

## **Bringing More Power To 2022**

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The combined Santa Clara Valley, San Francisco, and Oakland/East Bay Chapter of the IEEE Power Electronics Society is bringing more events to power electronics professionals and students this year. The chapter has been actively promoting power electronics technology via educational seminars and workshops and supporting students in the field of power electronics with its travel assistance program. For the efforts, the chapter was recognized with the unprecedented "triple crown," winning the 2017 IEEE PELS Global Best Chapter Award, the IEEE Region 6 (Western U.S.) Best Chapter Award, and the IEEE Santa Clara Valley Section Best Chapter Award. This year the chapter will host a series of eight webinars on a range of topics in power electronics (see the table).

In the next webinar on April 21, 2022, the chapter will host Maurizio Di Paolo Emilio, the editor-in-chief of the Power Electronics News and EEWeb, who will present the topic "Powering the EV Revolution". He will discuss how higher density batteries, more efficient electric motors, and new wide-bandgap semiconductor devices are enabling innovative power electronics solutions to advance vehicle electrification. This event is the first in a series of three webinars dedicated to topics related to vehicle electrification and wide bandgap semiconductors. The registration is free and open at [https://bit.ly/sfbac\\_ev](https://bit.ly/sfbac_ev).

Dragan Maksimovic, professor at the University of Colorado, Boulder, will present the webinar "High-Density SiC-Based Composite Converters for Electric Drivetrain Applications" on May 26, 2022. Maksimovic will discuss design and implementation aspects of traction inverters using SiC power devices and advanced power topologies.

The series concludes on June 22, 2022, with the webinar titled "Reliability of GaN Power Transistors in Power Supply Applications" by Sandeep Bahl, distinguished member of technical staff at Texas Instruments. GaN power transistors are being quickly adopted in fast chargers and high-density adapters while competing with superjunction Si and SiC MOSFETs in automotive applications. Undoubtedly, the topic of GaN device reliability will be of great interest to both device manufacturers and system designers.

After the summer hiatus, the chapter resumes its activities on September 15, 2022, with the webinar "Power Electronics Hardware Design for Manufacturability" presented by Grant Pitel, CTO of Magna-Power Electronics. Pitel will discuss practical aspects of power electronics design and manufacturing processes from PCB design and vendor selection to prototype and design controls to electromechanical integration.

On October 27, 2022, Bertan Bakkaloglu, professor at Arizona State University, will discuss "Disturbance-Free BIST Techniques for Loop Characterization of DC-DC Converters and LDOs." Bakkaloglu will present techniques to track changes in the dynamic loop characteristics of dc-dc converters without disturbing the normal mode of operation using built-in self-test capabilities.

The chapter will wrap up its 2022 educational program on 12/8/2022 with the webinar titled "Common Mode EMI Analysis and Mitigation Methods in Three-Phase Inverters" presented by Giovanna Oriti, professor of Electrical Energy Systems at the Naval Postgraduate School.

In addition to the upcoming webinars, the chapter has already hosted two webinars this year. On January 27, it started with the webinar "SMART Power Flow Controllers – A Necessity for Future Power Grid" presented by Kalyan Sen, president and CTO of Sen Engineering Solutions. Sen introduced basic principles of the power flow control theory, gave an overview of the most commonly used power flow controllers, and discussed future trends.

Another webinar, held on March 3, 2022, was titled "High Power Density High Efficiency Altitude-ready Solid-state Circuit Breaker for Hybrid Electric Propulsion". Di Zhang, the associate professor at the Naval Postgraduate School in Monterey, Calif., discussed the application background, design principles, and technical solutions to meet requirements for the solid-state circuit breaker rated at 2,000 V and 1,200 A for a NASA hybrid electric propulsion application intended to operate at altitudes above 35,000 ft.

All 2022 chapter events are virtual and registration is free to facilitate broad participation. For more information on these and future events, please visit the chapter's website at <https://ewh.ieee.org/r6/scv/pels/futureevents.html>. In case you missed an event, you can find recordings and

copies of presentations in the Archives section of the website. You can also follow the chapter on Twitter [@sfbac\\_pels](https://twitter.com/sfbac_pels), on LinkedIn at [linkedin.com/in/sfbac-pels-2851a4143](https://www.linkedin.com/in/sfbac-pels-2851a4143), and on Eventbrite at <http://sfbacpels.eventbrite.com>.

Table. Lineup for the Santa Clara Valley, San Francisco, and Oakland/East Bay Chapter of the IEEE PELS' 2022 webinar series.

Speaker	Affiliation	Title	Event Topic	Date	Time (Pacific)
Kalyan K Sen	Sen Engineering Solutions, Inc.	President & CTO	SMART Power Flow Controllers: A Necessity for Future Power Grids	1/27/22	11:00 AM
Di Zhang	Naval Postgraduate School	Associate professor	High Power Density High Efficiency Altitude-ready Solid-state Circuit Breaker for Hybrid Electric Propulsion	3/2/22	10:00 AM
Maurizio Di Paolo Emilio	AspenCore	Editor	Powering the EV Revolution	4/21/22	10:00 AM
Sandeep Bahl	Texas Instruments	Distinguished member of technical staff	Reliability of GaN power transistors in power supply applications	5/26/22	11:00 AM
Dragan Maksimovic	University of Colorado Boulder	Professor	TBD : related to higher-power, SiC-based drivetrain apps	6/23/22	11:00 AM
Grant Pitel	Magna Power	CTO	Power Electronics Hardware Design for Manufacturability	9/15/22	11:00 AM
Bertan Bakkaloglu	ASU	Professor	Disturbance-Free BIST Techniques for Loop Characterization of DCDC Converters and LDOs	10/27/22	11:00 AM
Giovanna Oriti	Naval Postgraduate School	Professor	Common Mode EMI Analysis and Mitigation Methods in Three-Phase Inverters	12/8/22	11:00 AM