

COMPEL 2021



IEEE 22th Workshop on Control and Modelling for Power Electronics

Virtual event, Colombia, November 2nd – 5th, 2021



COMPEL 2021 PANEL & DIALOG SESSION SCHEDULE

November 3rd 2021

PANEL SESSION

ADVANCED CONTROL OF POWER CONVERTERS

NOVEMBER 3rd, 2021, 8:00 AM - 9:00 AM (GMT-5)

8:00 AM

P17- Performance Evaluation of a Current DC-Link AC-AC Converter with Novel Monolithic Bidirectional 600V GaN Switches and New Advanced Control/Modulation Scheme

Neha Nain¹, Jonas Huber¹, Johann Walter Kolar¹, Kenneth Kin Leong² and Bhargav Pandya²

¹ETH ZURICH, ²INFINEON

8:15 AM

P19- Design of a Digital Peak V2 Controller for the Synchronous Boost Converter with Negligible ESR

Ekansh Kapoor¹, Amit Singha¹ and Ravada Madhu Sudhan Rao

¹Indian Institute of Technology (IIT) Mandi

8:30 AM

P7- Modified Capacitor Voltage Control Strategy of Stacked Multicell Converter with Model Predictive Control

Zehong Liao, Paul Judge, Michael Merlin and Stephen Finney

School of Engineering, University of Edinburgh

8:45 AM

LIVE Q&A



DIALOG SESSION

MODELING AND STABILITY OF POWER CONVERTERS
NOVEMBER 3rd, 2021, 9:00 AM - 10:00 AM (GMT-5)

P109- A Multi-Mode Four-Switch Buck-Boost Derived DC-DC Converter with an Intermediate Battery Interface for Solar Thermoelectric Generation

Firehiwot Gurara, Sreyam Sinha and Khurram Afridi
Cornell University

P43-Intrinsic and Robust Voltage Balancing of FCML Converters with Coupled Inductors

Daniel Zhou, Avi Bendory, Ping Wang and Minjie Chen
Princeton University

P125- Automatic determination of the amplitude of the perturbation signal for the non-parametric identification of DC/DC switching converters

Marlon Granda, Pablo Zumel and Cristina Fernandez
Universidad Carlos III de Madrid

P116- Adaptive Virtual Synchronous Machine Applied to Four-Leg Three-Phase VSC

Ana Marin-Hurtado¹, Walter Gil-González² and Andrés Escobar-Mejía¹
¹Universidad Tecnológica de Pereira, ²Institución Universitaria Pascual Bravo

P57- Modeling and Analysis of Resonant Switched-Capacitor Converters with Finite Terminal Capacitances

Yicheng Zhu, Zichao Ye and Robert Pilawa
University of California, Berkeley

P59- Comparison of Simulation of Dual Active Bridge in Different Simulators and Using Different Simulation Methods

Shiyuan Yin¹, Suman Debnath², Qianxue Xia¹, Shilpa Marti² and Maryam Saeedifard¹
¹Georgia Institute of Technology, ²Oak Ridge National Laboratory

P6- Improved Noise Immunity for Two-Sample PLL Applicable to Single-Phase PFCs

Paula Lamo¹, Francisco J. Azcondo² and Alberto Pigazo²
¹Universidad Internacional de La Rioja, ²Universidad de Cantabria

P66- Comparison of Inverter Topologies for High-Speed Motor Drive Applications

Mohammad Qasim and David Perreault
Massachusetts Institute of Technology



P72- New Third-Harmonic Injection Modulation Reducing the DC-Link Power Pulsation Buffer Requirement of Phase-Modular Isolated PFC Three-Phase AC/DC Converter Systems

Spasoje Miric¹, David Menzi¹, Jon Azurza Anderson², Matthias Joachim Kasper² and Johann Walter Kolar¹
¹PES ETH Zurich, Infineon²

P75- ZVS and Parametric Analysis for Fly-Buck Converter

Lee Gill, Matthew McDonough and Jason Neely
Sandia National Laboratories

P34- A Partial Power Processing MMC Topology for Direct AC/AC Power Conversion

Anjana Wijesekera, Yuan Li and Gregory Kish
University of Alberta

P62- An Accurate Approach to Calculate and Measure Capacitor Voltage and Inductor Current Levels in Hybrid Converters

Ratul Das and Hanh-Phuc Le
University of California San Diego

P100- A Modular Solid State Transformer for Future Hybrid Distribution Network

Jonathan Lillo¹, Felix Rojas¹, Diego Verdugo², Mohammed Azharuddin³ and Javier Pereda¹
¹Pontificia Universidad Católica de Chile, ²Universidad de Santiago de Chile, ³Technische Universität München

P87- Multidimensional Extensions to Generalized Averaged Models for Multi-Frequency-Excited Dynamic Systems

Kartikeya Jayadurga Prasad Veeramraju and Jonathan Kimball
Missouri University of Science and Technology

DIALOG SESSION

MODELLING AND STABILITY OF GRID TIED POWER CONVERTERS

NOVEMBER 3rd, 2021, 10:00 AM - 11:00 AM (GMT-5)

P4- Versatile Measurement Method for Three-Phase Impedance in a Two-Axis Domain

Kazuki Yomura, Toshiji Kato and Kaoru Inoue
Doshisha University

P70- A Simplified SISO Small-Signal Model for Analyzing Control Loops Interaction of Grid-Forming Converter with Droop Control

Liang Huang, Chao Wu, Dao Zhou and Frede Blaabjerg
Aalborg University



P127- Accurate Power-Sharing between Grid-Forming and Grid-Following Inverters

Fahmid Sadeque, Dushyant Sharma and Behrooz Mirafzal
Kansas State University

P111- Coherency Enforcement Control Scheme for Cluster of Grid-forming Inverters in Power Electronics-Dominated Grid

Muhammad F. Umar, Mohsen Hosseinzadehtaher and Mohammad B. Shadmand
University of Illinois at Chicago

P33- Averaged Dynamic Model of Three-level NPC Grid-following Inverter for Examining Neutral-point Instability

D Venkatramanan¹, Brian Johnson² and Sairaj Dhople¹
¹University of Minnesota, ²University of Washington

P119- Modeling and Comparison of Unbalanced Load Compensation Methods in DFIG Systems Based on Mechanical Constraints

Rasool Peykarporsan¹, Soroush Oshnoei¹, Subham Sahoo² and Frede Blaabjerg²
¹Shahid Beheshti University of Iran, ²Aalborg University

P128- A Model-Reference Adaptive Direct-Power Control Scheme for Grid-Interactive Inverters

Mehmetcan Gursoy and Fariba Fateh
Kansas State University

P95- Robust H_∞ Current Control of Three-Phase Grid-Connected Voltage Source Converters Using Linear Matrix Inequalities

Hosein Gholami-Khesht, Pooya Davari, Mateja Novak and Frede Blaabjerg
Aalborg University

P42- Low-Inertia Grid-Forming Control with Large Phase Angle Jump Capability for Converters With Small Energy Storage

Malte Eggers and Sibylle Dieckerhoff
Technische Universität Berlin

P12- Control Method and Operational Impact of Decoupling AC and DC Powers During a Frequency Event in the Modular Multilevel Converter Using Internal Energy Storage

Agatha Williams-Kelly and Michaël Merlin
University of Edinburgh

P9- Fast Oscillation Source Location Method Based on Instantaneous Active Power Direction

Songda Wang and Dongsheng Yang
Eindhoven University of Technology



PANEL SESSION

COMPONENT LEVEL DESIGN AND SIMULATION

NOVEMBER 3rd, 2021, 12:30 PM - 13:30 PM (GMT-5)

12:30 PM

P69 - Transfer Learning Methods for Data-Driven Magnetic Core Loss Modeling

Evan Dogariu¹, Haoran Li¹, Shukai Wang¹, Min Luo² and Minjie Chen¹

¹Princeton University, ²Plexim GmbH

12:45 PM

P22 - A High Frequency Resonant Gate Driver for SiC MOSFETs

Zhechi Ye, Zikang Tong and Juan Rivas-Davila

Stanford University

13:00 PM

P28 - Sequential-Drive Switched Capacitor Circuits for Electrostatic Loads: Modelling and Comparison

Yanqiao Li, Bahlakoana Mabetha and Jason Stauth

Dartmouth College

13:15 PM

LIVE Q&A

PANEL SESSION

DESIGN, OPTIMISATION AND RELIABILITY

NOVEMBER 3rd, 2021, 13:30 PM - 14:30 PM (GMT-5)

13:30 PM

P118– Mitigation of MMC High-frequency Resonance by Narrowband Damping

Pengxiang Huang and Jian Sun

Rensselaer Polytechnic Institute

13:45 PM

P77– Multi-Converter System Modelling in Cost for Reliability Studies

Monika Sandelic, Amirali Davoodi, Ariya Sangwongwanich, Saeed Peyghami and Frede Blaabjerg

Aalborg University



14:00 PM

P53– Reduce-Order Analysis and Circuit-Level Cost Function for the Numerical Optimization of Power Electronics Modules

Mark Cairnie¹, Christina DiMarino¹, Paul Evans² and Neo Lophitis²

¹Center for Power Electronics Systems at Virginia Tech, ²The University of Nottingham

14:15 PM

LIVE Q&A

PANEL SESSION

MODELING AND STABILITY OF GRID TIED POWER CONVERTERS

NOVEMBER 3rd, 2021, 14:30 PM - 15:30 PM (GMT-5)

14:30 PM

P36- Bifurcation-Based Transient Stability Analysis of Grid-Forming Converters with DC-Link Voltage Controller

Cheng Luo¹, Teng Liu², Xiongfei Wang² and Xikui Ma¹

¹Xi'an Jiaotong University, ²Aalborg University

14:45 PM

P88- Synthetic Reference based Transition Optimal Control of Inverter for Surge-Current-Free Rapid Interface to Grid

Mateo Greidanus and Sudip Mazumder

University of Illinois Chicago

15:00PM

P44- A Physics and Data Oriented Cyber Attack Profile Emulation for Grid Connected PV Systems

V S Bharath Kurukuru¹, Mohammed Ali Khan¹, Subham Sahoo² and Frede Blaabjerg²

¹Jamia Millia Islamia, ²Aalborg University

15:15 PM

LIVE Q&A



PANEL SESSION

MODELING AND STABILITY OF POWER CONVERTERS

NOVEMBER 3rd, 2021, 15:30 PM - 16:30 PM (GMT-5)

15:30 PM

P92- Broadly-Applicable Accurate Analytical Steady-State Model for Class-E Inverters

Yuetao Hou¹, Mohammad Daryaei², Ali Khajehoddin² and Khurram Afridi¹

¹Cornell University, ²University of Alberta

15:45 PM

P101- Capacitor Balance Control of a Modular Multilevel Converter Based on Parallel Connected Clusters for an MVAC/LVDC Solid State Transformer

Diego Verdugo¹, Felix Rojas¹, Jonathan Lillo¹, Mohammed Azharuddin² and Javier Pereda¹

¹Pontificia Universidad Católica de Chile, ²Technische Universität München

16:00 PM

P102- Feedback Control for a Piezoelectric-Resonator-Based DC-DC Power Converter

Joshua Piel, Jessica Boles and David Perreault

Massachusetts Institute of Technology

16:15 PM

LIVE Q&A

November 4th 2021

PANEL SESSION

MODELING AND STABILITY OF GRID TIED POWER CONVERTERS II

NOVEMBER 4th, 2021, 8:00 AM - 9:00 AM (GMT-5)

8:00 AM

P131 Multiple Grid-Forming Inverters in Black-Start: The Challenges

Fahmid Sadeque, Dushyant Sharma and Behrooz Mirafzal.

Kansas State University

8:15 AM

P110- A Self-learning Scheme to Detect and Mitigate the Impact of Model Parameters Imperfection in Predictive Controlled Grid-tied Inverter.

Matthew Baker, Hassan Althuwaini and Mohammad B. Shadmand.

University of Illinois at Chicago

8:30 AM

P56- Evaluation and Comparison of Different Topologies for a Grid Emulator

Ming Jia

The Institute for Power Generation and Storage Systems, RWTH Aachen University

8:45 AM

LIVE Q&A

DIALOG SESSION

TOPICS ON DER AND MICROGRIDS

NOVEMBER 4th, 2021, 9:00 AM - 10:00 AM (GMT-5)

P103- System-Level Stability of the CIGRE Low Voltage Benchmark System: Definitions and Extrapolations

Yubo Song¹, Subham Sahoo¹, Yongheng Yang² and Frede Blaabjerg¹

¹Aalborg University, ²Zhejiang University

P98- Blockchain-Enabled Cyber-Secure Microgrid Control Using Consensus Algorithm

Rasel Mahmud and Gab-Su Seo

National Renewable Energy Laboratory



P97- An Optimal Energy Management System for Marine Hybrid Power Systems

Daeseong Park¹, Florian Perabo¹, Minjoo Choi², Espen Skjong³ and Mehdi Zadeh¹

¹Norwegian University of Science and Technology, ²Korea Maritime and Ocean University, ³Blue Ctrl AS

P32- An autonomous fault detection and isolation algorithm for LVDC microgrid.

Chengwei Liu, Joan Marc Rodriguez-Bernuz and Adria Junyent-Ferre

Imperial College

P39- Smart Renewable Energy Communities - Existing and Future Prospects.

Harold R. Chamorro

KTH

P74- Analysis of DC Faults into Hybrid HVAC/HVDC Systems.

Jose A. Murillo and Mario A. Rios

Universidad de los Andes

P115- Modeling and Control of Multiple Microgrids: An Overview.

Miguel Felipe Arevalo-Castiblanco, Jhojan A. Rodriguez-Gil, Daniel Vargas-Medina, Eduardo Mojica-Nava, John Cortes-Romero, Camilo A. Cortes and Sergio Rivera

Universidad Nacional de Colombia

P35- Single-stage Grid-connected PV System with Artificial Neural Network Controller.

Prabhat Ranjan Bana¹, Simone Vanti² and Mohammad Amin¹

¹Norwegian University of Science and Technology, ²University of Padua

DIALOG SESSION

MODELING AND STABILITY OF POWER CONVERTERS

NOVEMBER 4th, 2021, 10:00 AM - 11:00 AM (GMT-5)

P20- Piezoelectric Resonator Second Harmonic Cancellation in Class Φ_2 Inverters

Eric Stolt, Weston Braun, Clarissa Daniel and Juan Rivas-Davila

Stanford University

P47- All-in-One-Magnetics for Matrix Coupled PWM Power Conversion.

Ping Wang, Daniel Zhou, Vincent Yang and Minjie Chen

Princeton University



P58- Multi-Resonant Compensation Control for Terminal Capacitance Reduction in Resonant Switched-Capacitor Converters.

Yicheng Zhu, Zichao Ye, Ting Ge and Robert Pilawa.
University of California, Berkeley

P86- Design of a Dual-Loop Controller with Two Voltage-Dependent Current Compensators for an LLC-Based Charger.

Ujjwal Pratik, Muhammad Abdelraziq, Urvi Ahluwalia, Zhansen Akhmetov, Gabriel Chenevert and Zeljko Pantic.
North Carolina State University

P14- Automated Copper Layer Design and Optimization Tool based on Progressive Point Expansion Algorithm for Switch Mode Power Supplies.

Yidong Tian, Andrew Forsyth, Zhuoru Li and Cheng Zhang
The University of Manchester

P65- Nodal impedance assessment in dc power distribution networks.

Renan Pillon Barcelos and Drazen Dujic.
EPFL - Ecole Polytechnique Federale de Lausanne.

P24- Design, Control and Simulation Study of a 3-phase PWM converter for Unity Power Factor Applications Independent of Load Variations.

Nisith Bhowmick¹, Kaushik Mukherjee² and Prasad Syam²
¹Valeo Siemens eAutomotive, ²Indian Institute of Engineering Science and Technology, Shibpur

PANEL SESSION

MODELING AND STABILITY OF POWER CONVERTERS II

NOVEMBER 4th, 2021, 12:30 PM - 13:30 PM (GMT-5)

12:30 PM

P107- Multiphase Coupled Inductor Current Balancer for Parallel Resonant GaN Devices

Tanuj Sen, Jaeil Baek and Minjie Chen
Princeton University

12:45 PM

P108 An Active Voltage Balancing Strategy for Stacked-Inverter ICN Converters

Mausamjeet Khatua and Khurram Afridi
Cornell University



13:00 PM

P3- Efficiency Modeling of the Flying Capacitor Multilevel Flyback Converter

Santino Graziani, Thomas Cook and Brandon Grainger
University of Pittsburgh

13:15 PM

LIVE Q&A

PANEL SESSION

MODELING AND STABILITY OF POWER CONVERTERS III

NOVEMBER 4th, 2021, 13:30 PM - 14:30 PM (GMT-5)

13:30 PM

P48- High-Frequency Self-driven Push-Pull Class E Rectifier using Capacitive Voltage Divider

Minki Kim and Jungwon Choi
University of Minnesota, Twin Cities

13:45 PM

P121- Resonant Converter based DC Transformer Operation with Magnetic Control

Yuqi Wei¹, Thiago Pereira², Marco Liserre² and Alan Mantoosh¹
¹University of Arkansas, ²Kiel University

14:00 PM

P46- 1 kW MHz Wide-band Class E Power Amplifier

Jiale Xu, Zikang Tong and Juan Rivas Davila
Stanford University

14:15 PM

LIVE Q&A

PANEL SESSION

REAL TIME APLICATIONS

NOVEMBER 4th, 2021, 14:30 PM - 15:30 PM (GMT-5)

14:30 PM

P16- Real Time Monitoring for Model Based Design of Power Converters

Maksudjon Usmonov and Francesco Gregoretti
Politecnico di Torino



14:45 PM

P50- Real-Time Electromagnetic Visualisation using Augmented Reality and Accelerated 3D Models

Bawar Jalal, Valon Blakaj, Steve Greedy and Paul Evans
University of Nottingham

15:00 PM

P54- Real-Time Stability Boundary Identification of Prosumers PCC in a Virtual Power Plant.

Ahmad Khan and Mohammad B. Shadmand
University of Illinois at Chicago

15:15 PM

LIVE Q&A

PANEL SESSION

ADVANCED CONTROL II

NOVEMBER 4th, 2021, 15-30 PM - 16:30 PM (GMT-5)

15:30 PM

P23- Bisection Algorithm based Indirect Finite Control Set Model Predictive Control for Modular Multilevel Converters.

Saad Hamayoon, Morten Hovd and Jon Are Suul
Norwegian University of Science and Technology

15:45 PM

P21- Implementation of a two-loop digital control for high voltage DC-DC buck-boost converter with coupled inductor.

Catalina Gonzalez Castaño¹, Emerson Madrid², Walter Naranjo¹, Carlos Restrepo², Javier Revelo-Fuelegan³ and Diego Peluffo-Ordoñez⁴

¹Universidad Manuela Beltran, ²Universidad de Talca, ³Universidad de Nariño, ⁴Mohammed VI Polytechnic University

16:00 PM

P71- Experimental Assessment of Sliding Mode Current Control with Exponential Reaching Law for an Induction Machine Drive fed by a Matrix Converter

Christian Medina¹, Paola Maidana¹, Jorge Rodas¹, Edgar Maqueda¹, Raul Gregor¹, Maarouf Saad² and Pat Wheeler³.

¹Universidad Nacional de Asunción, ²École de technologie supérieure, ³University of Nottingham

16:15 PM

LIVE Q&A

November 5th 2021

PANEL SESSION

MODELING AND STABILITY OF POWER CONVERTERS IV

NOVEMBER 5th, 2021, 8:00 AM - 9:00 AM (GMT-5)

8:00 AM

P61- Modeling and Analysis of Shutdown Dynamics in Flying Capacitor Multilevel Converters

Samantha Coday, Nathan Ellis and Robert Pilawa-Podgurski

University of California, Berkeley

8:15 AM

P81- Machine Learning based Power Flow Control for Multi-Active-Bridge Converters

Mian Liao, Haoran Li, Ping Wang, Yenan Chen and Minjie Chen

Princeton University

8:30 AM

P126- Self-Security for Grid-Interactive Smart Inverters Using Steady-State Model

Mehmetcan Gursoy and Behrooz Mirafzal

Kansas State University

8:45 AM

LIVE Q&A

DIALOG SESSION

DESIGN, OPTIMIZATION AND RELIABILITY

NOVEMBER 5th, 2021, 9:00 AM - 10:00 AM (GMT-5)

P122- Exploiting the Converter Efficiency as Application-level Health Estimation Precursor

Martin Kjaer, Huai Wang and Frede Blaabjerg

Aalborg University

P130- Smart Inverter Digital Twin for Anomaly Detection

Tareq Hossen, Dushyant Sharma and Behrooz Mirafzal

Kansas State University



P73- Dual-Sequence Current Controller with Delayed Signal Cancellation in the Rotating Reference Frame

Daniel dos Santos Mota, Erick Fernando Alves and Elisabetta Tedeschi
Norwegian University of Science and Technology (NTNU)

P99- Multi D-Q Frame Small-Signal Stability Analysis of Three-Phase Systems with Unbalanced Single-Phase Loads Using the Generalized Nyquist Criterion (GNC)

Ye Tang, Rolando Burgos, Bo Wen and Qing Lin
Center for Power Electronics Systems, Virginia Tech

P113- A Microcontroller-Based High Efficiency Critical Conduction Mode Control for GaN-Based Totem-Pole PFC

Xingyu Chen, Gibong Son, Feng Jin and Qiang Li
Center for Power Electronics Systems, Virginia Tech

P78- Compensation and Emulation of Output Impedance in Ultra-High Bandwidth Class-D Power Amplifiers

Florian Krismer and Johann W. Kolar
ETH Zürich

P105- Synthesized Finite Control Set-Model Predictive Control and Discrete SVPWM for quasi Z-Source Inverter

Abualkasim Bakeer and Mohammed Alhasheem
Aswan University

P55- Power Electronics Based Self-Monitoring and Diagnosing for Photovoltaics Systems

Jeet Panchal, Bo Wen and Rolando Burgos
Center for Power Electronics Systems, Virginia Tech

P114- Impact of the Transformer Magnetizing Inductance on the Performance of the Dual-Active Bridge Converter

Shiyuan Yin¹, Suman Debnath², Rafal Wojda², Phani Marthi², Qianxue Xia¹ and Maryam Saeedifard¹
¹Georgia Institute of Technology, ²Oak Ridge National Laboratory

P90- Broadband Impedance-Measurement Methods in Dynamic Analysis of Dual Active Bridge Converters

Roosa-Maria Sallinen and Tomi Roinila

P93- Impedance Characterization of a Single-Phase PFC in DQ Frame

Qing Lin, Bo Wen, Rolando Burgos, Ye Tang and Keyue Shan
Center for Power Electronics Systems, Virginia Tech



P104- Hybrid Scheme to Minimize DC-link Capacitance Requirement for Grid-Interactive Inverters

Anas Karaki, Congbo Bao, Mohammad B. Shadmand and Sudip Mazumder
University of Illinois at Chicago

P76- Decentralized Anomaly Characterization Certificates in Cyber-Physical Power Electronics Based Power Systems

Kirti Gupta¹, Subham Sahoo², Rabindra Mohanty³, Bijaya Ketan Panigrahi¹ and Frede Blaabjerg²
¹Indian Institute of Technology, ²Aalborg University, ³Birla Institute of Technology and Science

P124- Switched Control Applied to a Totem-Pole Bridgeless Rectifier for Power Factor Correction

Luan V. Fiorio, Tiago J. M. Dezuo and Yales R. De Novaes
Santa Catarina State University (UDESC)

P79- Hardware-in-the-Loop Experimental Setup of a LCL-Filtered Grid-Connected Inverter with Digital Proportional-Resonant Current Controller

Tiago Davi Curi Busarello¹, Joel Filipe Guerreiro², Marcelo Godoy Simões³ and José Antenor Pomilio²
¹Federal University of Santa Catarina, ²University of Campinas, ³University of Vaasa

DIALOG SESSION

ADVANCED CONTROL AND COMPONENTE LEVEL DESIGN AND SIMULATION

10:00 AM - 11:00 AM (GMT-5)

P29- Augmented Piezoelectric Resonators for Power Conversion

Joseph Bonavia, Jessica Boles, Jeffrey Lang and David Perreault
Massachusetts Institute of Technology

P38- Comparative Analysis of Different Box Inductor Designs

Edwin Peredo Maita, Diego Serrano López, Regina Ramos Hortal, Rafael Asensi Orosa and José Antonio Cobos Márquez
Universidad Politécnica de Madrid

P27- Simulations and Measurements of Failure Modes in SiC Cascode JFETs under Short Circuit Conditions

Sunday Nereus Agbo, Erfan Bashar, Ruizhu Wu, Simon Mendy, Jose Ortiz Gonzalez and Olayiwola Alatisè
The University of Warwick

P40- Piezoelectric Materials for the DC-DC Converters Based on Piezoelectric Resonators

Mustapha Touhami¹, Ghislain Despesse¹ and François Costa²
¹CEA-LETI, ²SATIE



P89- Analysis and mitigation of the voltage unbalance effects for the series connected rectifier diodes in high voltage generator applications

Song Zhang¹, Saijun Mao¹, Hongyao Liu², Yujie Ding¹ and Wenyu Li¹

¹Fudan University, ²UNISIC

P106- A Compact High-Power Single-Turn Inductor for 6 kV SiC-based Power Electronics Building Blocks

He Song¹, Jun Wang², Yue Xu¹, Joshua Stewart¹, Slavko Mocevic¹, Igor Cvetkovic¹, Rolando Burgos¹ and Dushan Boroyevich¹

¹Virginia Tech, ²University of Nebraska

P85- Class E Power Amplifier with Piezoelectric Resonator Output Branch

Clarissa Daniel, Eric Stolt and Juan Rivas-Davila

Stanford University

P18- Optimizations and Comparisons of Air-Core Inductors Based on a Semi-Analytical Calculation Toolkit

Yue Wu and Charles Sullivan

Dartmouth College

P68- Multi-level Active Gate Driver for SiC MOSFETs with Paralleling Operation

Yuqi Wei, Liyang Du, Xia Du and Alan Mantooth

University of Arkansas

P67- Cryogenic Static and Dynamic Characterizations of 650 V Field Stop Trench Si IGBT

Yuqi Wei, Md Maksudul Hossain and Alan Mantooth

University of Arkansas

P41- Lyapunov Function Based Weighting-Factorless Model Predictive Controller for Common-Grounded Photovoltaic Inverter

Mokhtar Aly¹, Fernanda Carnielutti², Margarita Norambuena³, Samir Kouro³, Jose Rodriguez⁴ and Emad M. Ahmed⁵

¹Universidad San Sebastián, ²Federal University of Santa Maria, ³Federico Santa María Technical University,

⁴Universidad Andres Bello, ⁵Aswan University

P80- Generalized Predictive Control Strategy applied to a Single-Phase T-Type Voltage Source Inverter in Stand-Alone Operation Mode

Diego Naunay¹, Paúl Ayala¹, Josue Andino¹, Wilmar Martinez², Jacqueline Llanos¹ and Diego Arcos-Aviles¹

¹Universidad de las Fuerzas Armadas ESPE, ²KU Leuven - EnergyVille

P117- Model Predictive Control of a Z-Source Power Converter for Wireless PowerTransfer Applications

Eliana Yiceth Piedrahita Echavarría, Walter Julián Gil González and Andrés Escobar Mejía

Universidad Tecnológica de Pereira



P2- Closed-Loop Control of a Three-Port Series Resonant Converter

¹Thomas Langbauer, ¹Alexander Connaughton, ¹Franz Vollmaier, ¹Milan Pajnic and Klaus Krischan²

¹Silicon Austria Labs GmbH, ²Graz University of Technology

P31- Study of Sensorless Field-Oriented Control of PMSM using rotor flux observer and disturbance observer based discrete sliding mode observer

Aveek Podder and Darshankumar Pandit

The MathWorks Inc

P45- A Simple, Decoupled Control Concept for a Modular DC-DC Converter in ISOP, IPOP, and Back-to-Back Connection

Niklas Fritz, Isabel Austrup and Rik W. De Doncker

RWTH Aachen University – ISEA

PANEL SESSION

EDUCATION

NOVEMBER 5th, 2021, 13:30 PM - 14:30 PM (GMT-5)

13:30 PM

P52- Kiosol: Intelligent Distributed Energy Resources (DERs) living laboratory

Jorge Felipe Gaviria Fierro, Gabriel Esteban Narvaez Morales, Harold Rene Chamorro Vera, Jose Fernando Jimenez Vargas, Luis Felipe Giraldo Trujillo and Michael Bressan

Universidad de los Andes

13:45 PM

P112- Lite-Sparse Hierarchical Partial Power Processing for Parallel Batteries in Heterogeneous Energy Storage Systems

Xiaofan Cui, Alireza Ramyar, Veronica Contreras, Gracie Judge, Jason Siegel, Anna Stefanopoulou and Al-Thaddeus Avestruz

University of Michigan Ann Arbor

14:00 PM

P129- The use of Renewable Energy System to Enhance the Power Electronics Curriculum

Rafael Ocasio, Guillermo Lopez, Melvin Lugo-Alvarez and Eduardo Ortiz

University of Puerto Rico, Mayaguez

14:15 PM

LIVE Q&A



PANEL SESSION

MICROGRID DER CONVERTERS

NOVEMBER 5th, 2021, 14:30 PM - 15:30 PM (GMT-5)

14:30 PM

P8- System Control and Reset Algorithm for DPP Converters in a Photovoltaic Microinverter

Chi Jui Lo and Katherine Kim

National Taiwan University

14:45 PM

P120- Control Strategy for a Brushless Synchronous Generator based Active Rectifier regulated DC Power System with minimal DC-link capacitance for More Electric Aircraft

Goutham Selvaraj¹, Kaushik Rajashekara¹ and Krishna Raj Ramachandran²

¹University of Houston, ²Indian Institute of Technology Delhi

15:00 PM

P15- Design and Control of a Grid-Connected Hybrid Wind-Solar Energy System with Adaptive Maximum Power Point Tracking

Zehong Liao, Ross Mathieson and Stephen Finney

University of Edinburgh

15:15 PM

LIVE Q&A

PANEL SESSION

MODELING AND STABILITY OF POWER CONVERTERS

NOVEMBER 5th, 2021, 15:30 PM - 16:30 PM (GMT-5)

15:30 PM

P10- Modular Multilevel Converter with Stack-Parallel Cascaded H-Bridge Energy Storage Branch

Zoe Blatsi, Sebastián Neira, Paul Judge, Michael Merlin and Stephen Finney

The University of Edinburgh

15:45 PM

P37- Exact Solution of Modulation Waveforms for MMCs Operating with Circulating Current Suppression Control (CCSC) Strategy

Ramin Parvari and Shaahin Filizadeh

University of Manitoba



16:00 PM

P49- Frequency and Duty Ratio Control of Bidirectional Class-E DC-DC Converter

Kamlesh Sawant, Brody Hultman and Jungwon Choi

University of Minnesota

16:15 PM

LIVE Q&A