

GRAINGER LECTURE SERIES PRESENTATION

Advances in Switched-Mode Power Converters Enabled by Converter Topologies, Soft Switching Techniques, and Wide Bandgap Semiconductors

Dr. Dragan Maksimovic

IEEE PELS Distinguished Lecturer

Professor, University of Colorado at Boulder

Director, Colorado Power Electronics Center

Tuesday, September 12, 2017, 11:00 AM

5070 ECE Building



Abstract: This seminar starts with an introduction to direct and indirect power concepts in switched-mode power converters leading to efficiency improvement approaches based on converter topologies, soft-switching techniques, and use of wide bandgap (SiC or GaN) power semiconductor devices. Challenges associated with efficient indirect power processing include more complex control, and reliability concerns due to increased numbers of power semiconductor components. Addressing these challenges requires innovations in circuit integration, packaging, and control techniques. Examples discussed include high-density, high efficiency SiC-based composite converter architectures for electric vehicle applications, and very high frequency converters based on custom GaN power integrated circuits.

Biography: Dragan Maksimovic received B.S. and M.S. degrees from the University of Belgrade, and his Ph.D. degree from the California Institute of Technology, Pasadena, in 1989. Since 1992, he has been with the University of Colorado at Boulder, where he is currently a Charles V. Schelke endowed Professor and Director of the Colorado Power Electronics Center (CoPEC). He has co-authored over 250 papers, and textbooks Fundamentals of Power Electronics (2nd edition), and Digital Control of High-Frequency Switched-Mode Power Converters. Prof. Maksimovic is a Fellow of the IEEE, and a recipient of the IEEE PELS Modeling and Control Technical Achievement Award. His current research interests include power electronics for renewable energy sources and energy efficiency, high frequency power conversion using wide bandgap semiconductors, digital control of switched-mode power converters, as well as analog, digital and mixed-signal integrated circuits for power management applications.