

PowerAmerica Members Presenting at APEC 2019

SUN. 3/17

Time	Room	Title and Presenter
9:30 a.m.–1 p.m.		PE SEMINAR: Design & Integration of WBG Solid State Circuit Protection Douglas Hopkins, NC State University
9:30 a.m.–1 p.m.		PE SEMINAR: Design Issues for High Power and High Performance SiC Converters Jiangbio He, Juan Sabate, Michael Schutten, Yash Veer Singh, Zheyu Zhang, GE Global Research Center
9:30 a.m.–1 p.m.		PE SEMINAR: WBG Device Characterization for Converter Design: Challenges and Solutions GE Global Research; University of Tennessee at Knoxville
2:30–6 p.m.		PE SEMINAR: High Power and Medium Voltage Applications of Wide Bandgap Power Devices Jin Wang and Mark Scott, The Ohio State University
2:30–6 p.m.		PE SEMINAR: Ten Most Commonly Asked Questions on Migrating from Si to SiC MOSFET-based Converter Designs David Levett, Infineon

MON. 3/18

8:30 a.m.–12 p.m.		PE SEMINAR: Systematic Approach to Control of Electric Drives and 3 Phase Converters Tony O’Gorman and Vladimir Blasko, UTRC
8:30 a.m.–12 p.m.		PE SEMINAR: Simulation and Analysis Applied to the Design of Buck Topologies Christopher Basso, ON Semiconductor
8:30 a.m.–12 p.m.		PE SEMINAR: What Makes SiC Better and How Do I Change My System to Benefit Xuning Zhang, Monolith Semiconductor

TUE. 3/19

8:30 a.m.–12 p.m.	211AB	TECHNICAL SESSION: Hybrid DC-DC Converters Multiphase Control for Robust and Complete Soft-Charging Operation of Dual Inductor Hybrid Converter Tianshi Xie , Ratul Das , Gab-Su Seo, Dragan Maksimovic , and Hanh-Phuc Le, UC-Boulder
8:30 a.m.–12 p.m.	212AB	TECHNICAL SESSION: Power Converter Modeling and Simulation Analytical Analysis of AC and DC Side Harmonics of Three-Level Active Neutral Point Clamped Inverter with Space Vector Modulation Fred Wang, Leon M. Tolbert and Daniel J. Costinett, University of Tennessee-Knoxville
8:30 a.m.–12 p.m.	213C	TECHNICAL SESSION: Photovoltaic Power Conversion Systems Power Pulsation Decoupling in a Series-Stacked PV-Battery Inverter Namwon Kim and Babak Parkhideh, University of North Carolina-Charlotte
8:30 a.m.–12 p.m.	213D	TECHNICAL SESSION: Control of DC-DC Converters Simplified Optimal Trajectory Control for 1 MHz LLC Converter with Wide Input Voltage Range Qiang Li and Fred C. Lee, Virginia Tech Dynamic Interleaving of Multi-Phase Synchronous DC-DC Converters with ZVS Wensong Yu and Iqbal Husain, NC State University
8:30 a.m.–12 p.m.	303AB	TECHNICAL SESSION: Drives & Inverters: Topologies & Control Coupled Inductor Design for Interleaved Three-Level Active Neutral Point Clamped Inverters Considering EMI Noise Reduction Fred Wang, Leon M. Tolbert, Daniel J. Costinett, University of Tennessee-Knoxville
8:30 a.m.–12 p.m.	304CD	TECHNICAL SESSION: WBG Applications Design Considerations of High-Voltage-Insulated Gate Drive Power Supply for 10 kV SiC MOSFET in Medium-Voltage Application Fred Wang and Leon M. Tolbert, University of Tennessee-Knoxville A Reliable Ultra-Fast Three Step Short Circuit Protection Method for E-Mode GaN HEMTs Jin Wang, The Ohio State University and Sandeep Bala, ABB Benchmarking and Qualification of Gate Drivers for Medium Voltage (MV) Operation Using 10 kV SiC MOSFETs Subhashish Bhattacharya, NC State University
8:30–11:55 a.m.	210D	INDUSTRY SESSION: Getting Up to Speed on Switching: Wide Bandgap and Other High Performance Components High Performance SiC MOSFETs and Diodes Fabricated in High-Volume 6-Inch CMOS Fab Sujit Banerjee, Monolith and Christophe Warin, Microsemi Avalanche and Short-circuit Robustness of High Voltage SiC DMOSFETs Ranbir Singh, GeneSiC CoolSiC Power MOSFETs: New Additions to the Portfolio Peter Friedrichs, Infineon How GaN Helps Power Supplies Achieve Extraordinary Levels of Efficiency Eric Persson, Infineon
8:30–11:55 a.m.	213B	INDUSTRY SESSION: Market Research What Can The Power Electronics Industry Expect from SiC & GaN? Ana Villamor, ON Semiconductor
5-6:30 p.m.	Ballroom D	RAP SESSION: When Will WBG Have Significant Volume? Is the System Benefit Worth the Cost? Is WBG Reliable? Sandeep Bala, ABB; Tim McDonald, Infineon; Chris Dries, United SiC

Time	Room	Title and Presenter
8:30-10:10 a.m.	212AB	TECHNICAL SESSION: Power Device and Modeling Chair: Sandeep Bala, ABB and Rolando Burgos, Virginia Tech New Dynamic Power MOSFET Model to Determine Maximum Device Operating Frequency Jayant Baliga and Douglas Hopkins, NC State University
8:30-10:10 a.m.	213C	TECHNICAL SESSION: Microgrid Applications Operation of a Flexible Dynamic Boundary Microgrid with Multiple Islands Fred Wang and Leon Tolbert, University of Tennessee-Knoxville
8:30-10:10 a.m.	213D	TECHNICAL SESSION: Rectifiers for EV Charging A 12.47 kV Medium Voltage Input 350 kW EV Fast Charger Using 10 kV SiC MOSFETs Srdjan Lukic, N.C. State University
8:30-10:10 a.m.	304AB	TECHNICAL SESSION: Optimization of Wireless Power Transfer Systems Soft Switching Realization of LCCL-LC Resonant Converter for Wireless Power Transfer Application Qiang Li and Fred C. Lee, Virginia Tech
8:30-10:10 a.m.	210BC	INDUSTRY SESSION: GaN in the Data Center eGaN Based High-Density Unregulated 48 V to x V LLC Converters with $\geq 98\%$ Efficiency for Future Data Centers Fred C. Lee and Qiang Li, Virginia Tech
8:30-10:10 a.m.	210D	INDUSTRY SESSION: Modules Chair: David Levett, Infineon A Modular and Scalable High Performance Power Module for Silicon Carbide Devices Ty McNutt, Wolfspeed-Fayetteville A Medium Voltage (10 kV), Low Inductance, SiC Power Module for Next-Generation Electric Power Distribution Applications Ty McNutt, Wolfspeed-Fayetteville
2-5:30 p.m.	211AB	TECHNICAL SESSION: Single-Phase AC-DC Converters Chair: Qiang Li, Virginia Tech Inductor Design and ZVS Control for a GaN-Based High Efficiency CRM Totem-Pole PFC Converter Daniel J. Costinett and Leon M. Tolbert, University of Tennessee-Knoxville
2-5:30 p.m.	213C	TECHNICAL SESSION: Wireless Power Transfer Applications Design and Evaluation of a Multilevel Switched Capacitor Rectifier for Wireless Fast Charging Daniel J. Costinett, University of Tennessee-Knoxville
2-5:30 p.m.	303AB	TECHNICAL SESSION: Driving WBG Devices Chair: Alireza Dayerizadeh, NC State In Depth Analysis of Driving Loss and Driving Power Supply Structure for SiC MOSFETs Sujit Banerjee, Monolith Semiconductor Current Source Gate Drive to Reduce Switching Loss for SiC MOSFETs Leon M. Tolbert, Fred Wang, and Daniel J. Costinett, University of Tennessee-Knoxville
2-5:30 p.m.	303CD	TECHNICAL SESSION: Drivers and Inverters: Parameter Identification, Measurement and Diagnostics Phase Current Reconstruction Based on Rogowski Coils Integrated on Gate Driver of SiC MOSFET Half-Bridge Module for Continuous and Discontinuous PWM Inverter Applications Rolando Burgos, Virginia Tech; Marko Jaksic, Mehrdad Teimor and Brian Peaslee, General Motors
2-5:30 p.m.	304CD	TECHNICAL SESSION: Transportation/Storage/Grid Stability Analysis of a Medium Voltage Cascaded Converter System with Reduced DC-Link Capacitance Subhashish Bhattacharya, N.C. State
2-5:25 p.m.	210A	INDUSTRY SESSION: Making Power Sources Small with 3-D Packaging Solutions Efficient Grid-to-Battery Power Electronics for EVs Ty McNutt, Wolfspeed-Fayetteville; Dave Grider and Edward Van Brundt, Wolfspeed
2-5:25 p.m.	210BC	INDUSTRY SESSION: Enablers for Transportation Electrification Silicon Carbide Inverter Development, Inverter Testing and Findings from Heavy-Duty Vehicles Brij Singh, John Deere Holistic Thermal Management Kevin Bennion, NREL
2-5:25 p.m.	210D	INDUSTRY SESSION: Current Reliability and Product Qualification Topics for SiC and GaN Wide Bandgap Devices Meeting Industry Requirements for GaN Device Reliability Tim McDonald, Infineon Performance, Reliability and Yield Considerations in State-of-the-Art SiC Diode and MosFET Technologies During Ramp-Up Thomas Neyer, ON Semiconductor SiC Device Reliability Don Gajewski, Wolfspeed

Time	Room	Title and Presenter
8:30-11:15 a.m.	211AB	TECHNICAL SESSION: Multilevel and Multiphase AC-DC Converters <i>Chair: Daniel Costinett, University of Tennessee-Knoxville</i> Design and Implementation of Forced Air-Cooled, 140kHz, 20kW SiC MOSFET Based Vienna PFC Wensong Yu, NC State University
8:30-11:15 a.m.	213D	TECHNICAL SESSION: Control Strategies for Improving Quality and Performance A Simple Control to Reduce Device Over-Voltage Caused by Non-Active Switch Loop in Three-Level ANPC Converters Fred Wang, and Leon M. Tolbert, University of Tennessee-Knoxville
8:30-11:15 a.m.	303AB	TECHNICAL SESSION: SiC and GaN-based Power Converters <i>Chair: Victor Veliadis, PowerAmerica</i>
8:30-11:15 a.m.	303CD	TECHNICAL SESSION: Magnetics Optimization Improved Partial Cancellation Method for High Frequency Core Loss Measurement Qiang Li, and Fred C. Lee, Virginia Tech Optimized Design of Integrated PCB-Winding Transformer for MHz LLC Converter Qiang Li and Fred C. Lee, Virginia Tech
8:30-11:15 a.m.	304CD	TECHNICAL SESSION: Wireless Power Transfer Design Techniques Combined Foreign Object Detection and Live Object Protection in Wireless Power Transfer Systems via Real-Time Thermal Camera Analysis Srdjan Lukic, NC State
8:30-11:15 a.m.	209AB	INDUSTRY SESSION: Production Use Cases of WBG Semiconductors <i>Chair: Tim McDonald, Infineon</i> Silicon Carbide Inverter Technology Development - A Success Story Brij Singh, John Deere Super High Efficiency SHE2 Telecom Rectifier Provides Record Efficiency With Cost Effective GaN Based Power Conversion Erik Persson, Infineon
8:30-11:25 a.m.	210BC	INDUSTRY SESSION: Advances in the Adoption of WBG Semiconductors in Commercial and Industrial Applications <i>Chair: Jim LeMunyon, PowerAmerica</i> Designing with UnitedSiC FETs Pete Losee, United SiC WBG Automotive Inverters and Chargers Kevin Bai, University of Tennessee-Knoxville Applications for WBG Devices Georgios Demetriades, ABB GaN Power IC Adoption Takes off in Fast Charging Market Dan Kinzer, Navitas Gaining Customer Acceptance of SiC Based Power Electronics Rick Eddins, GE
8:30-11:25 a.m.	210D	INDUSTRY SESSION: SiC Applications <i>Chair: Jeff Casady, Wolfspeed</i> Reliability of Silicon Carbide Power Modules Using POL-kW Packaging Technology Rick Eddins, GE Global Research High Efficiency 60kW Boost Converter for Solar Power Generation Julius Rice, Wolfspeed
1:45-3:25 p.m.	213B	INDUSTRY SESSION: Test Continuous Operation Evaluation Platform for SiC MOSFETs and Diodes Sujit Banerjee, Monolith and Christophe Warin, Microsemi
2:45-5 p.m.	211AB	TECHNICAL SESSION: DC-DC Converter Practical Implementation and Efficiency Evaluation of a Phase Shifted Full Bridge DC-DC Converter Using Radiation Hardened GaN FETs for Space Applications Rolando Burgos, Virginia Tech
2:45-5 p.m.	303CD	TECHNICAL SESSION: Motor Drive Modulation and Control Strategies A Hybrid PWM Modulation for EMI Filter Size Reduction in a 10 kW GaN-Based Three Phase Inverter Jin Wang, The Ohio State University and Sandeep Bala, ABB
2:45-5 p.m.	304CD	TECHNICAL SESSION: Industrial Applications A Regulated 48V-to-1V/100A 90.9%-Efficient Hybrid Converter for PoI Applications in Data Centers and Telecommunication Systems Ratul Das and Hanh-Phuc Le, UC-Boulder Identifying Deteriorated or Contaminated Power System Components from RF Emissions Yilmaz Sozer, University of Akron

*This agenda is subject to change, please refer to APEC's website for updates.



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Acknowledgment: The information, data, or work presented herein was funded in part by the Office of Energy Efficiency and Renewable Energy (EERE), U.S. Department of Energy, under Award Number DE-EE0006521.

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