RMIT University, Australia*

#### Transient Stability Study of a Real-World Microgrid with 100% Renewables [#1415]

Yaswanth Velaga, Jing Wang, Annabelle Pratt, Laurence Abcede and Nagadev Shamukh  
*National Renewable Energy Laboratory, United States; San Diego Gas & Electric, United States*

#### Global Maximum Power Point Tracking for Photovoltaic Systems Using Hybrid Secant and Binary Search Algorithms [#789]

Anusha Kumaresan, Glen G. Farivar, Hossein Dehghani Tafti, Neha Beniwal, Naga Brahmendra Yadav Gorla and Josep Pou  
*Nanyang Technological University, Singapore; University of Western Australia, Australia*

#### Modeling and Evaluation of Winding Losses in High Voltage Planar Transformers [#232]

Hanyu Liu, Kai Sun, Guoen Cao, Zheyuan Yi and Shilei Lu  
*Tsinghua University, China; Chinese Academy of Sciences, China*

#### A Robust IMFOGI Control for Power Quality Enhancement of a Dual Stage SPV-BES-BDC- SyRG DG Set Based Standalone Microgrid [#491]

Subhadip Chakraborty, Gaurav Modi and Bhim Singh  
*Indian Institute of Technology Delhi, India*

#### Impact on the Harmonic Distortion of Low-Capacitance Static Compensator with Discontinuous Modulation [#1428]

Qingxiang Liu, Ezequiel Rodriguez Ramos, Glen Ghias Farivar, Salvador Ceballos, Josep Pou, Christopher David Townsend and Ramon Leyva  
*Nanyang Technological University, Singapore; TECNALIA, Spain; University of Western Australia, Australia; Universitat Rovira i Virgili, Spain*

#### Efficiency Improvement of Computer Power Supply using Power Consumption Estimation from CPU Performance Monitors [#391]

Shinichi Kawaguchi  
*Shinagawa Institute of Technology, Japan*

### **Adaptive Reduced-Order Method of Aggregated Impedance Model for Large-Scale Photovoltaic Stations Small Signal Stability Analysis** [#374]

Xun Jiang, Meiqin Mao and Liuchen Chang  
*Hefei University of Technology, China; Hefei University of Technology, Canada*

### **High-Speed Three-Phase Enhanced Phase-Locked Loop for Grid Synchronization Under Adverse Conditions** [#898]

Surya chandra Gulipalli, Srinivas Gude and Chia-Chi Chu  
*National Tsing Hua University, Taiwan; Delta Electronics, Inc., Taiwan*

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## **Remote Q/A Session R03 | Electrification of Rail, Sea and Air Transportation Systems**

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*Link available on virtual platform*

**Chairs:** Shuvajit Das

### **Modeling and Harmonic Instability Analysis of the PET-Based Train-Grid System** [#444]

Chunxu Lin, Dan Liu, Huimin Wang, Kexin Wang, Yun Zuo, Qingli Deng, Junwen Mu and Xinglai Ge  
*Southwest Jiaotong University, China*

### **SOC inconsistency Estimation Using Sensor Fusion Method Based on the Dual Extended Kalman Filter Neglecting the Cell-to-cell Aging Condition** [#1365]

Jinhyeong Park, Jaewon Kim, Dongjae Lee, Roland Kobla Tagayi, Jelim Lee, Woonki Na and Jonghoon Kim  
*Chungnam National University, Korea (South); California State University, United States*

### **An Any-cell-to-any-cell Equalization Based on Half-bridge CLLC Converters for Lithium-ion Battery Strings** [#170]

Ruijia Cai, Yundong Ma, Ruiran Dai, Zhao Zhiqiang, Peng Wang and Pengfei Wang  
*Nanjing University of Aeronautics and Astronauti, China*

### **Design of Power Hardware-in-the-Loop Simulation for Aircraft Brushless Wound-Rotor Synchronous Motor** [#184]

Yuanhao Xie, Dong Jiang and Zicheng Liu  
*Huazhong University of Science and Technology, China*

### **An Experimental Investigating on the Effect of Contact Resistance for Pouch Type Lithium-ion Battery of the Performance and Safety** [#1362]

Insu Baek, Deokhun Kang, Changki Choi, Batool Dania, Bongwoo Kwak, Woonki Na and Jonghoon Kim  
*Chungnam National University, Korea, Republic of; Chungnam National University, Pakistan; Korea Institute of Industrial Technology, Korea, Republic of; California State University, United States*

### **Data-driven Prediction of Battery Degradation Using EIS-based Robust Features** [#1363]

SeungHwa Sin, PyeongYeon Lee, SangWoo Cho, Mazhar Abbas, SangRyuk Lee and Jonghoon Kim  
*Chungnam National University, Korea, Republic of*

### **Complete Process Emulation of Integrated Starter/Generator Using Power Electronic Devices** [#173]

Yuanhao Xie, Dong Jiang and Liangchen Tian  
*Huazhong University of Science and Technology, China*

### **Partial Discharge Detection of Electrical Machine Insulation Under PWM Voltage with High dv/dt for More Electric Aircraft** [#175]

Hao Sun, YaLin Wang, Yi Ding, YiFan Rui, Lu Fan and Yi Yin  
*Shanghai Jiao Tong University, China*

### **Active Filter Circuit in the HF AC-link of a Bidirectional Wireless Battery Charger for EV** [#1105]

Asier Garcia-Bediaga, Ander Avila, Itziar Alzuguren, Alejandro Rujas and Miroslav Vasic  
*Ikerlan Technology Research Centre (BRTA), Spain; Technical University of Madrid (UPM), Spain*

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## **Remote Q/A Session R04 | Wireless Power Transfer**

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*Link available on virtual platform*

**Chairs:** Zhen Xin, Jiangfeng Wang

### **Frequency Optimization Method for Underwater Wireless Power Transfer Considering Coupling Conditions** [#150]

Jia Li, Kailong Liu, Jixie Xie, Chong Zhu and Xi Zhang  
*Shanghai Jiao Tong University, China; Warwick Manufacturing Group University, United Kingdom*

### **A Two-Dimensional Misalignment-Tolerant IPT System Based on Three-arm Voltage Doubler Rectifier** [#187]

Shunpan Liu, Yihao Wu, Lingyun Zhou, Ruikun Mai, Zhengyou He and Stefan Goetz  
*Southwest Jiaotong University, China; University of Cambridge, United Kingdom*

### **Design of Power Amplifier Operating on Wide Input Power Range Based on Impedance Mismatch Evaluation Model** [#249]

Huan Hu, Ke Jin, Xue Wang, Weiyang Zhou and Chen Yang  
*Nanjing University of Aeronautics & Astronautics, China*

### **Arrangement Strategy of Antenna Array Based on Cruciform Growth Algorithm for Microwave Wireless Power Transmission** [#250]

Xue Wang, Ke Jin, Shuchen Cheng and Weiyang Zhou  
*Nanjing University of Aeronautics & Astronautics, China*

### **Advanced Self-Oscillating Control for Domino Wireless Power Transfer Systems with Quasi- Load Independent Outputs** [#273]

Kaiyuan Wang and Yun Yang  
*The Hong Kong Polytechnic University, Hong Kong*

### **Pulse Density Modulation Control of LCC-S Compensated WPT System with Switch-Controlled Capacitors for Constant Output Voltage of Frequency-Selective Receivers** [#87]

Ke Li, Wen Ding and Jiangnan Yuan  
*Xi'an Jiaotong University, China*

### **A Robust Primary-Side Hybrid Data-Driven Load Monitoring Strategy for Wireless Power Transfer Systems** [#295]

Yang Yun and Wu Huihuan  
*The Hong Kong Polytechnic University, Hong Kong*

### **Shielding Design for High-Frequency Wireless Power Transfer System for EV Charging with Self-Resonant Coils** [#1136]

Ruiyang Qin, Jie Li, Jingjing Sun and Daniel Costinett  
*The University of Tennessee, Knoxville, United States*

### **A Dynamic Reconstruction Strategy for Adaptive Power Receiving of Moving Targets in MPT System** [#811]

Jianying Ding, Ke Jin, Xing Li, Weiyang Zhou and Zhongwei Chen  
*Nanjing University of Aeronautics and Astronaut, China*

## Remote Q/A Session R05 | Power Converter Topologies A

Link available on virtual platform

Chairs: Zhituo Ni, Vishnu Mahadeva Iyer

### Three-Phase Voltage-Fed Inverter with Pulse-Voltage-Injected Two-Phase Modulation for CVCF Applications [#395]

Taketo Ikeuchi and Shin-ichi Motegi  
Kobe City College of Technology, Japan

### Modular Multilevel Converter Based Topology with Lower Number of High-Frequency Switches [#70]

Saleh Farzamkia, Houshang Salimian Rizi and Alex Q. Huang  
University of Texas at Austin, United States

### A High Step-Up DC-DC Converter Using a Three Winding Coupled Inductor for Photovoltaic to Grid Applications [#326]

Saeed Habibi, Ramin Rahimi, Mehdi Ferdowsi and Pourya Shamsi  
Missouri University of Science and Technology, United States

### A Novel Modular Multilevel Converter with Single Bridge Arm Per Phase for Size Reduction [#278]

Chang Pan, Lei Lin, Xiaojie Shi and Tianxiang Yin  
Huazhong University of Science and Technology, China

### Single-Phase Single-Stage PFC Based on a Novel Floating Capacitor Filter for Electric Vehicle On-Board Charger Application [#1087]

Itziar Alzuguren, Asier Garcia-Bediaga, Ander Avila, Alejandro Rujas and Miroslav Vasic  
Ikerlan Technology Research Centre (BRTA), Spain; UPM, Spain

### Boost Operation of a Dual-Active-Bridge AC-DC Converter with an Active Energy Buffer [#542]

Shohei Komeda, Shunsuke Takuma and Yoshiya Ohnuma  
Tokyo Univ. of Marine Science and Technology, Japan; Nagaoka Power Electronics Co., Ltd., Japan

### Single Phase High Power Density MISN PFC Converter [#684]

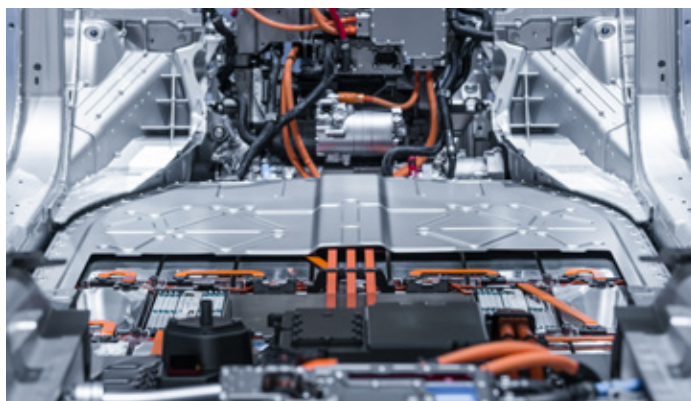
Tianlin Huang, Wending Zhao and Xinke Wu  
Zhejiang University, China

### Three-Phase Three-Level Reduced Switch Count Isolated AC/DC Neutral-Point Clamped Converter With High-Frequency DC-Link [#691]

Ailton Dutra, Montie Vitorino and Mauricio Correa  
Federal University of Campina Grande, Brazil

### Five-Level Three-Phase AC/DC Stacked Multicell Converter with Reduced Switch Count [#692]

Ailton Dutra, Reuben Souza, Montie Vitorino and Mauricio Correa  
Federal University of Campina Grande, Brazil



Monday, October 17

10:00AM–10:55AM

## Remote Q/A Session R06 | Grid Forming Inverters and Distributed Generation

Link available on virtual platform

Chairs: Liqun He, Ahmed Abuhusseini

### Inertia Evaluations on Grid Forming Inverters with Virtual Synchronous Generator Control Applied to Photovoltaic Power Systems [#453]

Qiang Lin, Tetsu Shijo, Kenichirou Ogawa, Hiroshi Uno, Yasuhiro Kanekiyo and Junichi Arai  
Toshiba Corporation, Japan; Energy and Environment Technology Research Inst, Japan

### Improved Control Strategy of Grid-Forming Inverters for Fault Ride-Through in a Microgrid System [#1367]

Jing Wang  
National Renewable Energy Laboratory, United States

### Virtual Flux-based Grid-Forming Current Controller for Flexible Operation of Voltage Source Converters [#861]

Afif Nazib, Donald Grahame Holmes and Brendan McGrath  
Universiti Malaysia Perlis, Malaysia; RMIT University, Australia

### Virtual Synchronous Machine Control Applied to Solid State Transformer [#1351]

Yushi Miura and Junya Higuchi  
Nagaoka University of Technology, Japan

### Event Detection Based Voltage and Frequency Restoration for Mobile Emergency Energy Storage Vehicle without Communication [#155]

Haocheng Wang, Xiao Zhang, Nian Lv, Zhenxiang Wang, Hao Yi and Fang Zhuo  
Xi'an Jiaotong University, China

### An Advanced Voltage Regulation Strategy for the Meshed Distribution Networks with Soft Normally-Open Point [#795]

Zhang Aozhe, Zhou Jianqiao, Zang Jiajie, Zhang Jianwen, Xi Dongmin, Shi Gang, Wang Zhida and Fan Xinming  
Inner Mongolia University of Technology, China; Shanghai Jiao Tong University, China; Shanghai University of Engineering Science, China; Foshan Power Supply Bureau of Guangdong Power Gr, China

### Short-Circuit Fault Protection Scheme for Serial-Shunt Type Soft Normally Open Point [#275]

Xinyi Kong, Jianwen Zhang, Jianqiao Zhou, Jiajie Zang, Gang Shi, Xu Cai, Xinming Fan and Dongmin Xi  
Shanghai Jiaotong University, China; The Key Laboratory of Control of Power Transmiss, China; Foshan Power Supply Bureau, China; Inner Mongolia University of Technology, China

### Ultra-Efficient Ultra-Wide Load Range Power Conversion Platform for DC Building Applications [#437]

Sui Pung, Victor Cheung, Qingchun Li and Tin Ho, River Li  
ASTRI, Hong Kong; ASTRI, China

### FRA-based DQ Impedance Measurement for Three-Phase Power Electronic Systems [#44]

Toshiji Kato, Kaoru Inoue, Kazuki Yomura and Miwa Yoshiki  
Doshisha University, Japan

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## Remote Q/A Session R07 | Data-Driven Assessment and Design for Power Electronic Applications

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*Link available on virtual platform*

**Chairs:** Shuai Zhao

### Health indicator Evaluation for Battery Pack Inconsistency and SOH Estimation Based on LSTM [#1364]

Jonghoon Kim, Dongho Han, Sanguk Kwon, Taesuk Mun, Miyoung Lee and Faiz Majeed  
*Chungnam National University, Korea (South)*

### A Sequential Network-model Alliance Module for Lithium-ion Battery Temperature Prediction [#276]

Li Marui, Dong Chaoyu, Li Xiangke, Dong Xiaohong, Mu Yunfei and Jia Hongjie  
*Tianjin University, China; The Hong Kong Polytechnic University, China; Hebei University of Technology, China*

### Energy Equalization of Battery Pack with Inconsistent Capacity [#944]

Rui Ling, Miaoya Yu, Shu Liu, Dongxue Li and Fei Feng  
*Chongqing University, China; Vicor Corporation, United States*

### Digital Twin System of Capacitive DC Bank Considering the Electrothermal Coupling Effect [#532]

Mingshuo Zhu, Yi Liu, Meng Huang and Xiaoming Zha  
*Wuhan University, China*

### Multi-Branch ResNet-Transformer Based Deep Hybrid Approach for Short-term Spatio- Temporal Solar Irradiance Forecasting [#515]

Saeedeh Ziyabari, Liang Du and Saroj K Biswas  
*Temple University, United States*

### Deep Neural Network-based Black-box Modeling of Power Electronic Converters Using Transfer Learning [#758]

Pouria Qashqai, Rawad Zgheib and Kamal Al-Haddad  
*Ecole de technologie superieure (ETS), Canada; Hydro-Quebec, Canada*

### Semi-Supervised Disaggregation of Daily Load Profiles at Transmission Buses with Significant Behind-the-Meter Solar Generations [#1065]

Zhenyu Zhao, Daniel Moscovitz, Shengyi Wang, Xiaoyuan Fan and Du Liang  
*Temple University, United States; PJM Interconnections, United States; Pacific Northwest National Lab, United States*

### An Improved Hardware-in-loop Power Electronics Converter Fast Multi-physics Design System [#268]

Chi Zhang, Wei Liu, Cheng Jiachang, Wang Kun and Shi Yimeng  
*Firstack Technology, China*

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## Remote Q/A Session R08 | Power Converter Topologies; DC-DC and AC-DC-AC

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*Link available on virtual platform*

**Chairs:** John Lam, Yifeng Wang

### A High-efficiency Resonant DC-DC Converter with Wide Voltage Gain Range [#201]

Mengying Chen, Bo Chen, Yifeng Wang, Ping Wang, Mingzhi Zhang and Chaochang Che  
*Tianjin University, China*

### A Novel Current Sharing Method of Interleaved LLC Resonant Converter by a Common CL Filter [#234]

Fan Zhai, Guidan Li, Yifeng Wang, Bo Chen, Zhongjie Wang and Chaochang Che  
*Tianjin University, China*

### A Novel Bidirectional TLCT Resonant DC-DC Converter with Wide Voltage Range [#136]

Yifeng Wang, Mingzhi Zhang, Bo Chen, Mengying Chen, Chen Chen and Chaochang Che  
*Tianjin University, China*

### An Improved ISOP-LLC Converter for Wide Voltage Variation Range [#195]

Yifeng Wang, Chen Chen, Bo Chen, Danfeng Zhao, Ruilin Ji and Mingzhi Zhang  
*Tianjin University, China; State Grid Tianjin Power Costumer Service Center, China*

### Novel Common-Ground Dual-Buck Inverter for Photovoltaic Applications with No Leakage Current Issues [#332]

Ashraf Ali Khan, Usman Ali Khan, Shahnawaz Khan and Shehab Ahmed  
*KAUST, Saudi Arabia; Yonsei University, Korea (South); University of Lahore, Pakistan*

### A Six-Leg AC-DC-AC Single-Phase Three-Wire Power Converter [#1178]

Bruna Gehrke, Cursino Jacobina, Rodrigo Lacerda, Filipe Rocha and Italo Silva  
*Federal University of Campina Grande, Brazil; Federal University of Paraiba, Brazil*

### Dynamic Pulse-Positioning for a Single-Stage Isolated AC-DC Converter [#982]

Vishwa Perera, Juan Zuniga and John Salmon  
*University of Alberta, Canada*

### An Interleaved High Step-Up DC-DC Converter with Coupled Inductor and Built-in Transformer for Renewable Energy Applications [#586]

Ramin Rahimi, Saeed Habibi, Mehdi Ferdowsi and Pourya Shamsi  
*Missouri University of Science and Technology, United States*

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## Remote Q/A Session R09 | Advanced Drivers, Driving, and Thermal Design

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*Link available on virtual platform*

**Chairs:** Zheyu Zhang

### Multiobjective Optimisation of active Gate Drivers for Fast-switching MOSFETs [#46]

Magnus Sandell, Xiang Wang, Gavin Watkins, Shusuke Kawai, Takeshi Ueno and Kohei Onizuka  
*Toshiba Europe Ltd, United Kingdom; Toshiba Corporation, Japan*

### A 15MHz GaN FET AZVT Buck Converter that Achieves 7.2-point Efficiency Increase at Heavy Load [#367]

Motohiro Kanai, Hidetoshi Taki, Kyohei Tanimura and Kousuke Miyaji  
*Shinshu University, Japan; Shinshu University, Japan*

### Measurement of Maximum diC/dt with Printed Circuit Board Rogowski Coil for Junction Temperature Estimation of IGBT Modules [#583]

Yafei Shi, Huai Wang, Yichao Duan, Jianlong Kang and Zhen Xin  
*Hebei University of Technology, China; Aalborg University, Denmark*

### Study on the Impacts of Signal Carrier in a Compact Gate Driver with Single Isolation Channel for Both Signal and Power Transferring [#548]

Cheng Jiang, Han Peng, Qiaozhi Yue and Qiaoling Tong  
*Huazhong University of Science and Technology, China*

### Study on the Immersion Oil Cooling Method of Power Module [#954]

Yang Fengtao, Liu Chaohui and Shen Jinliang  
*Xi'an Jiaotong University, China; National New Energy Vehicle Technology Center, China*



**Reshaped Switching Trajectory of SiC MOSFET via Co-Optimized Active Gate Driver [#1235]**

Mingrui Zou, Peng Sun, Yulei Wang, Zheng Zeng, Kaiyan Li and Xudong Han  
*Chongqing University, China*

**Conduction Time Variation-Based Active Thermal Control Method for Si and SiC Hybrid Switch [#835]**

Haichen Liu, Tiefu Zhao, Xiwen Xu and Jiale Zhou  
*University of North Carolina at Charlotte, United States*

**Remote Q/A Session R10 | PM & Synchronous Reluctance Machine Design**

*Link available on virtual platform*

**Chairs:** Akira Chiba, Fabio Giulii Capponi

**Investigation of the Impact of Magnet Segmentation on High Frequency Eddy Current Losses in an Interior Permanent Magnet Motor [#764]**

Samith Sirimanna, Xiaolong Zhang and Kiruba Haran  
*University of Illinois Urbana Champaign, United States*

**Shape Optimization of Stator Teeth in Interior Permanent Magnet Synchronous Motors with Distributed Windings to Reduce Rotor Loss [#754]**

Katsumi Yamazaki, Taiga Uematsu, Akihiro Tanaka and Tohru Nakada  
*Chiba Institute of Technology, Japan; Nissan Motor Co., Ltd., Japan*

**Permanent Magnets Assistance Design Methods of High-Speed Synchronous Reluctance Machines [#703]**

Gianvito Gallicchio, Marco Palmieri, Francesco Cupertino, Mauro Di Nardo, Michele Degano and Chris Gerada  
*Politecnico di Bari, Italy; University of Nottingham, United Kingdom*

**Reduction of On-Load Torque Ripple in PMSM using Time-Space Harmonics Analysis of Air- Gap Flux Density [#133]**

Yan Dong, Lei Haowei, Zhang Zhen, Shi Tingna and Xia Changliang  
*Zhejiang University, China; Zhejiang University AEEI Center, China*

**Future Electrical Machine Materials: Possibilities, Opportunities and Challenges [#161]**

Mousalreza Faramarzi Palangar and Wen L. Soong  
*University of Adelaide, Australia*

**Design and Analysis of Two Degree-of-Freedom Rotary-Linear Machines with Hybrid Permanent Magnets for Robotic Applications [#143]**

Yaojie He, You Zhou and Christopher H.T. Lee  
*Nanyang Technological University, Singapore*

**Accurate MTPA Strategy of PMSM Considering Cross Saturation Effect Based on Full-Flux- Linkage Model [#105]**

Jiayue Zhou, Xi Xiao, Zitan Wang, Haifeng Lu, Jianyun Chai and Zhang Meng  
*Tsinghua University, China; Beijing Institute of Control Engineering, China*

**Influence of Circulating Currents on Electromagnetic Performance of 6-Slot/2-Pole High-speed PM Motors with Rotor Eccentricity [#285]**

Tianran He, Ziqiang Zhu, Fan Xu, Hong Bin, Di Wu, Liming Gong and Jintao Chen  
*University of Sheffield, United Kingdom; Midea Group Corporate Research Center, China*

**Designing a LEAF-Benchmark Variable Magnetization-IPM Motor with Two V-Shaped PMs at a 100 kW Power Level [#242]**

Kyohei Yoneda, Wataru Suzuki and Kazuto Sakai  
*Toyo University, Japan*

**Internal Permanent Magnet Motor with U-shaped Permanent Magnet Arrangement to Enable a Small Magnetization Current with High Power and Efficiency for Electric Vehicles [#241]**

Wataru Suzuki, Kyohei Yoneda and Kazuto Sakai  
*Toyo University, Japan*

**Tuesday, October 18**

**9:00AM–9:55AM**

**Remote Q/A Session R11 | Power Converters and Control for Renewable Energy Systems A**

*Link available on virtual platform*

**Chairs:** Hengzhao Yang

**A Symmetrical Architecture for PV String Using LLC-based Voltage Multiplier by Differential Power Processing Technique [#140]**

Xue Wang, Huiqing Wen, Yinxiao Zhu, Guanying Chu and Rui Du  
*Xi'an Jiaotong -Liverpool University, China; Lincoln University, China*

**A Simplified Power Balance Strategy for Three-Phase Cascaded H-bridge Photovoltaic Inverter [#814]**

Hao Xue and Jinwei He  
*Tianjin University, China*

**Space Vector Modulation Technique for Leakage Current Attenuation in Grid-Connected Three-Phase Multilevel PV Inverters [#1252]**

Luan Aleixo Canario Mendonca, Filipe Antonio da Costa Bahia, Andre Pires Nobrega Tahim, Jose Renes Pinheiro and Fabiano Fragoso Costa  
*Federal University of Bahia, Brazil*

**Leakage Current Reduction with 240CPWM in Silicon Carbide Based Transformerless Grid-connected PV Converter [#1049]**

Hafsa Qamar, Haleema Qamar, Nikhil Korada, Raja Ayyanar and Madhura Sondharangalla  
*Arizona State University, United States*

**A Dual-Input-Single-Output Boost Converter with Inductors Coupling For Dual Electromagnetic Energy Harvesters [#568]**

Letian Tong, Han Peng, Xianchao Liu, Kai Gao, Shaojing Wang and Peng Xu  
*Huazhong University of Science and Technology, China; State Grid Shanghai Electric Power Research Inst, China*

**Power Converter Technologies for 20MW Wind Turbines [#271]**

Xibo Yuan, Yonglei Zhang and Xin Peng  
*China University of Mining and Technology, China*

**Fuel Cell Stack Broadband Excitation for Online Condition Monitoring Using different Switch-mode DC-DC Topologies [#460]**

Surprise Mahlangu and Paul Barendse  
*University of Cape Town, South Africa*

**A Single-Phase Single-Stage Five-Level Common-Ground Transformerless Inverter with Six-Switches and Switched-Capacitor Cell [#584]**

Fan Peng, Guohua Zhou, Nengmou Xu, Siya Gao and Dong Wu  
*Southwest Jiaotong University, China*

**A Novel Single-Phase Transformerless Grid-Connected PV Inverter [#1241]**

Arnaldo Oliveira Cunha Junior, Filipe Antonio da Costa Bahia, Joao Paulo Ramos Agra Mello, Andre Pires Nobrega Tahim and Fabiano Fragoso Costa  
*Federal University of Bahia, Brazil; Federal Rural University of Pernambuco, Brazil*

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## Remote Q/A Session R12 | Wireless Chargers

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Link available on virtual platform

Chairs: Md Sariful Islam

### A High Power Density 3/1-phase Compatible MISN-PFC Converter for On-Board Charger [#624]

Wending Zhao, Tianlin Huang and Xinke Wu  
Zhejiang University, China

### Analysis of a Three-Phase IPT Secondary Side in Interoperable Single-Phase Operation [#639]

Thorsten Kurpat and Lutz Eckstein  
RWTH Aachen University, Germany; Institute for Automotive Engineering RWTH Aachen, Germany

### A Large-scale Wireless Charging Station for Electric Vehicles [#400]

Jaehong Lee and Seung-Hwan Lee  
University of Seoul, Korea (South)

### Z3 class 50 kW Bidirectional IPT charger for EV [#931]

Fernando Gonzalez-Hernando, Ander Jauregi, Irma Villar, Alejandro Rujas and Luis Mir  
Ikerlan Technology Research Centre (BRTA), Spain, Spain

### A Four Port Isolated PV-Based EV Charger that Supports level-2 and DC Charging [#851]

Mohamed Tamasas Elrais, Reza Rezaei, Sumana Ghosh and Issa Batarseh  
University of Central Florida, United States

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## Remote Q/A Session R13 | Selected Topics in Emerging Technologies

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Link available on virtual platform

Chairs: Yuzhuo Li, Qiang Wei

### An Integrated Receiver for Inductive Power Transfer [#71]

Yiming Yin, Heyuan Li and Minfan Fu  
ShanghaiTech University, China

### Impedance-Model-Based Design of High-Order Class E Inverter [#95]

Yifan Jiang, Rong He, Kai Zhao and Minfan Fu  
ShanghaiTech University, China

### A Dual Coupled Double-Sided LCC IPT System Adapted to Battery Charging Profile Under High Misalignment [#144]

Shuyu Yang, Kailong Liu, Jixie Xie, Chong Zhu and Xi Zhang  
Shanghai Jiao Tong University, China; Warwick Manufacturing Group University, United Kingdom

### A Full Load Range Soft-Switching Inductive Power Transfer System [#227]

Xin Li, Yiming Zhang and Yi Tang  
Nanyang Technological University, Singapore; Fuzhou University, China

### An Adaptive Multi-Target Microwave Power Transmission Method Based on Split-Calibration and Power-Focusing Algorithm [#248]

Shuchen Cheng, Ke Jin, Huan Hu and Weiyang Zhou  
Nanjing University of Aeronautics & Astronautics, China

### An Adaptive Single-peak GMPPT Method Based on Cloud Model Under Dynamic Laser Wireless Transmission [#337]

Zhongwei Chen, Ke Jin, Weiyang Zhou and Jianying Ding  
Nanjing University of Aeronautics & Astronautics, China

### Efficiency Optimization of Class-F Power Amplifier at Different Power Levels for Microwave Power Transmission [#438]

Chen Yang, Ke Jin, Weiyang Zhou and Huan Hu  
Nanjing Univ. of Aeronautics and Astronautics, China

### Thermal Analysis Based on Equivalent Thermal Model for Magnetic Couplers in Wireless Charging System [#662]

Dongsheng Wang, Hao Feng and Li Ran  
Chongqing University, China

### Si IGBT and SiC MOSFET Hybrid Switch-Based Solid State Circuit Breaker for DC Applications [#840]

Haichen Liu, Jiale Zhou, Tiefu Zhao and Xiwen Xu  
University of North Carolina at Charlotte, United States

### Switched-Resistance Method for Estimation of Inductor ESR in dc-dc Converters: Theory and Design Challenges [#620]

Kausik Biswas, Olive Ray and Srinivas Boppu  
Indian Institute of Technology Bhubaneswar, India

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## Remote Q/A Session R14 | Power Converter Performance Improvement

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Link available on virtual platform

Chairs: Li Zhang, Zhituo Ni

### Technical Investigation on Robustness Enhancement for Grid-Connected Inverter in Weak Grid by Adding an Improved Grid Voltage Feedforward Path [#287]

Huili Zhang and Tianzhi Fang  
Nanjing Univ. of Aeronautics and Astronautics, China

### Design Method of Control Parameters for PCS Grid-Connected Mode Based on the Stability Analysis of Islanding Switching [#458]

Sheng Ren, Min Chen and Haoqing Cai  
Zhejiang University, China

### AC Impedance Modeling of True-Bipolar MMC-HVdc System With Dual-Droop Control [#132]

Bole Feng, Yue Wang, Pengkun Li, Quanle Zhu, Yinglin Xue, Fengmo Li, Runtian Li and Yi Liu  
Xi'an Jiaotong University, China; State Grid Corporation of China, China

### Leakage Current Analysis and Mitigation for Modular Multilevel Converter with Floating Submodules [#366]

Yongtao Liang, Dong Jiang, Wei Sun, Jianan Chen and Hong Li  
Huazhong University of Science and Technology, China; Beijing Jiaotong University, China

### Unsupervised Anomaly Detection for Multilevel Converters Based on Wavelet Packet Transform and Variational Autoencoders [#31]

Shu Ye and Feng Zhang  
Shanghai Jiao Tong University, China

### Current Ripple Mitigation in DC-Link Capacitors of Three-Phase NPC Converters Using Mixing Level-Shifted Modulation Schemes [#344]

Yong-Yao Shen, Szu-Chi Peng, Surya chandra Gulipalli, Po-Tai Cheng and Chia-Chi Chu  
National Tsing Hua University, Taiwan

### PI Tuning of High-bandwidth Buck Converters Based on Genetic Algorithm and Accurate Small-Signal Model [#966]

Yu Shao, Xiangpeng Cheng, Jinjun Liu, Zeng Liu and Jiwen Wei  
Xi'an Jiaotong University, China

### **A Modular and Integrated Reconfigurable Design for Battery Energy Storage System** [#719]

Huizhen Huang, Amer Ghias and Zuo Wang  
*Nanyang Technological University, Singapore*

### **Finite Control Set Model Predictive Control for Five-Level Modified Active Nested Neutral Point Clamped Converter** [#895]

Wenyuan Ding, Faraji Faramarz, Vijesh Jayan, Zuo Wang, Amer M. Y. M. Ghias and Honnyong Cha  
*Nanyang Technological University, China; Kyungpook National University, Korea (South); Nanyang Technological University, Singapore*

## **Remote Q/A Session R15 | Electric Drives A**

*Link available on virtual platform*  
**Chairs:** Kevin Lee, Zhe Zhang

### **Model-Free Predictive Pulse Pattern Control for Permanent Magnet Synchronous Motor Drives** [#52]

Dianxun Xiao, Battur Batkhisig, Aathira Karuvaril Vijayan, Alan Callegaro, Rohit Baranwal and Ali Emadi  
*McMaster University, Canada; Eaton, United States*

### **Vibration Frequency Estimation Scheme Based on Second-Order Extended State Observer for IPMSM Drive System Without Accelerometer** [#369]

Yun Zuo, Shuaishuai Wang, Huimin Wang, Dan Liu, Chunxu Lin, Abebe Teklu Woldegiorgis, Junwen Mu and Xinglai Ge  
*Southwest Jiaotong University, China*

### **An Open Source Virtual Prototyping Platform for Electric Drive Systems** [#436]

Baoyun Ge  
*University of Florida, United States*

### **Design and Analysis of a 54-Pulse Converter and 7-level Hybrid Inverter for Medium Voltage Induction Motor Drive** [#447]

Rohit Kumar, Bhim Singh and Piyush Kant  
*Indian Institute of Technology Delhi, India; Indian Institute of Technology, Kanpur, India*

### **Impedance-Based Analysis of Digital Control Delay in Metro Traction Drive System** [#781]

Junwen Mu, Yun Zuo, Chunxu Lin, Huimin Wang, Shuaishuai Wang and Xinglai Ge  
*Southwest Jiaotong University, China*

### **Open-End Nine-Leg Half-Controlled Converter for Six-Phase Synchronous Generator-Based Wind Energy Conversion Systems** [#380]

Emerson de Lacerda Soares, Cursino Brandao Jacobina, Nayara Brandao de Freitas, Nady Rocha and Ayslan Caisson Noroes Maia  
*Federal University of Campina Grande, Brazil; INESC TEC, Portugal; Federal University of Paraiba, Brazil; Federal Institute of Ceara, Brazil*

### **Flying Start of Permanent Magnet Generator Connected PWM Rectifier Based on Short Circuit Current Vector Increments** [#435]

Sun Gaoyang, Guo Hong, Ding Xiaofeng and Yang Yanyong  
*Beihang University, China*

### **A Comparison Between Nonlinear Kalman Filters for Sensorless Induction Motor Drives** [#1072]

Abbas Hassan, Ali Bazzi and Jensen Finn  
*American university of Beirut, Lebanon; University of Connecticut, United States; Aarhus university, Denmark*

### **Current Measurement Offset Error Compensation for Indirect Field-Oriented Controlled Induction Motor Drives** [#294]

Sangmin Lee and Kibok Lee  
*Incheon National University, Korea (South); Inha University, Korea (South)*

### **Torque Ripple Reduction Method for Interior Permanent Magnet Synchronous Machine with Minimal Loss** [#139]

Jianzhen Qu, Pinjia Zhang, Chengning Zhang and Shuo Zhang  
*Tsinghua University, China; Beijing Institute of Technology, China*

### **Zero-Sequence Current Reduction Method of Dual Inverter with a Common DC-Link for High-Speed Applications** [#549]

Jun Ohata and Hitoshi Haga  
*Nagaoka University Of Technology, Japan; Nagaoka University of Technology, Japan*

**Tuesday, October 18**

**10:00AM–10:55AM**

## **Remote Q/A Session R16 | Solid State Transformers and Utility Applications**

*Link available on virtual platform*  
**Chairs:** Anirban Pal, Cheng Wang

### **A Novel Modular Multilevel Converter Based Power Electronic Transformer with Integrated Switching Pairs** [#1214]

Yinyu Yan, Yichao Sun, Wanxin Guo, Zhendong Ji, Dongye Li and Jianfeng Zhao  
*Nanjing Normal University, China; Nanjing University of Science and Technology, China; Nanjing Institute of Technology, China; Southeast University, China*

### **Model Predictive Control of a Modular Multilevel DC Transformer Under Quasi-square Modulation** [#822]

Yufan Li, Yichao Sun, Carlos Teixeira, Liye Wu, Brendan McGrath and Donald Grahame Holmes  
*Nanjing Normal University, China; RMIT University, Australia*

### **Hierarchical Control for dc-Link Voltage and Power Sharing of CHB-based Solid State Transformer** [#125]

Jianqiao Zhou, Jianwen Zhang, Jiacheng Wang, Jiajie Zang, Gang Shi, Xu Cai and Xinming Fan  
*Shanghai Jiao Tong University, China; Simon Fraser University, Canada; Shanghai University of Engineering Science, China; Foshan Power Supply Bureau, China*

### **Design and Implementation of DC-Transformer using 10 kV SiC MOSFET for Medium-Voltage Extreme Fast Charger** [#667]

Hao Feng, Jehyuk Won, Xinyu Liang, Srdjan Srdic and Srdjan Lukic  
*Chongqing University, China; Gachon University, Korea (South); Analog Devices, United States; EGSTON Power Electronics, Austria; North Carolina State University, United States*

### **Integrated Onboard Battery Charger Based on Four-bridge Converter** [#126]

Bonyang Li, Min Zhou, Dong Jiang and Jialou Gao  
*Huazhong University of Science and Technology, China*

### **New Measurement Algorithm for Supraharmonics Real-time Monitoring Based on Dynamic Compressed Sensing** [#516]

Ting Yang, Fengxia Yang, Yuqing Niu and Wei Li  
*Tianjin University, China; The University of Sydney, Australia*

### **A Hierarchical Control Scheme With Flexible Power Regulation for the Series-Type Microgrid System** [#648]

Changwei Qin and Xiaoyan Li  
*Shandong Jianzhu University, China; Shandong University, China*

### **The Control Method for LCL-Type Single-Phase Grid-Connected Inverter Based on Circuit Energy Storage** [#957]

Zenghao Xia, Miaoya Yu, Hao Wu, Xinlin Li, Xingwang Huang and Xiaodong Li  
*Chongqing University, China*

### **Economic Analysis of Retrofitting Electric Motors with a Rewinding Process to Partial Loads** [#413]

Victor Aguiar, Fabio Nascimento, Ricardo Pontes, Wilkley Correia and Fernando Ferreira  
*Fed. R. Univ. of the Semi-Arid Region (UFERSA), Brazil; Federal University of Ceara (UFC), Brazil; University of Coimbra (UC), Portugal*

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## **Remote Q/A Session R17 | Power Converter Topologies; AC-AC and multilevel**

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*Link available on virtual platform*

**Chairs:** Bilal Akin, Shohei Komeda

### **New Type High-Frequency Transformer Isolated Cascaded AC-AC Converter for DVR to Compensate Sag or Swell in Voltage** [#291]

Ashraf Ali Khan, Usman Ali Khan, Hafiz Furqan Ahmed and Shehab Ahmed  
*KAUST, Saudi Arabia; Yonsei University, Saudi Arabia; National Sun Yat-sen University, Taiwan*

### **Quasi Two-Level Operation and Neutral-Point Voltage Balance Method for a Four-Level ANPC based Dual Active Bridge DC-DC Converter** [#433]

Jupeng Pang, Kui Wang, Zedong Zheng, Tong Zheng and Yongdong Li  
*Tsinghua University, China*

### **Low-Frequency Ripple Voltage Suppression Based on Active Power Decoupling for Modular Multilevel Converter Sub-Module Capacitors** [#557]

Hang Su, Shunfeng Yang, Fuyuan Zhuang, Yunshan Wang, Jingchun Huang and Qingyuan Wang  
*Southwest Jiaotong University, China*

### **Improved Virtual Space Vector Modulation Scheme for the Reduced Switch Count Three-Level Inverter With Unbalanced Neutral-Point Voltage Conditions** [#647]

Changwei Qin and Xiaoyan Li  
*Shandong Jianzhu University, China; Shandong University, China*

### **Six-Leg Single-Phase to Three-Phase AC-DC-AC Converter Using High-Frequency Link** [#1100]

Filipe Vieira Rocha, Cursino Brandao Jacobina, Rodrigo Pereira de Lacerda, Nayara Brandao de Freitas and Nady Rocha  
*UFMG, Brazil; INESC TEC, Portugal; UFPB, Brazil*

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## **Remote Q/A Session R18 | Power Converter Control and Optimization**

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*Link available on virtual platform*

**Chairs:** Alessandro Lidozzi, Salvatore Foti

### **Implementation of Vector Control for Single Phase Dual Active Bridge to Achieve ZVS and ZCS for Switching Loss Reduction** [#784]

Ganesan Perumal and Kamalesh Hatua  
*Centre for Development of Advanced Computing, India; Indian Institute of Technology Madras, India*

### **General Pulse Distribution Method of MMC under Phase-leg Based PD-PWM Modulation** [#819]

Yichao Sun, Yufan Li, Brendan McGrath, Carlos Teixeira, Donald Grahame Holmes and Jianfeng Zhao  
*Nanjing Normal University, China; RMIT University, Australia; Southeast University, China*

### **Square-Wave Current Control Optimization Method of Variable Frequency Modulation Inverter for Two-Stage HMI Digital Ballast** [#141]

Yifeng Wang, Shaoqi Yang, Xiaoyong Ma, Chen Wang, Yu Bai and Lei Li Tianjin  
*University, China; Beijing Huayuan Movie Equipment Co., LTD, China*

### **A Computationally Efficient FCS-MPC Imitator for Grid-Tied Three-Level NPC Power Converters Based on Sequential Artificial Neural Network** [#801]

Xinliang Yang, Yanda Lyu, Kun Wang, Uihyun Kim, Zhenbin Zhang and Ki-Bum Park  
*KAIST, Korea (South); Technical University of Denmark, Denmark; KAIST, Korea, Republic of; Shandong University, China*

### **A Weighting Factor Design Approach for FCS-MPC Techniques Based on PSO and K-Means Algorithm** [#802]

Xinliang Yang, Junda Li, Kun Wang, Uihyun Kim, Zhenbin Zhang and Ki-Bum Park  
*KAIST, Korea (South); Shandong University, China; KAIST, Korea, Republic of*

### **An Improved Model-free Predictive Power Control for Three-Phase AC/DC Converters** [#683]

Shengnan Li, Tingyi He, Shuijun Wu, Xin He, Peng He, Yunhang Dai, Yongchang Zhang, Qiyang Qu, Yufei Wang, Haisen Zhao and Guorui Xu  
*Electric Power Research Institute of Yunnan Power, China; Yunnan Electric Test & Research Institute Group, China; North China Electric Power University, China; North China University of Technology, China; University of Chinese Academy of Sciences, China*

### **Online Parameter Optimization Method of Harmonic Controller for Grid-Connected Inverter** [#664]

Tang Jian, Zou Zhixiang, Liu Xingqi, Zhang Yi, Xu Ruokai, Wang Yuchen and Hua Wei  
*Southeast University, China*

### **Power Oscillation Suppression Control Strategy with Peak Current Limitation for Three-Phase Four-Leg Inverter Under Unbalanced Voltage Dips** [#50]

Hao Yang, Zhao Liu, Ning Zhou, Shuai Meng, Qifeng Sun and Dongming Zhao  
*Nanjing University of Science and Technology, China*

### **Analysis and Modeling of Multi-Resonant Switched Tank Converter with Partial Power Voltage Regulation** [#168]

Ruiran Dai, Yundong Ma, Zhiqiang Zhao, Ruijia Cai, Peng Wang and Pengfei Wang  
*Nanjing University of Aeronautics and Astronauts, China*

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## **Remote Q/A Session R19 | Packaging, Materials and Passive Components**

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*Link available on virtual platform*

**Chairs:** Christina DiMarino

### **Observation of PWM-Dependent Chip Deformation of Automotive Power Module** [#312]

Peng Sun, Liang Wang, Yulei Wang, Zheng Zeng, Xudong Han, Mingrui Zou and Kaiyan Li  
*Chongqing University, China*

### **Design and Evaluation of a 1200-V/200-A SiC Three-Level NPC Power Module** [#130]

Zhang Honglang, Wu Yingzhe, Yin Shan, Jin Shoudong, Lin Shaofeng, Jiang Tian, Li Hui and Cheng Yuhua  
*Univ. of Electron. Sci. & Technol. of China, China; Xiamen SAN-U Optronics Co., Ltd., China*



### Multi-Physics Coupling Analysis and Optimization Design of SiC MOSFET Power Module Package Insulation [#606]

Wang Yalin, Li Wenyi, Ding Yi, Sun Hao and Yin Yi  
*Shanghai Jiao Tong University, China*

### Knowledge-aware Artificial Neural Network for Loss Modeling of Planar Magnetic Components [#394]

Junyun Deng, Wenbo Wang, Prasanth Venugopal, Jelena Popovic and Gert Rietveld  
*University of Twente, Netherlands; Yongjiang Lab, China*

### Feasible Evaluations of Low Profile Magnetic Structure Based on Meander Winding and Split- Magnetic Cores with High-Cooling Capability Used in Power Converters [#392]

Jun Imaoka, Kazuya Matsuta, Hiroki Ochiai, Koichi Shigematsu, Mostafa Noah and Masayoshi Yamamoto  
*Nagoya University, Japan*

### Low Loss Non Air Gap Multi-Permeability Planar Inductor Design for Totem-Pole PFC [#331]

Pengyuan Ren, Wenjie Chen, Xingwei Huang, Yuxuan Chen, Yongxing Zhou and Xu Yang  
*Xi'an Jiaotong University, China*

### The Influence of Asymmetric Parameters on Crosstalk between Paralleled SiC MOSFETs [#489]

Yujie Ding, Hongyao Liu, Saijun Mao, Kun Wang, Wenyu Li and Zhikun Wang  
*Fudan University, China; UniSiC Technology (Shanghai) Co.,Ltd., China*

### Power Semiconductor Lifetime Extension Technique using Turn-on Energy as a Variable to Maintain Constant Loss [#154]

Howe Li Yeo, Vaisambhayana Sriram and Anshuman Tripathi  
*Nanyang Technological University, Singapore*

### Modeling and Design Method of Coupled Inductor Using Powder Core with Concentrated Air Gap [#96]

Sihoon Choi, Jun Imaoka and Masayoshi Yamamoto  
*Nagoya University, Japan*

### Integrated High Frequency Nanocrystalline Based Planar Magnetics Design for a Bidirectional CLLC Resonant Converter [#1264]

Sunil Kumar Dube, Ramu Nair and Pritam Das  
*SUNY Binghamton, United States*

### Mission-Profile-Based Lifetime study for SiC Module Chips using Graphene Films [#826]

Sepideh Amirpour and Torbjorn Thiringer  
*China Euro Vehicle Technology AB, Sweden; Chalmers University of Technology, Sweden*

## Remote Q/A Session R20 | Electric Machine Effects of Design and Operation

*Link available on virtual platform*

**Chairs:** Athanasios Karlis, David Reigosa

### Measurement of Vibration and Acoustic Noise Generated by Magnetostriction in Three Stator Cores Made of High Silicon Steel, Amorphous Iron, and Conventional Silicon Steel [#427]

Yifei Cai, Fares El-Faouri, Saikawa Naoki and Chiba Akira  
*Tokyo Institute of Technology, Japan*

### Investigation of Effective Conditions of Radial Force Sum Flattening for Acoustic Noise Reduction in Switched Reluctance Motors [#229]

Akira Chiba, Candra Adi Wiguna, Kyohei Kiyota, Sozer Yilmaz, Gundogmus Omer, Junichi Asama and Atsuya Ohashi  
*Tokyo Institute of Technology, Japan; University of Akron, United States; Shizuoka University, Japan*

### Online Optimization Method of Two-step Commutation for Switched Reluctance Generator [#188]

Zhiyuan Chai, Peilin Liu, Xin Li and Chuang Liu  
*Nanjing University of Aeronautics and Astronauts, China*

### Vibration Characteristics of Induction Motors Considering the Lower-Order Harmonics in Power Supply [#596]

Haisen Zhao, Zihan Zhou, Zixu Wang, Jinping Kang, Eldeeb Hassan, Guorui Xu, Yang Zhan and Yongchang Zhang  
*North China Electric Power University, China; BorgWarner Noblesville Technical Center, United States*

### Mathematical Derivation of Current Reference for Radial-Force Sum Flattening in Switched Reluctance Motors [#1305]

Fares El-Faouri, Yifei Cai, Yusuke Fujii and Akira Chiba  
*Tokyo Institute of Technology, Japan*

### Contact Resistance Prediction with Grey Box Thermal Model and Experimental Validation of Axial Flux Motors [#214]

Zhaozong Li, Chengning Zhang, Fengyu Zhang, Zeyuan Xu, David Gerada, Christopher Gerada, Xueping Li, Shuo Zhang and Yue Zhao  
*The University of Nottingham, United Kingdom; Beijing Institute of Technology, China; Beijing Institute of Technology, United Kingdom; The University of Nottingham, China*

### Proactive Low-Frequency Ride-Through Method for Speed-Sensorless Induction Motor Drives Against Changing Torque [#301]

Ruhan Li, Cheng Luo, Kai Yang, Zhijie Xu, Yifei Zheng and Yuhao Huang  
*Huazhong University of Science and Technology, China*

### Design of Satellite Reaction Wheel with FPCB Windings for Angular Momentum Optimization [#815]

Nai-Wen Liu, Kuo-Yuan Hung, Yi-Jen Lin and Shih-Chin Yang  
*National Taiwan University, Taiwan*

### Operation Characteristics of a Magnetic Resonance Coupling Motor with a Magnetic Ring for 8 and 4 Poles [#239]

Takaki Toda and Kazuto Sakai  
*Toyo University, Japan*

**Wednesday, October 19**

**9:00AM–9:55AM**

## Remote Q/A Session R21 | Power Converter Topologies B

*Link available on virtual platform*

**Chairs:** Sheldon Williamson, Montie Vitorino

### Analytical Comparison of 3-Level 2-Phase and Double-Step-Down Topologies for Integrated High-Ratio DC-DC Converters in BCD and GaN Process [#1325]

Muhammad Rizwan Khan, Xin Zhang and Cheng Huang  
*Iowa State University, United States; IBM T. J. Watson Research Center, United States*

### A Synchronous Rectification Method with Switching Delay for CLLC Converters to Achieve Secondary-side ZVS [#342]

Leheng Wang, Huan Chen and Kai Sun  
*Tsinghua University, China*

### Minimum Current Operation of Impedance Control Network Resonant Converters [#373]

Mausamjeet Khatua and Khurram Afridi  
*Cornell University, United States*

**A Multi-Mode Hybrid CCM/DCM Three-Phase Step-Up AC/DC Soft-Switched Converter with an Adaptive Active-Controlled Auxiliary Circuit and Constant Output Voltage** [#867]

Siamak Derakhshan and John Lam  
York University, Canada

**A Single-Stage Multilevel AC-DC Bidirectional Converter with Natural Grid Harmonic Elimination** [#1296]

Ramu Nair, Sunil Dube and Pritam Das  
SUNY Binghamton, United States

**A New Full-MOSFET-Switches-Based Buck-Boost Type Inverter with Reactive Power Support Capability** [#612]

Yanqi Cheng, Weimin Wu, Jianming Chen, Gang Lu, Eftychios Koutroulis, Frede Blaabjerg and Henry Chung  
Shanghai Maritime University, China; Zhejiang HRV Electric Co. Ltd, China; Technical University of Crete, Greece; Aalborg University, Denmark; City University of Hongkong, China

**Grid Filter Reduction of Single-Phase Inverters using 3-Leg Topology** [#89]

Guanhong Song, Bo Cao, Hassan Athab and Liuchen Chang  
University of New Brunswick, Canada

**An Algorithm for Harmonic Elimination in Three-Phase Multilevel Inverters** [#916]

Concettina Buccella, Maria Gabriella Cimatori, Sobhan Mohamadian and Carlo Cecati  
DISIM, University of L'Aquila, Italy

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**Remote Q/A Session R22 | Select Topics on EMI and Multilevel Topologies**

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Link available on virtual platform

Chairs: Tommaso Scimone, Li Zhang

**Decoupling Control of Circulating Current Suppression and Current Distortion Elimination for the Paralleled Vienna-Type Rectifiers** [#803]

Wanqing Han, Xiaoyan Li, Changwei Qin, Xianzhe Pang and Chenghui Zhang  
Shandong University, China; Shandong Jianzhu University, China

**Automatic-Optimization ADRC-Based Disturbance Rejection Method for Low Voltage Interface Converter in Microgrid** [#147]

Long Tao, Ping Wang, Yifeng Wang, Xiaoyong Ma, Huaidong Shi and Shaoqi Yang  
Tianjin University, China

**An Instantaneous Power Balancing Control With Power Factor Correction for Single-Stage Three-Phase AC-DC Converters** [#979]

Mojtaba Forouzesh, Yan-Fei Liu and Paresh C. Sen  
Queen's University, Canada

**A Capacitor Aging Effect Balancing Strategy for an MMC Distributed Control System** [#554]

Wang Li, Yang Shunfeng, Wang Haiyu, Qi Xin, Su Hang and Wang Qingyuan  
Southwest Jiaotong University, China

**Common-Mode Voltage Reduction Scheme for MMC with Consideration of Dead Zone** [#324]

Hui Liu, Jianan Chen, Dong Jiang and Wei Sun  
Huazhong University of Science and Technology, China; Nanjing University of Technology, China

**Power MOSFET Lifetime Prediction Method Based on Optimized Long Short-Term Memory Neural Network** [#158]

Hongyu Ren, Xiong Du, Yaoyi Yu, Jing Wang, Junjie Zhou and Yuhao Peng  
State Key Laboratory of Power Transmission Equip, China

**Analysis on Voltage to Ground of Submodules for MMC Under NLM and CPS-PWM** [#174]

Huang Yihong, Lin Lei, Shi Xiaojie and Yin Tianxiang  
Huazhong University of Science and Technology, China

**A Constant Common-Mode Voltage PWM Method for Three-Phase Series-end Winding Topology** [#272]

Zhiyuan Wang, Zicheng Liu, Dong Jiang and Ronghai Qu  
Huazhong University of Science and Technology, China

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**Remote Q/A Session R23 | Wide Bandgap Design and Applications**

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Link available on virtual platform

Chairs: Yue Zhao

**Design Considerations for Developing 1.2 kV 4H-SiC BiDFET-enabled Power Conversion Systems** [#805]

Ajit Kanale, Tzu-Hsuan Cheng, Ramandeep Narwal, Aditi Agarwal, B. Jayant Baliga, Subhashish Bhattacharya and Douglas C. Hopkins  
North Carolina State University, United States

**Influence of Emitter Side Design on the Unintentional Turn-on of 10kV+ SiC n-IGBTs** [#972]

Ioannis Almpanis, Marina Antoniou, Paul Evans, Lee Empringham, Peter Gammon, Florin Udrea, Philip Mawby and Neophytos Lophitis  
University of Nottingham, United Kingdom; University of Warwick, United Kingdom; University of Cambridge, United Kingdom

**A Wide-Range Input Auxiliary Power Supply based on Series-Connected SiC MOSFETs with Active Gate Driver** [#1319]

Arindam Sircar, Inhwan Lee, Muhammad Abubakr Saeed and Xiu Yao  
University at Buffalo, United States

**Analysis of Nonlinear Conductivity Coating used to Improve Electric Field Distribution in Medium Voltage Power Module** [#828]

Yuan Gao, Yang Yang, Hongbo Zhao, Thore Stig Aunsborg, Stig Munk-Nielsen and Christian Uhrenfeldt  
Aalborg University, Denmark; Northwestern University, United States

**Real EOFF as a Factor in Design of Soft-switched DC-DC Converters with SiC MOSFET Power Modules** [#932]

Jacek Rabkowski, Fernando Gonzalez-Hernando, Mariusz Zdanowski, Irma Villar and Uxue Larranaga  
Warsaw University of Technology, Poland, Poland; Ikerlan Technology Research Centre (BRTA), Spain, Spain; CAF Power & Automation, Spain

**Modeling and Analysis of Bridge-Leg Crosstalk of GaN HEMT Considering Staged Effect of Common-Source Inductance** [#616]

Xiao Li, Xuyang Liu, Jianyu Cao, Yushan Liu, Haiwen Yuan and Yaosuo Xue  
Beihang University, China; Oak Ridge National Laboratory, United States

**A Comparison of GaN-Based Cascode and E-mode HEMTs Using Bridgeless Totem Pole PFC** [#484]

Beyza Saglam, Mehmet Hakan Aksit and Bunyamin Tamyurek  
ASELSAN, Turkey; Gazi University, Turkey

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## Remote Q/A Session R24 | Design and Performance Assessment of Electric Machines A

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*Link available on virtual platform*

**Chairs:** Eric Severson, Jonathan Bird

### Impact of Two Types of Grounding on the Common-mode Voltage of Wide-bandgap Motor Drive Systems [#355]

Yipu Xu, Xibo Yuan, Zihao Wang, Yan Li and Yonglei Zhang  
*China University of Mining and Technology, China*

### Design and Analysis of Dual-Winding Permanent Magnet Machine with High Torque Density [#265]

Shaoshuai Wang, Jianzhong Zhang, Ning Wang and Yongbin Wu  
*Southeast University, China*

### Performance Analysis and Mechanical Assembly Considerations for a Spoke-Type Permanent Magnet Vernier Machine with an Inner Salient Pole Core on the Rotor [#511]

John Mushenya and Azeem Khan  
*University of Cape Town, South Africa*

### A Two-Dimensional Analysis Model of Cogging Torque in Homopolar Inductor Machines [#889]

Yufei Wang, Guomin Zhang, Haisen Zhao and Zhongjing Liu  
*Institute of Electrical Engineering CAS, China; North China Electric Power University, China*

### Thermal Modeling with Surrogate Model-Based Optimization of Direct Oil Cooling Heat Transfer Coefficient for HEV Motor [#755]

So-Yeon Im, Tae-Gun Lee, Ki-Won Kim, Jin-Cheol Park, Jun-Woo Chin and Myung-Seop Lim  
*Hanyang University, Korea, Republic of; Korea Automotive Technology Institute, Korea, Republic of*

### Influence of Magnetic Shield Thickness in End Region on Stator Leakage Reactance of Synchronous Condenser [#633]

Xu Guorui, Zhu Xueyang, Li Weili, Liu Wenmao, Zhan Yang and Zhao Haisen  
*North China Electric Power University, China; Beijing Jiaotong University, China*

### Transformer Integration and Winding Design for ISOP-LLC Converter [#196]

Yifeng Wang, Chen Chen, Bo Chen, Zhongjie Wang, Ruilin Ji and Mingzhi Zhang  
*Tianjin University, China; State Grid Tianjin Power Customer Service Center, China*

### Open-circuit Fault-tolerant Control Strategy of Five-leg Drive in Active Magnetic Bearing [#30]

Jianfu Ding, Dong Jiang, Feng Hu, Jichang Yang and Zlcheng Liu  
*Huazhong University of Science and Technology, China*

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## Remote Q/A Session R25 | Electric Drives B

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*Link available on virtual platform*

**Chairs:** Ali Bazzi, Seema Kewat

### An Improved Model-Free Predictive Current Control Method for PMSM Drives Based on Extended Control Set and Fast Current Difference Updating [#816]

Yongchang Zhang, Wenjia Shen, Haitao Yang, Guo Xiaojiang, Fu Mingzhi and Qin Meng  
*North China Electric Power University, China; North China University of Technology, China; Huaneng Clean Energy Research Institute, China*

### Model Predictive Current Control of PMSM Drives Based on Evaluation of Switch Jumps [#817]

Haitao Yang, Min Li, Yongchang Zhang, Xiaojiang Guo, Mingzhi Fu and Meng Qin  
*North China University of Technology, China; North China Electric Power University, China; Huaneng Clean Energy Research Institute, China*

### An Improved Synchronous Frequency Extractors PLL with Low Computational Burden [#45]

Kai Liu, Yuchen Wang and Wei Hua  
*Southeast University, China*

### Control Method of Dual Parallel Surface-Mounted Permanent-Magnet Synchronous Motor Systems with Different Parameters Using Single Inverter [#902]

Cheonsu Park and Shinji Doki  
*Nagoya University, Japan*

### Synchronous Switch Current Reversion (SSCR) Technique for Motor Braking Enhancement [#995]

Li Teng, Zhiwu Xie, Yu Yin and Junrui Liang  
*ShanghaiTech University, China; ShanghaiTech University, China*

### Sensorless Estimation for Stator Winding Temperature of Automotive Electric Motors Based on Sequential Current Pulse Injection [#385]

Yansong Lu, Hao Yin, Jingbo Han, Jingxuan Li, Chong Zhu and Xi Zhang  
*Shanghai Jiao Tong University, China*

### A Virtual Voltage Vector-Based Space Vector Modulation Scheme for Three-Phase Open-Winding Motor Drive with Five-Leg Converter [#41]

Zhiping Dong, Hang Zhao, Rundong Huang, Wusen Wang and Chunhua Liu  
*City University of Hong Kong, Hong Kong; The Hong Kong University of Science and Technology, Hong Kong*

### Fault Tolerant Operation of an LCI and VSI Fed Hybrid Induction Machine Drive for Medium Voltage High Power Applications [#800]

Harikrishnan Pookulangara, Pratyush Pandey, Jose Titus and Kamalesh Hatua  
*PhD scholar, India; Assistant Professor, India; Associate Professor, India*

### Discontinuous PWM Scheme for an Open-end Winding Induction Motor Drives Fed by Dual Inverter [#688]

Kibok Lee and Yongsu Han  
*Inha University, Korea (South); Myongji University, Korea (South)*

### Design and Comparison of Output Filter Configurations for SiC-MOSFET-Based Automotive DC-AC Inverters [#670]

Mohammad Ali, Jens Friebe and Axel Mertens  
*Leibniz University Hannover, Germany*

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**Wednesday, October 19**

**10:00AM–10:55AM**

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## Remote Q/A Session R26 | Power Converters and Control for Renewable Energy Systems B

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*Link available on virtual platform*

**Chairs:** Zian Qin

### Flexible Power Point Tracking for Photovoltaic Systems Under Partial Shading Conditions [#339]

Yinxiao Zhu, Huiqing Wen, Qinglei Bu, Guanying Chu and Haochen Shi  
*Xi'an Jiaotong-Liverpool University, China; Huazhong University of Science and Technology, China*

**Analysis of Direct-duty-ratio based MPPT control scheme for Integrated Dual-DC Boost Converter [#630]**

Ritam Chakraborty and Olive Ray  
*Indian Institute of Technology Bhubaneswar, India*

**Modified Hybrid Modulation Technique for Cascaded H-Bridge Converter with DC Bus Oscillation [#845]**

Sumit Rohidas Patil, Amir Hussain and Wajiha Shireen  
*University of Houston, United States*

**Power Ramp-Rate Control for Differential Power Processing-based Distributed PV Systems [#172]**

Yinxiao Zhu, Huiqing Wen, Guanying Chu, Qinglei Bu, Xue Wang and Haochen Shi  
*Xi'an Jiaotong - Liverpool University, China; Huazhong University of Science and Technology, China*

**A Comparison of PI-Based and Sorting-Based State of Charge Balancing Methods in Cascaded H-Bridge Converters [#397]**

Gaowen Liang, Ezequiel Rodriguez, Glen Farivar, Naga Brahmendra Yadav Gorla, Neha Beniwal, Josep Pou and Georgios Konstantinou  
*Nanyang Technological University, Singapore; University of New South Wales, Australia*

**Energy Redistribution as a Method for Mitigating Risk of Propagating Thermal Runaway [#741]**

Jacob Mueller, Yuliya Preger, Andrew Kurzawski, Luciano Garcia Rodriguez and John Hewson  
*Sandia National Laboratories, United States*

**An Adaptive Cyber Security Scheme for AC Micro-grids [#333]**

Junjie Xiao, Lu Wang, Zian Qin and Pavol Bauer  
*Delft University of Technology, Delft, Netherlands*

**An Analysis of SoC Self-convergence for Adaptive Droop Control Systems of Battery Energy Storage with Different Capacity [#166]**

Yasushi Eto, Yuichi Noge, Masahito Shoyama and Tadatoshi Babasaki  
*Kyushu University, Japan; NTT Facilities, Inc., Japan*

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**Remote Q/A Session R27 | AC/DC Distribution, AC/DC Microgrids and Renewable Energy Integration**

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*Link available on virtual platform*

**Chairs:** Anshuman Shukla, Fariba Fateh

**Adaptive Droop Controller for PV - Battery Based Microgrids [#729]**

Yusuf Gupta and Mohammad Amin  
*Norwegian University of Science and Technology, Norway*

**A Communication-less Secondary Voltage Control Based on Small-AC-Signal Injection for DC Microgrids [#471]**

Pu Zhao, Zeng Liu, Qing Wang and Jinjun Liu  
*Xi'an Jiaotong University, China*

**Distribution Power Loss Minimization of Energy Storage Systems in DC Microgrids under FDI Attacks [#200]**

Yajie Jiang, Yun Yang, Siew-Chong Tan and Shu Yuen Ron Hui  
*The University of Hong Kong, Hong Kong; The Hong Kong Polytechnic University, Hong Kong; Nanyang Technological University, Hong Kong*

**Fault-Ride Through Strategy for Islanded Microgrids Via Dynamically Reconfigurable Voltage Reference [#574]**

Xia Shen, Wen Huang, Chao Shen, Yang Shen, Zhikang Shuai and Z. John Shen  
*Hunan University, China; Southeast university, China; Illinois Institute of Technology, United States*

**Quantum Approximate Optimization Algorithm-Enabled DER Disturbance Analysis of Networked Microgrids [#1068]**

Hang Jing, Ye Wang, Yan Li, Liang Du and Ziping Wu  
*Penn State University, United States; Duke University, United States; Temple University, United States; ComEd, United States*

**Generator Preventive Maintenance Scheduling in Large Power Systems with High Penetration of Renewable Energy Resources [#226]**

Thanh Tung To, Solmaz Kahourzade and Amin Mahmoudi  
*University of South Australia, Australia; Flinders University, Australia*

**FOPLL Based Synchronization Scheme with LDLMS Control for Solar Fed Microgrid Feeding Hybrid AC/DC Loads [#619]**

Suvom Roy, Farheen Chishti, Bhim Singh and B.K. Panigrahi  
*Indian institute Of Technology, Delhi, India*

**Field Testing of a Hierarchical Model-Free Transactive Control Strategy in a Residential House [#205]**

Mohammed Olama, Kadir Amasyali and Christopher Winstead  
*Oak Ridge National Laboratory, United States*

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**Remote Q/A Session R28 | Power Converter Topologies C**

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*Link available on virtual platform*

**Chairs:** Sandro Calligaro, Fabio Mandrile

**Design and Implementation of Inverted Voltage Balancing Control for Bidirectional Flying- Capacitor DC/DC Converter [#35]**

Hung-Chi Chen and Ding-Hao Lin  
*National Yang Ming Chiao Tung University, Taiwan*

**Triple-Phase Shift Power-Level Controller (TPSPC) For Single-Phase Dual Active Bridge (DAB) DC/DC Converter [#428]**

Hamid Naseem and Jul-Ki Seok  
*Yeungnam University, Korea, Republic of*

**Enhancement of The CCM Operating Region of A Synchronous Buck Converter Using A Flux- Rate Switching-Based Adjustable Inductor [#913]**

Ruman Kalyan Mahapatra, L. Umanand and K. Gopakumar  
*Indian institute of science, India; Indian Institute of Science, India*

**Optimization of Stacked Structure LLC Resonant Converter with Hybrid Modulation Strategy [#747]**

Yuqi Wei and Alan Mantooth  
*University of Arkansas, United States*

**An 80A 48V-Input Capacitor-assisted Dual-Inductor Hybrid Dickson Converter for Large- Conversion-Ratio Applications [#1339]**

Weijie Han, Chen Chen, Jin Liu and Hoi Lee  
*University of Texas at Dallas, United States*

**A Three-Port DC-DC-DC Converter based on Dual Active Bridge Series Resonant Topology for Electric Vehicle DC Fast Charging Applications [#776]**

Md Safayatullah, Reza Rezaii, Fahad Alaql and Issa Batarseh  
*University of Central Florida, United States; Imam Mohammad Ibn Saud Islamic University, Saudi Arabia*

**GaN-Based T-Type Totem-Pole Rectifier with ZVS Control and Reactive Power Regulation [#256]**

Jingjing Sun, Liyan Zhu, Ruiyang Qin, Jie Li, Daniel Costinett and Leon Tolbert  
*The University of Tennessee, Knoxville, United States; The University of Tennessee, Knoxville, United States*



## Quadratic Extended-Duty-Ratio Boost Converter with Voltage Multiplier Cell for High Gain Applications [#1099]

Ankul Gupta, Nikhil Korada, Raja Ayyanar and Madhura Sondharangalla  
*Arizona State University, United States*

## Remote Q/A Session R29 | Design and Performance Assessment of Electric Machines B

*Link available on virtual platform*

**Chairs:** Matthew C. Gardner, Poskovic Emir

### Comparative Study on Slotted and Slotless High-Speed Permanent Magnet Motors with Toroidal Windings [#284]

Fan Xu, Tianran He, Ziqiang Zhu, Hong Bin, Di Wu, Liming Gong and Jintao Chen  
*University of Sheffield, United Kingdom; Midea Group Corporate Research Center, China*

### Design and Analysis of Electric-Excitation Claw-Pole Field-Modulated Machine Considering Effective Harmonics [#251]

Yu Dong, Xianglin Li, Xiaosong Wang, Kejin Lu and Xingtian Feng  
*China University of Petroleum (East China), China; Qingdao University, China*

### A Combined 3-D Geometric and Magnetic Modeling Approach of Coils in Air-Cored Resonant Induction Machines [#1259]

Zhao Jin, Matteo Iacchetti, Alexander Smith, Rajesh Deodhar, Yoshiyuki Komi, Ahmad Abdullallah and Chiaki Umemura  
*The University of Manchester, United Kingdom; IMRA Europe S.A.S. UK Research Centre, United Kingdom; Aisin Corporation, Japan*

### Influence of Rotor Damping Effect on Dynamic Characteristic of Dual-Excited Synchronous Generator with Excitation Control [#533]

Xu Guorui, Fu Yue, Wang Zhenzhen, Zhan Yang, Zhao Haisen and Zhang Yongchang  
*North China Electric Power University, China*

### Improvement of Reactive Power Consumption Ability for Dual-Excited Synchronous Condenser [#632]

Xu Guorui, Li Zijing, Li Zhiqiang, Zhao Haisen, Zhan Yang and Zhang Yongchang  
*North China Electric Power University, China; China Electric Power Research Institute, China*

### Impact of Inverter Switching Harmonics in Detecting Changes in Impedance Due to Broken Rotor Bars [#185]

Lebohang Ralikalakala and Paul Barendse  
*University of Cape Town, South Africa*

### Influence of PWM Excitation on DC Winding Induced Voltage in Wound Field Switched Flux Machines [#605]

Zhongze Wu, Lai Jin, Wentao Zhang, Ying Fan, Wei Hua and Ming Cheng  
*Southeast University, China*

### A Stable and Computationally Efficient Spatial Harmonic Model for Predicting the DC Winding Induced Voltage in WFSF Machine [#80]

Wentao Zhang, Zhongze Wu, Ying Fan, Wei Hua and Ming Cheng  
*Southeast University, China*

### A Motor Capable of Conversion Between Synchronous Motor and Induction Motors with Pole Change for Electric Vehicles [#254]

Hayate Matsumoto and Kazuto Sakai  
*Toyo University, Japan*

## Remote Q/A Session R30 | Converter Control Optimization and Enhancement

*Link available on virtual platform*

**Chairs:** Alessandro Lidozzi, Salvatore Foti

### Computation-Efficient Variable Angle Phase-Shifting PWM Method for Cascaded H-Bridge Converters [#842]

Yiwei Pan, Ariya Sangwongwanich, Thiago Pereira, Yongheng Yang, Marco Liserre and Frede Blaabjerg  
*Aalborg University, Denmark; Kiel University, Germany; Zhejiang University, China*

### Open-Circuit Fault Diagnosis and Fault-Tolerant Control for Coupled-Inductor-Based Aalborg Inverter [#611]

Chengqi Xiao, Weimin Wu, Jianmin Chen, Gang Lu, Eftichios Koutroulis, Henry Shu-Hung Chung and Frede Blaabjerg  
*Shanghai Maritime University, China; Zhejiang HRV Electric Co. Ltd, China; Technical University of Crete, Greece; City University of Hong Kong, China; Aalborg University, Denmark*

### VRFT for Current-Mode Buck Converter with Anti-Windup Compensation [#177]

Naoki Kameya, Yasutaka Fujimoto, Yu Hosoyamada and Toyoaki Suenaga  
*Yokohama National University, Japan; Kyosan Electric Manufacturing Co., Ltd., Japan*

### Stability and Accuracy Evaluation of LCL Coupling Networks for PMSM Emulation PHIL [#1430]

Luca Bigarelli, Marco Di Benedetto, Alessandro Lidozzi and Luca Solero  
*ROMA TRE University, C-PED, Italy*

### A Discrete-Time Domain Modeling of LLC Resonant Converter Considering the Nonlinearity of Voltage-Controlled Oscillator [#59]

Yuecheng Zhang, Xinbo Ruan and Ying Li  
*NUAA, China; University of Nottingham, United Kingdom*

### Active-Damping for Digital Controlled LC-Type Voltage Source Inverter with Positive Proportional Feedback of Filter Capacitor Voltage [#452]

Li Zhang, Haoxin Yang and Yi Tang  
*Huazhong University of Science and Technology, China; Nanyang Technological University, Singapore*

### Exploration of the Pareto Optimization of Bidirectional Isolated DC-DC Power Electronic Converters for More Electric Aircraft [#151]

Alejandro Fernandez-Hernandez, Fernando Gonzalez-Hernando, Asier Garcia-Bediaga, Irma Villar and Gonzalo Abad  
*Ikerlan Technology Research Centre (BRTA), Spain; Mondragon Unibertsitatea, Spain*

### A Novel Online On-State Voltage Drop Measurement Technique for Thyristors [#323]

Yanyong Yang, Dayong Zheng, Xiaofeng Ding and Pinjia Zhang  
*Beihang University, China; Tsinghua University, China*

### Fieldbus Communication Scheme for Modular Converter Systems - Considerations for Minimal Switching Period and Low Data Latency [#1055]

Stefan Rietmann, Simon Fuchs, Simon Beck and Juergen Biela  
*ETH Zurich, HPE, Switzerland*