

# Northeast Power Electronics Symposium (NEPES)

## SCHEDULE THURSDAY | NOVEMBER 21, 2024

	<b>08:00 am – 09:00 am</b>	<b>Registration and Breakfast</b>
	<b>09:00 am – 09:10 am</b>	<b>Welcome Notes</b> <i>UConn – Prof. Ali Bazzi</i> <i>Wolfspeed – Mr. Kevin Mead, Dr. Ugo Ghisla, Dr. Ty McNutt, and Dr. Ashish Kumar</i>
Wolfspeed Workshop	<b>09:10 am – 09:30 am</b>	<b>Silicon Carbide Basics</b> <i>Technology comparison: SiC vs Si vs GaN</i>
	<b>09:30 am – 10:15 am</b>	<b>Simulation and Models</b> <i>Predict junction temperatures</i> <i>Minimize voltage overshoots</i> <i>Use virtual prototypes to inform hardware decisions and/or facilitate optimization</i>
	<b>10:15 am – 10:30 am</b>	<b>Break</b>
	<b>10:30 am – 11:00 am</b>	<b>SiC die Technology Discussion</b>
	<b>11:00 am – 11:45 am</b>	<b>Future of Packaging</b> <i>Top side cooling</i> <i>Overmolded modules</i> <i>Sintering considerations</i>
	<b>11:45 am – 12:15 pm</b>	<b>SiC Reliability</b> <i>Cosmic ray reliability</i> <i>Neutron failure mechanism</i>
	<b>12:15 pm – 01:00 pm</b>	<b>Lunch</b>
	<b>01:00 pm – 02:00 pm</b>	<b>Demonstrations</b> <i>SpeedVal Demo modular evaluation platform</i> <i>300kW and 600 kW reference designs</i>
	<b>02:00 pm – 03:00 pm</b>	<b>Thermal Considerations</b> <i>Fundamentals of thermal stack up</i> <i>System level thermal characterizations</i>
	<b>03:00 pm – 03:15 pm</b>	<b>Break</b>
	<b>03:15 pm – 04:15 pm</b>	<b>High Voltage Applications</b> <i>Review of 1 MW inverter for motor drive applications</i>
	<b>04:15 pm – 05:15 pm</b>	<b>Best Design Practices</b> <i>Gate driver circuits</i> <i>Proper layout</i> <i>Paralleling components</i>
	<b>05:15 pm – 05:30 pm</b>	<b>Break</b>
	<b>05:30 pm – 07:30 pm</b>	<b>IEEE PELS CT Chapter Roundtable: Applications &amp; Reliability of WBG Devices in Space and Industrial Environments</b> <i>Dr. Ty McNutt, Wolfspeed</i> <i>Dr. Joseph Kozak, Johns Hopkins APL</i>
	<b>05:30 pm – 08:00 pm</b>	<b>Reception and Refreshments</b>

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## SCHEDULE FRIDAY | NOVEMBER 22, 2024

08:00 am – 08:30 am	Registration and Breakfast	
08:30 am – 08:50 am	Welcome Notes	<b>Prof. Ali Bazzi</b> Dean Ji-Cheng Zhao
08:50 am – 09:20 am	Integrated Power Train Development for Aerospace Electrified Propulsion	<b>Dr. Xin Wu</b> ARPA-E
09:20 am – 09:50 am	Intelligent Power Module Designs Offering Onboard State of Health and Next Generation Thermal Management Suitable for Ga2O3 Power Devices	<b>Dr. Faisal Khan</b> NREL
09:50 am – 10:05 am	Break	
10:05 am – 10:35 am	Trends in the Development of Electrical Drives, Motors and Control over the Last 50 Years	<b>Dr. Vladimir Blasko</b> Sikorsky-LM
10:35 am – 11:00 am	High-Performance Capacitor-based Power Conversion for Electrified Aircraft	<b>Prof. Samantha Coday</b> MIT
11:00 am – 11:15 am	Break	
11:15 am – 11:40 pm	Research on Simplified Hybrid Power Conversion Systems with Integrated Energy Management and Scalable Design for Small UAV	<b>Prof. Yeonho Jeong</b> University of Rhode Island
11:40 pm – 12:30 pm	<b>Panel 1: Power Electronics Challenges in Marine and Aerospace Applications</b> <i>Dr. Zubair A. Baig, Pratt &amp; Whitney</i> <i>Mr. Jack Chapman, Electric Boat</i> <i>Dr. Vladimir Blasko, Sikorsky-LM</i> <i>Dr. Dan Martin, Wolfspeed</i>	<b>Dr. Parag Kshirsagar</b> RTRC
12:30 pm – 01:15 pm	Lunch	
01:15 pm – 01:40 pm	Fault-tolerant and self-healing power electronics: An Overview	<b>Prof. Ali Bazzi</b> UConn
01:40 pm – 02:05 pm	Talk 4: Trends in Motor Drive Technology for Elevator Applications	<b>Mr. P. Nagarajan</b> Otis
02:05 pm – 02:30 pm	Fast Speed Protection Brought by Solid State Circuit Breakers in Medium Voltage DC Power Systems	<b>Prof. Matthias Preindl</b> Columbia University
02:30 pm – 02:45 pm	Break	
02:45 pm – 03:10 pm	Fast Speed Protection Brought by Solid State Circuit Breakers in Medium Voltage DC Power Systems	<b>Prof. Hua Zhang</b> Lehigh University
03:10 pm – 04:00 pm	<b>Panel 2: Grid Power Electronics – Goals and Challenges</b> <i>Dr. Fernando Fachini, Dominion Energy</i> <i>Mr. Gustavo Ortenzi, Avangrid</i> <i>Mr. Steffen Zeigler, Eversource Energy</i>	<b>Prof. Fang Luo</b> Stony Brook
04:00 pm – 04:15 pm	Break	
04:15 pm – 04:40 pm	Dynamic Capacitive Wireless Charging of Electrified Vehicles	<b>Prof. Khurram Afridi</b> Cornell University
04:40 pm – 04:50 pm	Move to IPB Lobby	
04:50 pm – 06:00 pm	Reception and Poster/Demos Presentation	
06:00 pm – 07:30 pm	Power Electronics Lab Tour	