ECCE 2009 Table of Contents

Session S2-1: Inverter Control

Session S2-2: dc-dc Converter Topologies

Session S2-3: Inverters for Solar Energy Systems

Manuel Galvez, Emilio Bueno, Francisco J. Rodriguez, Francisco J. Meca and Ana Rodriguez

A Single Phase Curren Source Solar Inverter with Reduced DC Link and Improved Maximum Power Point Tracking

Craig Bush and Bingsen Wang

Session S2-4: dc-dc Converters for Distributed Generation Systems

Novel bidirectional DC-DC converter with high step-up/down voltage gain

Ci-Ming Hong, Lung-Sheng Yang, Tsorng-Juu Liang and Jiann-Fuh Chen

High-Efficiency DC-DC Converter for Fuel Cell Applications: Performance and Dynamic Modeling

Oday Ahmed and J.A.M. Bleijs

A Dual-Active-Bridge DC/DC Converter for Single-Phase Distributed Generators

Jaehong Kim, Kwanghee Nam and Ilsu Jeong

Session S2-5: Inverter PWM and Control Techniques

Dead-Time Elimination Method and Current Polarity Detection Circuit without Separate Power Sources for Three-Phase Inverter

Yong-Kai Lin and Yen-Shin Lai

Enhanced Three Phase AC Stationary Frame PI Current Regulators

Wang Y. Kong, D. Grahame Holmes and Brendan P. McGrath

Asymmetric Interleaving - A New Approach to Operating Parallel Converters

Troy Beechner and Jian Sun

Session S2-6: Wide-Bandgap Semiconductors and Applications

Roadmap for Megawatt Class Power Switch Modules Utilizing Large Area Silicon Carbide MOSFETs and JBS Diodes

Jim Richmond, Scott Leslie, Brett Hull, Mrinal Das, Anant Agarwal and John Palmour

20 A, 1200 V 4H-SiC DMOSFETs for Power Conversion Systems

Brett Hull, Mrinal Das, Fatima Husna, Robert Callanan, Anant Agarwal and John Palmour

Investigation on Inherently Safe Gate Drive Techniques for Normally-On Wide Bandgap Power Semiconductor Switching Devices

Mi Dong, John Elmes, Michael Pepper, Issa Batarseh and Z. John Shen

Session S2-7: PM Machines: Design, Analysis, and Optimization

Analysis of Slanted Air-gap Structure of Interior Permanent Magnet Synchronous Motor with Brushless Field Excitation

Seong T. Lee and Leon Tolbert

Torque Ripple Reduction of Axial Flux Permanent Magnet Synchronous Machines with Segmented and Laminated Stator

Weizhong Fei and Patrick Luk

Rotor Saliency Improved Structural Design For Cost Reduction in Single-phase Line-Start Permanent Magnet Motor

Fang Liang, Lee Byeong-Hwa, Hong Jung-Pyo and Nam Hyuk

Session S2-8: Induction Motor Drives

Flux Weakening Strategy of an Induction Machine Driven by an Electrolytic Capacitor-less Inverter

Anno Yoo, Seung-Ki Sul, Sunja Kim and Kyung-Seo Kim

Reduced-Order Flux Observers with Stator-Resistance Adaptation for Speed-Sensorless Induction Motor Drives

Marko Hinkkanen, Lennart Harnefors and Jorma Luomi

A design methodology of an optimal torque minimizing energy loss under torque limit for an induction motor

Kaoru Inoue, Masatoshi Minamiyama and Toshiji Kato

Session P3-1: dc-dc Converters

Hyun-Wook Seong, Ki-Bum Park, Gun-Woo Moon and Myung-Joong Youn

A Novel Bidirectional Multilevel Boost-Buck Dc-Dc Converter

Sergio Busquets-Monge, Salvador Alepuz and Josep Bordonau

Novel On-line Parameter Tuning Technique for Predictive Current Mode Control Operating in Boundary Conduction Mode

Ye-Then Chang and Yen-Shin Lai

Active Cancellation of Capacitor ESR and ESL effects for improving converter transient and steady-state response

Henry S.H. Chung and Wai-to Yan

Optimized Operating Mode of Current-fed Dual Half Bridges DC-DC Converters for Energy Storage Applications

Zhan Wang and Hui Li

Session P3-2: Resonant and Soft-Switched Converters

Novel Synchronous Rectifier Driving Scheme for LLC Converter with Primary Current Sensing

Xinke Wu, Baohong Li, Rongxiang Zhao and Zhaoming Qian

LLC Resonant DC/DC Converter with Current-Driven Synchronized Voltage-Doubler Rectifier

Guoxing Zhang, Junming Zhang, Chen Zhao, Xinke Wu and Zhaoming Qian

Load Sharing Characteristic of Two-Phase Interleaved LLC Resonant Converter with Parallel and Series Input Structure

Bong-Chul Kim, Ki-Bum Park, Chong-Eun Kim and Gun-Woo Moon

A Simple and novel two phase interleaved LLC series resonant converter employing a phase of the resonant capacitor

Kang-Hyun Yi, Bong-Chul Kim and Gun-Woo Moon

Dynamic Analysis and Control Design of Optocoupler-Isolated LLC Series Resonant Converters with Wide Input and Load Variations

Jinhaeng Jang, Minjae Joung, Byungcho Choi and Heung-geun Kim

A Novel Primary Current Detecting Concept for Synchronous Rectified LLC Resonant Converter

Chen Zhao, Baohong Li, Jing Cao, Yue Chen, Xinke Wu and Zhaoming Qian

Analysis and Design of LLC Resonant Converter considering Rectifier Voltage Oscillation

Ki-Bum Park, Bong-Chul Kim, Byoung-Hee Lee, Chong-Eun Kim, Gun-Woo Moon and Myung-Joong Youn

Comparison of Inductor-Half-Bridge and Class-E Resonant Topologies for Piezoelectric Transformer Applications

Yujia Yang, Fabio Bisogno, Andressa Schittler, Matthias Radecker, Sadachai Nittayarumphong, Wolf-Joachim Fischer and Marc Fahlenkamp

Feedforward Plus Feedback Control of the Improved Z-source Inverter

Yu Tang, Shaojun Xie and Chaohua Zhang

Envelope Modeling and Small-Signal Analysis of a PWM-Controlled Parallel Resonant Inverter for Electronic Ballast Applications

Christian Branas, Francisco J. Azcondo and Rosario Casanueva

Unified Steady-State Description of Phase-Shift-Controlled ZVS-Operated Series-Resonant and Non-Resonant Single-Active-Bridge Converters

Robert U. Lenke, Jiefang Hu and Rik W. De Doncker

High Switching Frequency, High Efficiency CLL Resonant Converter with Synchronous Rectifier

Daocheng Huang, Fu Dianbo and Fred C. Lee

The Evaluation of Control Strategies for Auxiliary Resonant Commutated Pole Inverter

Ke Ma, Dehong Xu, Tao Zhang and Seiki Igarashi

Simplified ZVT Circuits Applied to Bidirectional Poles: Concept and Synthesis Methodology

Rafael Concatto Beltrame, Jonatan Rafael Rakoski Zientarski, Mario Lucio da Silva Martins, Jose Renes Pinheiro and Helio L. Hey

A Constant Frequency Series-Parallel Resonant Converter with Dual-Edge PWM to Implement Secondary-Side Control

Darryl J. Tschirhart and Praveen K. Jain

Dynamic Performance of a Current-Phase Control Method for Zone-Control Induction Heating Systems

Ha Pham Ngoc, Fujita Hideaki, Ozaki Kazuhiro and Uchida Naoki

A New AC Processing Pickup for IPT Systems

Hunter Wu, John Boys, Grant Covic, Saining Ren and Patrick Hu

A Novel Three-level Zero-Current Transition Active Neutral-Point-Clamped Inverter

Jin Li, Jinjun Liu and Zeng Liu

Soft Switching Schemes for Multiphase DC/DC Converter with Six-pulse Modulated Pulsating Output

Rongjun Huang and Sudip K. Mazumder

Session P3-3: Inverters and Rectifiers

Harmonic Losses of Multi-Phase PWM Inverter-Fed Drives

Drazen Dujic, Emil Levi and Martin Jones

Analysis and Compensation Method of Voltage Error by Dead-Time with Five-Leg Inverter for Two-AC Motor Independent Drives

Kazuo Oka, Hiroyuki Enokijima, Hisao Kubota and Kouki Matsuse

Novel PWM Technique with Switching-Loss Reduction in Five-Leg Inverter for Independent Drives of Two 3-Phase AC Motors

Kazuo Oka, Nobutaka Kezuka, Ichiro Miki and Kouki Matsuse

A Novel Space Vector Modulation for Nine-Switch Converters

Seyed Mohammad Dehghan, Mustafa Mohamadian, Ali Yazdian and Farhad Ashrafzadeh

On Zero Steady-State Error of Single-Phase PWM Inverters Voltage Control and Phase-Locked Loop System

Dong Dong, Timothy Thacker, Rolando Burgos, Dushan Boroyevich and Fred Wang

Analysis of PWM Frequency Control to Improve the Lifetime of PWM Inverter

Lixiang Wei, Jeffrey McGuire and Richard Lukaszewski

Control Strategy of Achieving Input Voltage Sharing and Output Voltage Sharing for Input-Series-Output-Series Inverters System

Tianzhi Fang, Xinbo Ruan and Chi K. Tse

Bi-Directional Grid-Tied Inverter with Predictive Current Control

Yaow-Ming Chen, Kuan-Yu Liu, Shih-Kai Chiang and Yung-Ruei Chang

The PWM Strategies of Grid-connected Distributed Generation Active NPC Inverters

Lin Ma, Tamas Kerekes, Remus Teodorescu, Pedro Rodriguez, Xinmin Jin and Marco Liserre

Grid-Tied Inverter with Current-Mode Asynchronous Sigma-Delta Modulation

Yaow-Ming Chen, Chia-Shi Chang and Kuan-Yu Liu

Output Voltage Switching Noise Peaks and Utility AC Input Harmonic Current Characteristics of Delta-Sigma Modulated AC-DC Converter with Boost-Buck Circuit Topologies

Atsushi Hirota, Mun Sang-Pil, Kwon Soon-Kurl and Mutsuo Nakaoka

Passive Lossless Snubber with Minimum Voltage and Current Stress for Boost PFC

River T. H. Li, Anson Sung and Henry S.H. Chung

Multistage Active-Clamp High Power Factor Rectifier with passive lossless current sharing

Jose Villarejo, Esther De Jodar, Fulgencio Soto and Cava Moreno

A Novel AC-DC Single-Stage Converter for Low Power Applications

Navid Golbon and Gerry Moschopoulos

Improved One-Cycle-Controlled Active Rectifiers with High-Order Input Filters

Yi Tang, Poh Chiang Loh, Peng Wang, Fook Hoong Choo and Kuan Khoon Tan

Dc-bus voltage control of three-phase AC/DC converter using load predictive method

Zitao Wang and Liuchen Chang

Session P3-4: Components, Materials, and Related Topics

A High-Speed H-Bridge Circuit Based on GaN HFETs and custom resonant gate drivers

Bo Wang, Antonello Monti and Marco Riva

Modeling simulation and validation of a SiC BJT

Tanya Gachovska, Bin Du, Jerry Hudgins, Enrico Santi, H. Alan Mantooth, Anant Agarwal, Angus Bryant and Alexander Grekov

Physical Modelling of Large Area 4H-SiC PiN Diodes

Angus Bryant, Michael Jennings, Nii-Adotei Parker-Allotey, Philip Mawby, Amador Perez-Tomas, P. Brosselard, P. Godignon, X. Jorda, J. Millan, Patrick Palmer, Enrico Santi and Jerry Hudgins

Design of AC Resonant Inductors Using Area Product Method

Marian Kazimierczuk and Hiroo Sekiya

Multilayer Stacked Coreless Printed Spiral Winding Inductor with Wide Frequency Bandwidth

Chi Kwan Lee, Yi Peng Su and Shu Yuen (Ron) Hui

Power Transformer Winding Positioning to Reduce Copper Losses: Non-sinusoidal Currents

Bernardo Cougo, Thierry Meynard, Francois Forest and Eric Laboure

Thermally enhanced SMT power components

Ivan Josifovic, Jelena Popovic-Gerber and Jan Abraham Ferreira

Effect of Capacitance on Eddy-Current Loss in Multi-Layer Magnetic Films for MHz Magnetic Components

Di Yao and Charles Sullivan

PCB integrated transformer composed with mosaic ferrite blocks for LLC resonant converter

Jianing Wang, Xu Yang, Huapeng Niu, Zhao'an Wang and Jinjun Liu

High-Power-Density Three-phase Converter Utilizing a Balanced-Flux Transformer Core

Jacobo Aguillon-Garcia, Gun-Woo Moon, Ki-Beoum Park and Bong-Chul Kim

Automatic Layout Optimization of a Double Sided Power Module Regarding Thermal and EMC constraints

Sylvain Mandray, Jean-Michel Guichon, Jean-Luc Schanen, Sebastien Vieillard and Arezki Bouzourene

The Effect of Relative Humidity, Moisture, and Extreme Environmental Conditions on Power Electronic Performance

Rosa Ciprian and Brad Lehman

Characterization of Amorphous Iron Distribution Transformer Core for Use in High-Power Medium-Frequency Applications

Robert U. Lenke, Sebastian Rohde, Florian Mura and Rik W. De Doncker

A General Model to Predict the Iron Losses in Inverter Fed Induction Motors

Andrea Boglietti, Andrea Cavagnino, Mircea Popescu, Dan Ionel, Dave Staton and Silvio Vaschetto

Modeling of Asymmetrical Cables for an Accurate Calculation of Common Mode Ground Currents

Oliver Magdun, Andreas Binder, Calin Purcarea, Alexander Rocks and Funieru Bogdan

Bearing Lifetime of Linear PM Machines

Johannes J.H. Paulides, Jeroen L.G. Janssen and Elena A. Lomonova

An Adaptive Noise-Cancellation Method for Detecting Generalized Roughness Bearing Faults under Dynamic Load Conditions

Bin Lu, Michael Nowak, Stefan Grubic and Thomas Habetler

Bearing Damage Detection in Permanent Magnet Synchronous Machines

Mario Pacas, Ralf Dietrich and Sebastian Villwock

Session P3-5: Machines: Modeling, Analysis, Design and Application

An analytical determination of the torque-speed and efficiency-speed characteristics of a BLDC motor

Miroslav Markovic, Andre Hodder and Yves Perriard

Analytical Method of Torque Calculation for Interior Permanent Magnet Synchronous Machines

Seong T. Lee and Leon Tolbert

Finite Element Surrogate Model for Electric Machines with Revolving Field - Application to IPM Motors

Dan Ionel and Mircea Popescu

A Useful Multi-objective Optimization Design Method for PM Motors Considering Nonlinear Material Properties

Yao Duan, Ronald Harley and Thomas Habetler

Adaptation of the classical dq method of analysis applied in machines with non-sinusoidal distribution of terminal quantities

Beata Wawrzyniak and Pawel Witczak

Development of the DMPM-based Electrical Variable Transmission for HEV Drive

Tao Fan, Xuhui Wen, Haiying Meng, Feng Zhao, Jun Liu and Longya Xu

Rotor Pole Number Studies for Doubly Excited Brushless Machine

Longya Xu and Huijun Liu

Experimental Verification of Design Techniques of Permanent Magnet Synchronous Motors for Low Torque Ripple Applications

Mohammad Islam, Rakib Islam and Tomy Sebastian

Analysis of the Vibration Spectrum Based on the Input Voltage Spectrum

Laszlo Mathe, Uffe Jakobsen, Peter O. Rasmussen and John K. Pedersen

Shu Yamamoto, John Adawey and Takahiro Ara

Development of a Claw Pole Permanent Magnet Motor with a Molded Low Density Soft Magnetic Composite Stator Core

Youguang Guo, Jianguo Zhu, David Dorrell, Haiyan Lu and Yi Wang

Session P3-6: Solar and Wind Energy

Investigation of different kinds of Photovoltaic Array Simulators Based on PWM Rectifier

Hongliang Liu, Mingzhi He, Xiaojie You and Trillion Q Zheng

Maximum Power Point Tracking Method for PV Array under Partially Shaded Condition

Young-Hyok Ji, Doo-Yong Jung, Chung-Yuen Won, Byoung-Kuk Lee and Jin-Wook Kim

Transient Maximum Power Point Tracking for Single-stage Grid-tied Inverter

Ding Li, Feng Gao, Poh Chiang Loh, Peng Wang and Yi Tang

Design of a Photovoltaic Simulator with a Novel Reference Signal Generator and Two Stage LC Output Filter

Ahmed Koran, Kenichiro Sano, Rae-Young Kim and Jih-Sheng Lai

High Efficient Interleaved Input-Series-Output-Parallel-Connected DC/DC Converter for Photovoltaic Power Conditioning System

Jong-Pil Lee, Byung-Duk Min, Tae-Jin Kim, Dong-Wook Yoo and Ji-Yoon Yoo

Steady-state characterization of Multi-phase, Interleaved, DC-DC converters for Photovoltaic Applications

Sairaj Dhople, Ali Davoudi and Patrick Chapman

Performance Evaluation and Simulation of a Solar Thermal Power Plant

Eduardo Ortiz-Rivera and Luisa Feliciano-Cruz

Study of a Simplified Model for DFIG-Based Wind Turbines

Kleber Lima, Alvaro Luna, Pedro Rodriguez, Edson Watanabe and Mauricio Aredes

A Phase-Modulated High-Frequency Isolated Dual LCL DC/AC Converter

Xiaodong Li and Ashoka Bhat

Complementary Half Controlled Converter for Directly-driven PM Synchronous Generator in Wind Power Generation Application

Heng Nian, Rong Zeng, Jiao Liu and Wei Zhang

Control Methods for Low Voltage Ride-Through Compliance in Grid-Connected NPC Converter Based Wind Power Systems Using Predictive Control

Salvador Alepuz, Sergio Busquets-Monge, Josep Bordonau, Patricio Cortes and Samir Kouro

Control of DFIG-WT under unbalanced grid voltage conditions

Alvaro Luna, Kleber Lima, Felipe Corcoles, Edson Watanabe, Pedro Rodriguez and Remus Teodorescu

Simulation Analysis of a Three-level NPC Based STATCOM Combined with TSC on a Wind Farm

Xiaohu Liu, Lin Xinchun, Yong Kang and Kevin Lee

Grid-fault Tolerant Operation of DFIG Wind Turbine Generator Using a Passive Resistance Network

Yan Xiangwu, Venkataramanan Giri and Wang Yang

Reconfigurable Control and Converter Topologies for Wind Energy Systems with Switch Failure Fault Tolerance Capability

Arnaud Gaillard, Philippe Poure, Shahrokh Saadate and Serge Pierfederici

Z-source Inverter with Grid Connected for Wind Power System

Uthane Supatti and Fang Z. Peng

Output Maximization Control for DFIG Wind Turbines without Using Wind and Shaft Speed Measurements

Wei Qiao, Xiang Gong and Liyan Qu

Session P3-7: Applications of Power Electronics and Drives

HIL Emulation of All-Electric UAV Power Systems

Rebecca Todd and Andrew Forsyth

Output voltage control of synchronous generator for ships using a PMG type digital AVR

Sang-Hoon Park, Jae-Sung Yu, Sang-Seuk Lee, Su-Won Lee and Chung-Yuen Won

Novel Primary High Voltage Traction Converter Topology for Multi-system Locomotives

Pavel Drabek, Martin Pittermann and Marek Cedl

Main Problems and Proposed Solutions to Induction Machine Drive Control of Multisystem Locomotive

Zdenek Peroutka, Tomas Glasberger and Martin Janda

Control of a Fuel Cell Hybrid Electric Motorcycle

Taehyung Kim, Oleg Vodyakho and Jefferson Yang

A Power Flow Control Strategy for Optimal Fuel Efficiency of a Variable Speed Engine-Generator based Series Hybrid Electric Vehicle

Hyunjae Yoo, Byung-Geuk Cho, Seung-Ki Sul, Sang-Min Kim and Yongho Park

Proposal of a Hybrid Rectifier Structure with HPF and Low THD Suitable for Front-End Trolleybusses Systems Supplied by AC Distribution Networks

Luiz Carlos Freitas, Gustavo Brito Lima, Flavio Goncalves, Guilherme A. Melo, Carlos Canesin and Luiz C. de Freitas

High level decision methodology for the selection of a fuel cell based power distribution architecture for an aircraft application

Jesus A. Oliver, Pablo Zumel, Marina Sanz, Carmen Raga, Daniel Izquierdo, Oscar Garcia, Andres Barrado, Roberto Prieto, Ricardo Azcona, Bernardo Delicado and Jose Antonio Cobos

Near Unity Power-Factor Electronic Ballast Based on Integration Techniques to Drive High Intensity Discharge Metal Halide (HID-MH) Lamps

Andre Luiz Fuerback, Cicero da Silveira Postiglione, Arnaldo Perin and Claudinor Bitencourt Nascimento

A New Dimmable High Power Factor Electronic Ballast System for Compact Fluorescent Lamps (CFL) with Standard Incandescent Phase-cut Dimmers

John Lam and Praveen K. Jain

A High Efficiency Linear Power Amplifier with Switch-Linear Hybrid Scheme

Xiaodong Liu, Sucheng Liu and Jingbo Kan

ZVS Phase Shift Full Bridge Converter with Separated Primary Winding (SPW)

Young-Do Kim, Chong-Eun Kim, Kyu-Min Cho, Ki-Bum Park and Gun-Woo Moon

A New Capacitor Charging Power Supply using Phase-Shifted PWM Full-Bridge Converter

Soo-Hong Kim, Byong-Seob Kim, Young-Duck Lee, Byung-Ki Kwon, Jae-Sik Kim, Chang-Ho Choi and Seung-Gap Choi

A Control Strategy by Instantaneous Average Values for Parallel Operation of Single Phase Voltage Source Inverters Based in the Inductor Current Feedback

Telles Lazzarin, Guilherme Bauer and Ivo Barbi

Multilevel converter for envelope tracking in RF power amplifiers

Miguel Rodriguez, Pablo Fernandez, Alberto Rodriguez and Javier Sebastian

A New Two-Switch Flyback Battery Equalizer with Low Voltage Stress on the Switches

Hyoung-Suk Kim, Ki-Bum Park, Sang-Hyun Park, Gun-Woo Moon and Myung-Joong Youn

Compatibility Between GFCI Breakers and Household Adjustable Speed Drives

Jordan Henry and Jonathan Kimball

Session P3-8: Power Quality, Power Systems, and Related Topics

Multi Induction Motor Connected Network Residual Voltage and it's Back Power

Yuji Akiyama and Yuta Niwa

Optimal Allocation of Distributed Facts Devices in Power Networks for Relieving Congestion Using Particle Swarm Optimization

Debrup Das, Anish Prasai, Ronald Harley and Deepak Divan

Evaluation of smoothing effects of autonomous control of microgrids on line flow fluctuations at the coupling point with the utility grid

Eiichi Koda, Shigeru Bando and Hiroshi Asano

High-Voltage-Input, Low-Voltage-Output, Series-Connected Converters with Uniform Voltage Distribution

Kasemsan Siri, Michael Willhoff, Hu Haibing and Issa Batarseh

Power System Stabilization by Fault Current Limiter and Thyristor Controlled Braking Resistor

Masaki Yagami and Junji Tamura

Robust Controller Design for Inverter-Interfaced Distributed Generators Considering Islanded Operation of a Microgrid

Il-Yop Chung, Wenxin Liu, Siyu Leng, David Cartes and Emmanuel Collins

FPGA Implementation of a Sequence Separation Algorithm Based on a Generalized Delayed Signal Cancelation Method

Maria J. Diaz, Emilio Bueno, Helber Souza, Francisco A. S. Neves and Marcelo Cavalcanti

Frequency Adaptive Phase-Sequence Separation Based on a Generalized Delayed Signal Cancellation Method

Helber Souza, Fabricio Bradaschia, Francisco A. S. Neves, Marcelo Cavalcanti and Mario Rizo

Proposal of a resonant controller for a three phase four wire grid-connected shunt hybrid filter

Ignacio Candela, Pedro Rodriguez, Alvaro Luna, Remus Teodorescu and Frede Blaabjerg

Cost Effective Voltage Sag Mitigation using Square-Wave Series Compensators

Igor Amariz Pires and Braz de Jesus Cardoso

Analysis of Active Power Filters Operating with Unbalanced Loads

Leonardo Limongi, Daniel Roiu, Radu Bojoi and Alberto Tenconi

Instantaneous Power Quantities in Polyphase Systems - A Geometric Algebra Approach

Hanoch Lev-Ari and Alex Stankovic

Passive Harmonic Filter Design Scheme for Subsea Cable Application with 6-Pulse Variable Frequency Drives

Xiaodong Liang and Obinna Ilochonwu

Control Strategy for a High Efficiency Single Stage Converter

Hugo Ribeiro and Beatriz Borges

A Three-Phase Harmonic Decomposition Technique for Grid-Connected Converters

Davood Yazdani and Alireza Bakhshai

Determination of Active and Reactive Powers in Multiphase Machines

Olorunfemi Ojo and Sosthenes Karugaba

FPGA Based Digital Implementation of Naturally Sampled Space Vector Modulation

Alexander Julian and Giovanna Oriti

Fault Monitoring and Control of PEM Fuel Cell as Backup Power for UPS Applications

Yuedong Zhan, Hua Wang, Jianguo Zhu and Youguang Guo

Session S4-1: Power Converter Modeling and Control

Sequence-Based Control for Standalone and Networked Switching Power Converters

Sudip K. Mazumder and Kaustuva Acharya

A Control Strategy for Multi-Phase Buck Converters under Dynamical Selection of Active Phases

Alejandro Pascual, Gabriel Eirea and Enrique Ferreira

A Heuristic Digital Control Method for Optimal Capacitor Charging

Mor Mordechai Peretz and Sam Ben-Yaakov

Design Verification of Power Electronics Systems Subject to Bounded Uncertain Inputs

Eric Hope and Alejandro Dominguez-Garcia

Session S4-2: Resonant and Soft-Switching Converters

Multiple Output of Dual Half Bridge LLC Resonant Converter Using PFM-PD Control

Byeong Cheol Hyeon and Bo Hyung Cho

Analysis and Design of Two-Phase Interleaved LLC Resonant Converter Considering Load Sharing

Bong-Chul Kim, Ki-Bum Park and Gun-Woo Moon

Current Sharing in Three-Phase LLC Interleaved Resonant Converter

Enrico Orietti, Paolo Mattavelli, Giorgio Spiazzi, Claudio Adragna and Giuseppe Gattavari

Wide Range ZVS Active-Clamped L-L Type Current-Fed DC-DC Converter for Fuel-Cells to Utility Interface: Analysis, Design and Experimental Results

Akshay Rathore, Ashoka Bhat and Ramesh Oruganti

Session S4-3: Power Electronics in Renewable Energy Systems

Power Electronics, a Key Technology for future more electrical energy systems

Peter Steimer

Indirect DC-Link Voltage Control of Two-Stage Single-Phase PV Inverter

Feng Gao, Ding Li, Poh Chiang Loh, Yi Tang and Peng Wang

Advances on Inter-Harmonic Variable-Frequency Injection-Based Grid-Impedance Estimation Methods Suitable for PV Inverters

Roberto Petrella, Alessandro Revelant and Piero Stocco

Renewable Hybrid Systems using Biogas - Fuzzy Multi-Sets and Fuzzy Multi-Rules Analyses

Alexandre Barin, Luciane Neves Canha, Breno Wottrich, Karine Faverzani Magnago and Alzenira Abaide

Session S4-4: Power Converters for Transportation Applications

Evaluation of a Current Source Active Power Filter to Reduce the DC Bus Capacitor in a Hybrid Electric Vehicle Traction Drive

Shengnan Li, Burak Ozpineci and Leon Tolbert

Minimizing DC Capacitor Current Ripple and DC Capacitance Requirement of The HEV Converter/Inverter Systems

Xi Lu and Fang Z. Peng

Performance Evaluation of Two StageMatrix Converters for EMA in aircraft applications

Andrew Trentin, Pericle Zanchetta, Patrick Wheeler and Jon Clare

Challenges of Traction Single-Phase Current-Source Active Rectifier

Jan Michalik, Jan Molnar and Zdenek Peroutka

Session S4-5: Three-Phase Rectifiers

Three-Phase PFC Current Control Using DC-Rail Current as Feedback

Zhonghui Bing, Xiong Du and Jian Sun

A Simple Three-Phase Single-Stage AC-DC ZVZCS PWM Full-Bridge Converter

Dunisha Wijeratne and Gerry Moschopoulos

Evaluation of Alternate Soft Charge Circuits For Diode Front End Variable Frequency Drives

Mahesh Swamy, Tsuneo Kume and Nory Takada

A Novel Hybrid 3-phase PWM Current Source Rectifier using SCRs and IGBTs

Lijie Jiang, Zhengyu Lu, Huiming Chen and Xinke Wu

Session S4-6: Converter Thermal and Protection Issues

Thermal Design Guideline of PCB Traces under DC and AC Current

Yi Wang, Sjoerd de Haan and Jan Abraham Ferreira

3-D Thermal Simulation of Power Module Packaging

Ian Swan, Angus Bryant, Nii-Adotei Parker-Allotey and Philip Mawby

Power Device Reliability Assessment in High Pulsed Power Resonant Converters

Fabio Carastro, Jon Clare, Alberto Castellazzi, Mark Johnson, Michael Bland and Patrick Wheeler

Design and Verification of a Simulation Model for Fuses with High-Breaking Capacity

Peter Koellensperger, Sebastian Boehm, Martin Hilscher, Peter Domanits and Volker Seefeld

Session S4-7: Induction Machines

Impact of the Supply Voltage on the Stray Load Losses in Induction Motors

Aldo Boglietti, Andrea Cavagnino, Luca Ferraris and Mario Lazzari

An Evaluation of Induction Machine Stray Load Loss from Collated Test Results

Emmanuel Agamloh

A Finite Element Procedure to Compute Variable Speed Induction Machine Performance

Luigi Alberti, Nicola Bianchi and Silverio Bolognani

Equivalent Circuits for Single-sided Linear Induction Motors

Wei Xu, Jianguo Zhu, Youguang Guo, Yi Wang, Yongchang Zhang and Longcheng Tan

Session S4-8: AC Machine Protection and Control Issues

Magnet Temperature Estimation in Surface PM Machines Using High Frequency Signal Injection

David Reigosa, Fernando Briz, Pablo Garcia, Juan M. Guerrero and Michael Degner

Experimental Analysis of Industry Standards on Derating of a Three-Phase Induction Motor due to Thermal Stress Caused by Voltage Unbalance

David Springer, Erik Stolz and Ernesto Wiedenbrug

A Novel Motor Surge Voltage Suppression Method with Surge Energy Regeneration

Shimizu Toshihisa, Saito Mikiya and Nakamura Masanobu

Discrete-time Current Regulator Design for AC Electric Machine Drives

Hongrae Kim, Michael Degner, Juan M. Guerrero, Fernando Briz and Robert Lorenz

Session S5-1a: Rectifiers and Power Quality Issues

Ripple Steering AC-DC Converters to Minimize Input Filter

Frank Chen, Bruce Lu, Eric Chou and Adragna Claudio

Single Comparator Based A/D Converter for Output Voltage Sensing in Power Factor Correction Rectifiers

Barry Mather and Dragan Maksimovic

Non Linear Inductor Design for Improving Light Load Efficiency of Boost PFC

Shu Fan Lim and Ashwin M. Khambadkone

An Ac-Dc Single-Stage Full-Bridge PWM Converter with Bridgeless Input

Pritam Das, Ahmad Mousavi and Gerry Moschopoulos

Session S5-2a: Advances in dc-dc Converters

Dual-Bridge DC/DC Converter With Wide-Range ZVS and Zero Circulating Current

Zhong Ye

A Current-Fed Three-Phase Half-Bridge DC-DC Converter with Active Clamping

Yujin Song, Soo-Bin Han, Suk-In Park, Hak-Geun Jeong, Bong-Man Jung, Jaeho Choi and Gawoo Park

Novel Dual Mode Operation of Phase-Shifted Full Bridge Converter to Improve Efficiency under Light Load Condition

Bo-Yuan Chen and Yen-Shin Lai

Analysis and Design for Paralleled Three-port DC/DC Converters with Democratic Current Sharing Control

Zhijun Qian, Osama Abdel-Rahman, Michael Pepper and Issa Batarseh

Session S5-3a: Power Converters for Wind Energy Systems

A Unified DC Link Current Control Scheme for Grid Fault Ride-Through in Current Source Converter Based Wind Energy Conversion Systems

Jingya Dai, Dewei Xu, Bin Wu and Navid Zargari

A Low-Cost Rectifier Topology with Variable-Speed Control Capability for High-Power PMSG Wind Turbines

Jiacheng Wang, Dewei Xu, Bin Wu and Zhenhan Luo

Controller Hardware-in-the-loop Validation for a 10 MVA ETO-based STATCOM for Wind Farm Application

Yu Liu, Zhengping Xi, Zhigang Liang, Wenchao Song, Subhashish Bhattacharya, Alex Huang, James Langston, Mischa Steurer, Wayne Litzenberger, Loren Anderson, Ram Adapa and Ashok Sundaram

SVM Direct Torque Control of a Permanent Magnet Wind Power Generator and a Grid Converter

Zhuang Xu, Pengyao Ge, Dianguo Xu and C.H. Zhang

Session S5-4a: Hybrid Energy Storage Systems

A Novel Scheme for Optimally Combining Batteries and Ultracapacitors

Arvind Govindaraj, Srdjan Lukic and Ali Emadi

Optimization of Autonomous Hybrid Energy Storage System for Photovoltaic Applications

Margaret Glavin, Ka Wai Paul Chan and Gerard Hurley

A Two-stage DC-DC Converter for the Fuel Cell-Supercapacitor Hybrid System

Zhe Zhang, Ole C. Thomsen and Michael A. E. Andersen

Optimized Energy Storage System Design for a Fuel Cell Vehicle Using a Novel Phase Shift and Duty Cycle Control

Lei Wang, Zhan Wang and Hui Li

Session S5-5a: Utility Converter Power Quality Issues

Optimal PWM Method based on Harmonics Injection and Equal Area Criteria

Jin Wang, Damoun Ahmadi and Renxiang Wang

Combined active and reactive power control of power converter building block to facilitate the connection of Micro-grid to Electric Power System

Xiaoxiao Yu and Ashwin M. Khambadkone

High Performance Harmonic Isolation By Means of The Single-phase Series Active Filter Employing The Waveform Reconstruction Method

Osman S. Senturk and Ahmet M. Hava

A Dynamic Voltage Restorer Equipped with a High-Frequency Isolated DC-DC Converter

Takushi Jimichi, Hideaki Fujita and Hirofumi Akagi

Session S5-6a: Wide-Bandgap Semiconductors and Applications

Parameter Extraction Procedure for High Power SiC JFET

Alexander Grekov, Zhiyang Chen, Enrico Santi, Jerry Hudgins, H. Alan Mantooth, David Sheridan and Jeff Casady

High-Voltage Capacitance Measurement System for SiC Power MOSFETs

Parrish Ralston, Tam Duong, Nanying Yang, David Berning, Colleen Hood, Allen Hefner and Kathleen Meehan

Characterization and Modeling of 1.2 kV, 20 A SiC MOSFETs

Zheng Chen, Dushan Boroyevich, Rolando Burgos and Fred Wang

Characterization, Modeling of 10-kV SiC JBS Diodes and Their Application in X-Ray Generators

Jun Wang, Yu Du, Subhashish Bhattacharya and Alex Huang

Session S5-7a: Special Machines

Magnetically Levitated Slice Motors - An Overview

Philipp Karutz, Thomas Nussbaumer and Johann Walter Kolar

A Wound-Field Three-Phase Flux-Switching Synchronous Motor with All Excitation Sources on the Stator

Ackim Zulu, Barrie Mecrow and Matthew Armstrong

Motor Integrated Permanent Magnet Gear with a wide Torque-Speed Range

Peter Rasmussen, Thomas Jahns, Hamid A. Toliyat, Hans-Henrik Mortensen and Torben Matzen

Design and Analysis of Slotless Brushless DC Motor

Jung-Moo Seo, Joo-Han Kim and In-Soung Jung

Session S5-8a: Induction Motor Drive Control Issues

Rotor Parameter Identification of Saturated Induction Machines

Mikaela Ranta, Marko Hinkkanen and Jorma Luomi

Accurate Inverter Error Compensation and Related Self-Commissioning Scheme in Sensorless Induction Motor Drives

Gianmario Pellegrino, Radu Bojoi, Paolo Guglielmi and Francesco Cupertino

Novel Voltage Trajectory Control for Field Weakening Operation of Induction Motor Drives

Ping-Yi Lin and Yen-Shin Lai

A Novel Adaptive Algorithm for Rotor-Flux and Slip Estimation of Sensorless Field-Oriented Induction Machine Drives

Bo Guan and Longya Xu

Session S5-1b: Three-Phase Rectifiers

A Comparative Study on Control Algorithm for Active Front-end Rectifier of Large Motor Drives under Unbalance Input

Yongsug Suh and Yuran Go

A Hybrid 18-Pulse Rectification Scheme For Diode Front End Variable Frequency Drives

Mahesh Swamy, Tsuneo Kume and Nory Takada

Three Phase Current-Fed Z-Source PWM Rectifier

Qin Lei, Shuitao Yang and Fang Z. Peng

Session S5-2b: Advances in dc-dc Converters

Minimum PCB Footprint Point-of-Load DC-DC Converter Realized with Switched-Capacitor Architecture

Vincent W Ng, Michael D Seeman and Seth R. Sanders

Algebraic Foundation of Self Adjusting Switched Capacitors Converters

Sam Ben-Yaakov and Alexander Kushnerov

Optimization of Transistors for Very High Frequency dc-dc Converters

Anthony Sagneri, David Anderson and David Perreault

Session S5-3b: Wind Energy Systems

Growing Neural Gas (GNG) based Maximum Power Point Tracking for High Performance VOC-FOC based Wind Generator System with an Induction Machine

Maurizio Cirrincione, Marcello Pucci and Gianpaolo Vitale

Ride-through Strategy for DFIG Wind Turbine Systems Using Dynamic Voltage Restorers

Ahmad Ibrahim, Thanh Hai Nguyen, Dong-Choon Lee and Su-Chang Kim

A New Control Method of Energy Capacitor System in DC-Based Wind Farm

S.M. Muyeen, Rion Takahashi, Toshiaki Murata and Junji Tamura

Session S5-4b: Hybrid Energy Storage Systems

An ultra-capacitor based regenerating energy storage system for urban rail transit

Aiguo Xu, Shaojun Xie, Yuan Yao, Xiaobao Liu, Huafeng Xiao and Jingjing Feng

A Supercapacitor Based Light Rail Vehicle: System design and operations modes

Luis Mir, Ion Etxeberria-Otadui, Igor Perez de Arenaza, Izaskun Sarasola and Txomin Nieva

Optimal Energy Management for a Hybrid Energy Storage System Combining Batteries and Double Layer Capacitors

Christoph Romaus, Joachim Boecker, Katrin Witting, Albert Seifried and Oleksiy Znamenshchykov

Session S5-5b: Power Converter Drive Techniques

Self-Driven Schemes for 12V Self-Driven Voltage Regulator

Ke Jin, Ming Xu, Yi Sun and Fred C. Lee

A New Discontinuous Current-Source Driver for High Frequency Power MOSFETs

Zhiliang Zhang, Jizhen Fu, Yan-Fei Liu and Paresh Sen

A High Efficiency Current Source Driver with Negative Gate Voltage for Buck Voltage Regulators

Jizhen Fu, Zhiliang Zhang, Wilson Eberle, Yan-Fei Liu and Paresh Sen

Session S5-6b: EMI Suppression Techniques

High Frequency Modeling Method of EMI filters

Jean Luc Kotny, Margueron Xavier and Nadir Idir

Optimization of Switching Transient Waveform to Reduce EMI Noise in a Selective Frequency Band

Satoshi Ogasawara, Tomohiko Igarashi, Hirohito Funato and Mitsuo Hara

Optimal Damping of EMI Filter Input Impedance

Lei Xing, Frank Feng and Jian Sun

Session S5-7b: Special Machines

A Design Consideration of a Novel Bearingless Disk Motor for Artificial Hearts

Junichi Asama, Akira Chiba, Oiwa Takaaki, Tadashi Fukao and M. Azizur Rahman

Implementation of Super High-speed Permanent Magnet Synchronous Machine Drive

Myoungho Kim, Jung-Sik Yim, Seung-Ki Sul and Sung-Il Lim

Comparison of All and Alternate Poles Wound Flux-Switching PM Machines Having Different Stator and Rotor Pole Numbers

J.T. Chen and Z.Q. Zhu

Session S5-8b: Machine Drive Sensor and Control Issues

Analysis and Compensation of Current Measurement Errors in a Doubly Fed Induction Generator

Won-Sang Im, Seon-Hwan Hwang, Jang-Mok Kim and Jaeho Choi

Compensation of Amplitude Imbalance and Imperfect Quadrature in Resolver Signals for PMSM Drives

Seon-Hwan Hwang, Hyun-Jin Kim, Jang-Mok Kim, Hui Li and Liming Liu

Sensorless Control of a Novel Linear Magnetostrictive Motor

Ali Sadighi and Won-jong Kim

Session S6-1a: Inverter Power Quality and Control

A Transformerless Hybrid Active filter Based on a Neutral-Point-Clamped PWM Converter for a Medium-Voltage Motor Drive

Hirofumi Akagi and Ryota Kondo

DC-link Voltage Stabilization for Reduced DC-link Capacitor Inverter

Wook-Jin Lee and Seung-Ki Sul

An Ultracapacitor-based Energy Storage System Design for High Power Motor Drive with Dynamic Real Power Compensation and Harmonic Cancellation

Liming Liu, Jang-Mok Kim and Hui Li

Evaluation of VAR Control and Voltage Regulation Functionalities in a Single-Phase Utility-Connected Inverter for Distributed Energy Applications

Sudipta Chakraborty, Benjamin Kroposki and William Kramer

Session S6-2a: High-Performance dc-dc Converters

High Power Density DC/DC Converter using the Close-Coupled Inductors

Mitsuaki Hirakawa, Masao Nagano, Watanabe Yasuto, Keigo Ando, Soumei Nakatomi and Hashino Satoshi

Fully Bi-directional DC-DC Converter for EV Power Train with Power Density of 40 kW/l

Martin Pavlovsky, Yukinori Tsuruta and Atsuo Kawamura

Comparison of dc-dc converter topologies for future SLHC experiments

Simone Buso, Giorgio Spiazzi, Federico Faccio and Stefano Michelis

Bi-directional Buck/Boost Dc-Dc Converter with Ultra High Efficiency Based on Improved SAZZ Topology

Martin Pavlovsky, Yukinori Tsuruta and Atsuo Kawamura

Session S6-3a: Energy Storage Technology

Ageing assessment of supercapacitors during calendar life and power cycling tests

El Hassane El Brouji, Jean-Michel Vinassa, Olivier Briat, Nicolas Bertrand, Jean-Yves Deletage and Eric Woirgard

Discrimination of Battery Characteristics Using Discharging/Charging Voltage Pattern Recognition

Kim Jonghoon, Lee Seongjun and Cho Bohyung

A Novel Equalization Method with Defective-Battery-Replacing for Series-Connected Lithium Battery Strings

Weijing Du, Xiucheng Huang, Shuitao Yang, Fan Zhang, Xinke Wu and Zhaoming Qian

Individual Cell Voltage Equalizer Using Selective Two Current Paths for Series Connected Li-ion Battery Strings

Chol-Ho Kim, Hong-Sun Park, Gun-Woo Moon and Young-Do Kim

Session S6-4a: Transportation and Industrial Applications

Load Position Detection and Validation on the Variable-Phase Contactless Energy Transfer Desktop

Christoph Sonntag, Jorge Duarte and Guus Pemen

Variable Tuning in LCL Compensated Contactless Power Transfer Pickups

Nicholas Keeling, Grant Covic, Hao Frank, Libin George and John Boys

New Generation of Full Low-Floor Trams: Control of Wheel Drives with Permanent Magnet Synchronous Motors

Zdenek Peroutka, Karel Zeman, Frantisek Krus and Frantisek Kosta

Nine-phase Synchronous Motor Drive System for High-speed Elevator

Eunsoo Jung, Hyunjae Yoo, Seung-Ki Sul, Hong-Soon Choi and Yun-Young Choi

Session S6-5a: DC-DC Converters

Multiple-input Single Ended Primary Inductor Converter (SEPIC) Converter for Distributed Generation Applications

Ruichen Zhao and Alexis Kwasinski

Soft-Switching Dual Forward DC/DC Converters Employing Secondary Side Control

Bin Su, Tao Yang, Zhengyu Lu and Dehong Xu

Interleaved Coupled-inductor Boost Converter with Boost Type Snubber for PV Power System

S.-Y. Tseng, C.-L. Ou, S.-T. Peng and J.-D. Lee

A Class of Single-Step High-Voltage DC-DC Converters with Low Voltage Stress and High Output Current Capacity

Huai Wang, Henry S.H. Chung, Saad Tapuchi and Adrian Ioinovici

Session S6-6a: Converter Magnetic Components

Designing of Coupled Inductor in Interleaved Critical Conduction Mode Boost PFC Converter

Fei Yang, Ruan Xinbo, Ming Xu and Qing Ji

Analytical Modeling of Losses for High Frequency Planar LCT Components

Kien Lai-Dac, Yves Lembeye, Abdelhadi Besri and Jean-Pierre Keradec

Planar inductors for high-frequency DC/DC converters using microwave magnetic material

Christian Martin, Jean-Jacques Rousseau, Desire Allaissem, Ludovic Menager, Vincent Bley, Bruno Allard, Dominique Tournier, Maher Soueidan and Jean-Yves Lembeye

Fabrication and Modeling of a Planar Magnetic Structure with Directly Etched Windings

Anish Prasai and Willem Odendaal

Session S6-7a: Machine Losses and Torque Ripple

Modeling of Stator Teeth-Tip Iron Losses in Fractional-Slot Concentrated Winding Surface PM Machines

Patel Reddy and Thomas Jahns

Core loss and torque ripple in IPM machines: dedicated modeling and design trade off

Gianmario Pellegrino, Paolo Guglielmi, Alfredo Vagati and Franco Villata

Transposition Effects on Bundle Proximity Losses in High-Speed PM Machines

Patel Reddy, Thomas Jahns and Theodore Bohn

Impact of Flux Weakening Current to the Iron Loss in an IPMSM Including PWM Carrier Effect

Kan Akatsu, Katsuyuki Narita, Hiroyuki Sakashita and Takashi Yamada

Session S6-8a: Sensorless Control of PM Machine Drives

Performance Improvement of Sensorless IPMSM Drives in Low-speed Region Using Online Parameter Identification

Yukinori Inoue, Yasunori Kawaguchi, Shigeo Morimoto and Masayuki Sanada

A New Flux-Barrier Design of Torque Ripple Reduction in Saliency-Based Sensorless Drive IPM Motors for General Industrial Applications

Yoshiaki Kano, Takafumi Terahai, Takashi Kosaka, Nobuyuki Matsui and Toshihito Nakanishi

An On-line Position Error Compensation Method for Sensorless IPM Motor Drives Using High Frequency Injection

Jingbo Liu, Thomas Nondahl, Peter Schmidt, Semyon Royak and Mark Harbaugh

Sensorless position control of permanent magnet motors with pulsating current injection considering end-effect

Francesco Cupertino, Paolo Giangrande, Gianmario Pellegrino and Luigi Salvatore

Session S6-1b: Multi-Level Inverters

A single phase multilevel inverter using switched series/parallel dc voltage sources

Youhei Hinago and Hirotaka Koizumi

New Topologies of Multi-Level Power Converters for Use of Next-Generation Ultra High-Speed Switching Devices

Toshihiko Noguchi and Suroso Suroso

An Optimum PWM Strategy for 5-Level Active NPC (ANPC) Converter Based on Real-time Solution for THD Minimization

Jun Li, Yu Liu, Subhashish Bhattacharya and Alex Huang

Session S6-2b: Soft-Switched dc-dc Converters

A Novel ZVS Non-Isolated Current Tripler Topology for Low Voltage and High Current Applications

Zhiliang Zhang, Eric Meyer, Yan-Fei Liu and Paresh Sen

A ZCS Full-Bridge Converter without Voltage Over-Stress on the Switches

Xin Zhang, Henry S.H. Chung, Xinbo Ruan and Adrian Ioinovici

Soft-Switched CCM Boost Converter with High Voltage Gain for High Power Applications

Sewan Choi and Sungsik Park

Session S6-3b: Distributed Energy Resources and Systems

Grid Synchronization Techniques for Converter Interfaced Distributed Generation Systems

Davood Yazdani, Majid Pahlevaninezhad and Alireza Bakhshai

Control of tie-line power flow of microgrid including wind generation by DSTATCOM-SMES controller

Marcelo Gustavo Molina and Pedro Enrique Mercado

Control Strategies for Distributed Energy Resource Interface Converters in the Low Voltage Microgrid

Chia-Tse Lee, Cheng-Chieh Chuang, Chia-Chi Chu and Po-Tai Cheng

Session S6-4b: Transportation and Industrial Applications

A Novel ZVS-PWM DC-DC Converter for Bidirectional Applications with Steep Conversion Ratio

Pritam Das, Ahmad Mousavi and Gerry Moschopoulos

Analysis and Design of a ZCS-PWM Full-Bridge Fuel Cell Converter

Ahmad Mousavi, Pritam Das and Gerry Moschopoulos

A Power Conversion System for AC Furnace with Enhanced Arc Stability

Yongsug Suh, Yongjoong Lee, Hyeoncheol Park and Peter Steimer

Session S6-5b: Lighting Analysis and Power Electronics Control

A simple physical low pressure discharge lamp model

Deyan Lin, Wei Yan, Georges Zissis and Shu Yuen (Ron) Hui

On The Driving Techniques for High-Brightness LEDs

Ka Hong Loo, Wai-Keung Lun, Siew-Chong Tan, Yuk Ming Lai and Chi K. Tse

Non Iterative Design Procedure of LCC-based Electronic Ballasts for Fluorescent Lamps Including Dimming Operation

Simone Buso and Giorgio Spiazzi

Session S6-6b: Converter Magnetic Components

Optimization of Shielded PCB Air-Core Toroids for High Efficiency DC-DC Converters

Stefano Orlandi, Bruno Allongue, Georges Blanchot, Simone Buso, Federico Faccio, Cristian Fuentes, Maher Kayal, Stefano Michelis and Giorgio Spiazzi

Design and Optimisation of Magnetic Structures for Lumped Inductive Power Transfer Systems

Mickel Budhia, Grant Covic and John Boys

A New Separated Resonant-Inductor Winding Phase Shift Full Bridge Converter for Server Power System

Cho Kyu-Min, Kim Young-Do, Cho In-Ho, Kim Bong-Chul and Gun-Woo Moon

Session S6-7b: Actuator Analysis and Control

Implementation and Control of a Electromagnetic Actuator for Miniature Magnetically Levitated Rotating Machines

Sheng-Ming Yang and Chien-Lung Huang

Analytical Determination of Optimal Split Ratio of E-core Permanent Magnet Linear Oscillatory Actuators

X. Chen and Z.Q. Zhu

Robust Control of Low-Cost Actuator for Automotive Active Front Steering Application

Chandra Namuduri, Suresh Gopalakrishnan, Balarama Murty, Robb Bolio and Ross Feller

Session S6-8b: Sensorless Control of Drives

Optimization of Transient Operations in Sensorless Control Techniques Based on Carrier Signal Injection

Alfio Consoli, Alberto Gaeta, Giuseppe Scarcella, Giacomo Scelba and Antonio Testa

High Bandwidth Sensorless Algorithm for AC Machines Based on Square-wave Type Voltage Injection

Young-Doo Yoon, Seung-Ki Sul, Shinya Morimoto and Kozo Ide

Active-Flux Based Motion Sensorless Vector Control of Biaxial Excitation Generator/Motor for Automobiles (BEGA)

Vasile Coroban-Schramel, Ion Boldea, Gheorghe-Daniel Andrescu and Frede Blaabjerg

Session S7-1: Multilevel Inverters

A Novel High Efficient Fifteen Level Power Converter

Youssef Ounejjar and Kamal Al-Haddad

Simple and Robust Feedback Control of a Two-Switch Multi-Level Half-Bridge Inverter with Non-Ideal Operation

Chris Chapelsky, John Salmon and Andrew M. Knight

A DC-Voltage-Balancing Circuit Including a Single Coupled Inductor for a Five-Level Diode-Clamped PWM Inverter

Kazunori Hasegawa and Hirofumi Akagi

Three-Phase Multilevel Bidirectional DC-AC Converter Using Three-Phase Coupled Inductor

Ivo Barbi and Romeu Hausmann

Session S7-2: Advances in dc-dc Converters

Converter and Control Design for Very Low-Frequency High-Voltage Test Systems

Zhiyu Cao, Norbert Froehleke and Joachim Boecker

Performance Analysis of a Multi-Mode Interleaved Boost Converter

Biswajit Ray, Hiroyuki Kosai, Seana McNeal, Brett Jordan and James Scofield

Output Ripple Reduction of an Automotive Multi-Phase Bi-Directional DC-DC Converter

Stefan Waffler, Juergen Biela and Johann Walter Kolar

A Novel Current-Fed Dual-Inductor Boost Converter with Ripple Reduction (DIBCRR) for High Output-Voltage Applications

Ching-Shan Leu and Ming-Hui Li

Session S7-3: Converters for Renewable Energy Systems

Design and Control of Proportional-Resonant Controller based Photovoltaic Power Condition System

Han-Ju Cha, Trung-Kien Vu and Jae-Eon Kim

A Nonlinear approach to Control Instantaneous Power for Single-Phase Grid-Connected Photovoltaic Systems

Sayed Ali Khajehoddin, Masoud Karimi-Ghartemani, Alireza Bakhshai and Praveen K. Jain

Hardware based performance analysis of a multi-function single-phase PV-AF system

Hyo-Ryong Seo, Seong-Jae Jang, Gyeong-Hun Kim, Minwon Park and In-Keun Yu

A Novel Zero-Voltage-Switching Scheme for Renewable/Alternative Energy Based High-Frequency-AC-Link Inverter

Sudip K. Mazumder

Session S7-4: Power Systems and Utility Applications

Power Flow Control in Networks Using Controllable NetworkTransformers

Debrup Das and Deepak Divan

Experimental Implementation of a Multilevel Converter for Power System Integration

Alan Watson, Si Dang, Patrick Wheeler, Jon Clare and Gopal Mondal

Multiple Second Order Generalized Integrators for Harmonic Synchronization of Power Converters

Pedro Rodriguez, Alvaro Luna, Ion Etxeberria-Otadui, Juan Ramon Hermoso and Remus Teodorescu

Adaptive Echo State Network to Maximize Overhead Power Line Dynamic Thermal Rating

Yi Yang, Ronald Harley, Deepak Divan and Thomas Habetler

Session S7-5: Reliability and Diagnostics

Gear fault diagnostics integrated in the motion servo drive for electromechanical actuators

Kum-Kang Huh, Robert Lorenz and Nicholas J. Nagel

Modulated Error Voltages for the Diagnosis of Faults in Matrix Converters

Sergio Cruz, Marco Ferreira, Andre Mendes and Antonio Cardoso

Reliability Assessment of Fault Tolerant DC-DC converters for Photovoltaic Applications

Sairaj Dhople, Ali Davoudi, Alejandro Dominguez-Garcia and Patrick Chapman

Automated Detection of Rotor Faults for Inverter-fed Induction Machines under Standstill Conditions

Byunghwan Kim, Kwanghwan Lee, Jinkyu Yang, Sang Bin Lee, Ernesto Wiedenbrug and Manoj Shah

Session S7-6: Wide-Bandgap Semiconductors and Applications

Optically-Activated Gate Control (OAGC) for the Next-Generation SiC-based Power Electronics Devices and Applications

Sudip K. Mazumder and Tirthajyoti Sarkar

Design Considerations of a Fast 0-Ohm Gate-Drive Circuit for 1.2 kV SiC JFET Devices in Phase-Leg Configuration

Rolando Burgos, Zheng Chen, Dushan Boroyevich and Fred Wang

A Shoot-Through Protection Scheme for Converters Built with SiC JFETs

Rixin Lai, Fred Wang, Rolando Burgos and Dushan Boroyevich

Vertical SiC JFET Model with Unified Description of Linear and Saturation Operating Regions

Zhiyang Chen, Alexander Grekov, Ruiyun Fu, Enrico Santi, Jerry Hudgins, Alan Mantooth, David Sheridan and Jeff Casady

Session S7-7: Machine Condition Monitoring

A Transfer Function-based Thermal Model Reduction Study for Induction Machine Thermal Overload Protective Relays

Pinjia Zhang, Yi Du and Thomas Habetler

A Novel Cooling Condition Monitoring Method for Induction Motors based on Particle Swarm Optimization

Yi Du, Pinjia Zhang, Zhi Gao and Thomas Habetler

Automated Monitoring of Magnet Quality for Permanent Magnet Synchronous Motors at Standstill

Jongman Hong, Doosoo Hyun, Sang Bin Lee, Ji-Yoon Yoo and Kwangwoon Lee

Towards practical quantification of induction drives mixed eccentricity

Carlo Concari, Giovanni Franceschini and Carla Tassoni

Session S7-8: PM Machine Control and Suspension

Automatic Tracking of MTPA Trajectory in IPM Motor Drives Based on AC Current Injection

Silverio Bolognani, Roberto Petrella, Antonio Prearo and Luca Sgarbossa

Extended field weakening and overloading of high-torque density permanent magnet motors

Deak Csaba, Binder Andreas, Funieru Bogdan and Mirzaei Mehran

Magnetic guidance of the mover in a long-primary linear motor

C. Phong Khong, Roberto Leidhold and Peter Mutschler

Experimental Evaluation of Magnetic Suspension Characteristics in a 5-axis Active Control Type Bearingless Motor without a Thrust Disk for Wide-gap Condition

Masatsugu Takemoto, Satoru Iwasaki, Hajime Miyazaki, Akira Chiba and Tadashi Fukao

Session P8-1: dc-dc Converters and Lighting

Implementation of Bi-level Current Driving Technique for Improved Efficacy of High-Power LEDs

Wai-Keung Lun, Ka Hong Loo, Siew-Chong Tan, Yuk Ming Lai and Chi K. Tse

Dynamic Control of LED Systems based on the General Phot-Electro-Thermal Theory

Yaxiao Qin, Deyan Lin, Henry S.H. Chung, Wei Yan and Shu Yuen (Ron) Hui

Ballast for Independent Control of Multiple LED Lamps

Xiaohui Qu, Siu-Chung Wong and Chi K. Tse

Self-Oscillating Flyback Driver for Power LEDs

Edilson Mineiro, Reuber Santiago, Fernando Antunes, Arnaldo Perin and Cicero da Silveira Postiglione

Analysis of the Structural Designs of LED Devices and Systems based on the General Photo-Electro-Thermal Theory

Shu Yuen (Ron) Hui and Yaxiao Qin

FPGA-Based Digital Current Mode Controller for Phase-Shifted Full-Bridge PWM Converter

Jeong-Gyu Lim, Se-Kyo Chung and Yujin Song

New Method to Cancel High Frequency Current Undulations Generated by DC/DC Converter

Ahmed Shahin, Roghayeh Gavagsaz-Ghoachani, Jean-Philippe Martin, Serge Pierfederici, Farid Meibody-Tabar and B. Davat

Bus-Voltage Ripple Optimization Method for Automotive Multiphase DC/DC-Converters

Tomas Reiter, Dieter Polenov, Hartmut Proebstle and Hans-Georg Herzog

Controller Design Issues and Solutions for Buck Converters with Phase Shedding and AVP Functions

Liyu Yang, Jiwei Fan and Alex Huang

High Efficiency and Smooth Transition Buck-Boost Converter for Extending Battery Life in Portable Devices

Huang Ping-Ching, Wu Wei-Quan, Ho Hsin-Hsin and Chen Ke-Horng

Current boosted active clamp forward converter without output filter

Keun-Wook Lee, Seong-Wook Choi, Byoung-Hee Lee and Gun-Woo Moon

Multiple-Input Full Bridge DC/DC Converter

Dongsheng Yang, Xinbo Ruan, Yan Li and Fuxin Liu

A Unified Derivation of Second-Order Switching Surface for Boundary Control of DC-DC Converters

Huai Wang, Henry S.H. Chung and Jerome Presse

High-Efficiency Slope Compensator (HSC) with Input-Independent Load Condition Identification in Current Mode DC/DC Buck Converters

Wei-Jen Lai, Chi-Lin Chen, Yu-Chiao Hsieh and Ke-Horng Chen

A hold-up time compensation circuit for PWM front-end DC/DC converters

Kang-Hyun Yi, In-Ho Cho, Bong-Chul Kim and Gun-Woo Moon

A Dual Active Bridge Buck-Boost (DAB3) DC-DC converter for High Power Applications

Sangtaek Han and Deepak Divan

Session P8-2: Modeling and Control of Power Electronics

Interleaved Discontinuous Space-Vector PWM for A Multi-Level PWM VSI using a 3-phase Split-Wound Coupled Inductor

Behzad Vafakhah, John Salmon and Andrew M. Knight

Analysis and Control of DC-DC Converters Based on Lyapunov Stability Theory

Fellipe Garcia, Jose Antenor Pomilio, Grace Deaecto and Jose Claudio Geromel

Peak-Current-Mode-Controlled Buck Converter with Positive Feedforward Control

Hyoung Y. Cho and Enrico Santi

Boundary Control of DC-AC Inverters Using Ripple-Derived Switching Surface

Sufen Chen, Yuk Ming Lai, Siew-Chong Tan and Chi K. Tse

High Performance Controller for Voltage-controlled Current Source Inverter with Nonlinear Loads

Longcheng Tan, Yaohua Li, Congwei Liu, Ping Wang, Xiaomei Lv and Zixin Li

Constant-Frequency Hysteresis Current Control of Grid-Connected VSI without Bandwidth Control

Carl N.M. Ho, Victor S.P. Cheung and Henry S.H. Chung

Auto-normalizing Phase-Locked Loop for Grid-connected Converters

Lennart Angquist and Massimo Bongiorno

Comparison among Digital Current Controllers applied to Power Factor Correction Boost Converters

Leandro Roggia, Jose Eduardo Baggio and Jose Renes Pinheiro

Small-Signal Model and Control Design of LCC Resonant Converter with a Capacitive Load Applied in Very Low Frequency High Voltage Test System

Manli Hu, Norbert Froehleke and Joachim Boecker

Small Signal model for Boost Phase-shifted Full Bridge converter in High Voltage application

Xin Zhang, Xinbo Ruan and Wu Chen

Generalized DC Voltage Regulation Strategy for n:1 Relation Cascade H-Bridge Converter-Based STATCOM

Javier Perez-Ramirez, Victor Cardenas, Homero Miranda and Gerardo Espinosa-Perez

Active Stabilization of a Poorly Damped Input Filter Supplying a Constant Power Load

Ahmed-Bilal Awan, Serge Pierfederici, Babak Nahid-Mobarakeh and Farid Meibody-Tabar

Investigation of Active Damping Approaches for PI-based Current Control of Grid-Connected PWM Converters with LCL Filters

Joerg Dannehl, Friedrich W. Fuchs, Paul B. Thogersen and Steffan Hansen

Autonomous Power Electronic Interfaces Between Microgrids

Sandeep Bala and Giri Venkataramanan

Fast Frequency Response Measurement of Switched-Mode Converter in the Presence of Nonlinear Distortions

Tomi Roinila, Matti Vilkko and Teuvo Suntio

Modified Projected Cross Point Control - A Large Signal Analysis

Mostafa Khazraei and Mehdi Ferdowsi

Analysis of the Beat Frequency Oscillations in Voltage Regulators

Kisun Lee and Han Zou

On EMI-filter interactions in a regulated converter - Stability and load-transient performance

Teuvo Suntio, Jari Leppaaho and Mikko Hankaniemi

Session P8-3: ac-ac Conversion and High-Power Techniques

Ac-Ac Dual Active Bridge Converter for Solid State Transformer

Hengsi Qin and Jonathan Kimball

Push-pull mode Three-level AC/AC Converter

Kaiming Yang and Lei Li

Novel Control Strategy for Synchronous PWM on a Matrix Converter

Jun-ichi Itoh and Koji Maki

Predictive Control with Active Damping in a Direct Matrix Converter

Marco E. Rivera, Pablo I. Correa, Jose R. Rodiguez, Jose R. Espinoza, Christian Rojas and Ignacio Lizama

Novel Three-Phase AC-AC Z-Source Converters Using Matrix Converter Theory

Shao Zhang, King Jet Tseng and Trong Duy Nguyen

High Power Factor Control for Current-Source Type Single-phase to Three-phase Matrix Converter

Hiroki Takahasi, Ryo Hisamichi and Hitoshi Haga

Control of Multilevel Direct AC Converters

Jyoti Sastry and Deepak Divan

Three-Phase Cascaded Multilevel Inverter Using Power Cells with Two Inverter Legs in Series

Gierri Waltrich and Ivo Barbi

DC Link Balancing and Ripple Compensation for a Cascaded-H-Bridge using Space Vector Modulation

John Vodden, Patrick Wheeler and Jon Clare

A Novel Five-level Three-phase PWM Rectifier using 12 Switches

Jun-ichi Itoh, Noge Yuichi and Taketo Adachi

Enhanced Voltage Balancing of a Flying Capacitor Multilevel Converter Using Phase Disposition (PD) Modulation

Brendan P. McGrath and D. Grahame Holmes

A New Diode-Clamping Multilevel Converter with Reduced Device Count and DC Voltage Balancing Control

Qingquan Tang, Dariusz Czarkowski, Xu Yang and Songsheng Lu

A new transformerless cascaded multilevel converter topology

Kui Wang, Yongdong Li and Zedong Zheng

Predictive Control Based Selective Harmonic Elimination With Low Switching Frequency for Multilevel Converters

Samir Kouro, Bruno La Rocca, Patricio Cortes, Salvador Alepuz, Bin Wu and Jose Rodriguez

A Single Leg Switched PWM Method for Three-phase H-Bridge Voltage Source Converters

Osman S. Senturk, Lars Helle, Stig Munk-Nielsen, Pedro Rodriguez and Remus Teodorescu

High Efficiency Multilevel Uninterruptible Power Supply

Eduardo Kazuhide Sato, Masahiro Kinoshita, Yushin Yamamoto and Tatsuaki Amboh

Session P8-4: Reliability, Diagnostics, Modeling and Analysis

An Industry-Based Survey of Reliability in Power Electronic Converters

Shaoyong Yang, Angus Bryant, Philip Mawby, Xiang Dawei, Li Ran and Peter Tavner

Operating Standby Redundant Controller to Improve Voltage Source Inverter Reliability

Alexander Julian, Giovanna Oriti and Stephen Blevins

A Survey of Condition Monitoring and Protection Methods for Medium Voltage Induction Motors

Pinjia Zhang, Yi Du, Thomas Habetler and Bin Lu

Simple Switch Open Fault Detection Method of Voltage Source Inverter

Shin-Myung Jung, Jin-Sik Park, Hyoung-Suk Kim, Hag-Wone Kim and Myung-Joong Youn

Mechanical Transmission and Torsional Vibration Effect on Induction Machine Stator Current and Torque in Railway Traction Systems

Shahin Hedayati Kia, Humberto Henao and Gerard Andre Capolino

Kalman Filter Used for on Line Monitoring and Predictive Maintenance System of Aluminium Electrolytic Capacitors in UPS

Karim Abdennadher, Pascal Venet, Gerard Rojat, Jean Marie Retif and Christophe Rosset

Monte-Carlo Study on a Large-Scale Power System Model in Real-Time using eMEGAsim

Jean-Nicolas Paquin, Jean Belanger, Laurence A. Snider, Claudio Pirolli and Wei Li

Modeling, Analysis and Design for Hybrid Power Systems with Dual-Input DC-DC Converter

Yan Li, Xinbo Ruan, Dongsheng Yang and Fuxin Liu

Modeling and Analysis of the Dead-Time Effects in Parallel Two-Level Voltage Source Inverters

Toni Itkonen, Julius Luukko and Riku Pollanen

A Novel Transformer for Contactless Energy Transmission Systems

Wei Zhang, Qianhong Chen, Siu-Chung Wong, Chi K. Tse and Xinbo Ruan

The role of electricity in energy efficiency power conversion: a Markal application for energy planning

Norma Anglani, Giuseppe Muliere and Giovanni Petrecca

Steady State Analysis of a Capacitively Coupled Contactless Power Transfer System

Chao Liu and Aiguo Patrick Hu

Creating Low-Cost Energy-Management Systems for Homes Using Non-Intrusive Energy Monitoring Devices

Rebecca Sawyer, Jason Anderson, Edward Foulks, John Troxler and Robert Cox

Detecting and Locating the Stator Turn-to-turn Faults in a Closed-loop Multiple-motor Drive System

Siwei Cheng, Pinjia Zhang and Thomas Habetler

Investigation on Surge Testing for Winding Insulation Fault Detection in an Online Environment

Stefan Grubic, Lu Bin, Jose M. Aller and Thomas Habetler

Modeling and Control Design of Distributed Power Flow Controller based-on Per-phase Control

Wenchao Song, Xiaohu Zhou, Zhigang Liang, Subhashish Bhattacharya and Alex Huang

Design and Analysis on Reduced Switching Frequency Current Mode Control Isolated Power Converters for Light Load Efficiency

Ruiyang Yu and Bryan M.H. Pong

Session P8-5: Drives and Thermal Considerations

A Comparative Study of Luenberger Observer, Sliding Mode Observer and Extended Kalman Filter for Sensorless Vector Control of Induction Motor Drives

Yongchang Zhang, Zhengming Zhao, Ting Lu, Liqiang Yuan, Wei Xu and Jianguo Zhu

Novel Coil Arrangement of an Integrated Displacement Sensor with Reduced Influence of Suspension Fluxes for a Wide Gap Bearingless Motor

Naoki Tsukada, Takayoshi Onaka, Junichi Asama, Akira Chiba and Tadashi Fukao

Evaluating the Practical Low Speed Limits for Back-EMF Tracking-Based Sensorless Speed Control Using Drive Stiffness as a Key Metric

Robert Hejny and Robert Lorenz

Phase Modulation-Based Technique for Saliency Position Estimation of IPMSMs

Alfio Consoli, Giuseppe Scarcella, Giacomo Scelba, Antonio Testa and Semyon Royak

Active Flux Based Motion-Sensorless Vector Control of DC-Excited Synchronous Machines

Claudio Rossi, Domenico Casadei, Alessio Pilati, Ion Boldea and Gheorghe-Daniel Andrescu

Dead-beat Direct Torque and Flux Control of Interior Permanent Magnet Machines with Discrete Time Stator Current and Stator Flux Linkage Observer

Jaesuk Lee, Chan-Hee Choi, Jul-Ki Seok and Robert Lorenz

A Converter Based Adjustable Speed Drive for Doubly Fed Induction Machine with Centrifugal Loads

Xibo Yuan, Jianyun Chai and Yongdong Li

Observer Based Inverter Disturbance Compensation

Xinmei Yuan, Ian Brown, Robert Lorenz and Arui Qui

Digital Control Strategy to Optimize Efficiency of BLDC Motor Driver with VOPFC

Chia- Hao Wu and Ying-Yu Tzou

Single-Controllable-Switch-Based Switched Reluctance Motor Drive for Low-Cost Variable- Speed Applications

Jaehyuck Kim and Ramu Krishnan

Minimum Power Loss Control - Thermoelectric Technology in Power Electronics Cooling

Jin Wang, Ke Zou and Friend Jeremiah

Effect of Supply Network Harmonics to Frequency Converter Intermediate Circuit Capacitor Temperatures

Valtteri Mattsson and Jouko Niiranen

Evaluation of Zero Vectors in DTC Control of Synchronous Machines and its Effect on Losses

Samer Shisha and Chandur Sadarangani

A Modular Multilevel PWM Inverter for Medium-Voltage Motor Drives

Makoto Hagiwara, Kazutoshi Nishimura and Hirofumi Akagi

Switching Loss Analysis of Modulation Methods Used in Neutral Point Clamped Converters

Daniel Andler, Samir Kouro, Marcelo Perez, Jose Rodriquez and Bin Wu

Torque Ripple Suppression Control for PM Motor with High Bandwidth Torque Meter

Kento Nakamura, Hiroshi Fujimoto and Masami Fujitsuna

Modeling, Simulation and Control of Reluctance Motor Drives for High Speed Operation

V.L. Do and Minh Cao Ta

Session P8-6: Renewable and Alternative Energy

Adaptive Nonlinear Maximum Power Point Tracker for a WECS Based on Permanent Magnet Synchronous Generator Fed by a Matrix Converter

Majid Pahlevaninezhad, Alireza Safaee, Suzan Eren, Alireza Bakhshai and Praveen K. Jain

PV Power System Using Buck/Forward Hybrid Converters for LED lighting

S.-Y. Fan, S.-Y. Tseng, Y.-J. Wu and J.-D. Lee

Low-cost converter for harvesting of microwave electromagnetic energy

Boubekeur Merabet, Bruno Allard, Hakim Takhedmit, Christian Vollaire, Francois Costa, Laurent Cirio and Odile Picon

Optimization of the Operating Point of a Vanadium Redox Flow Battery

Christian Blanc and Alfred Rufer

Igor Cvetkovic, Timothy Thacker, Dong Dong, Gerald Francis, Vladimir Podosinov, Dushan Boreyevich, Fred Wang, Rolando Burgos, Glenn Skutt and John Lesko

Session P8-7: Applications of Power Electronics and Drives

A Novel Electrical Power Supply for Electrothermal and Electrochemical Removal Machining Methods

David Tastekin, Harry Kroetz, Clemens Gerlach and Joerg Roth-Stielow

Vector Control of Single-Phase Voltage Source Converters based on Fictive Axis Emulation

Alfred Rufer, Behrooz Bahrani, Stephan Kenzelmann and Luiz Lopes

A Novel Three-Phase, Switched Multi-Winding Power Electronic Transformer

Ranjan Gupta, Krushna Mohapatra and Ned Mohan

A New Single-phase Voltage Sag/Swell Compensator using Direct Power Conversion

Lee Sanghoey, Cha Hanju and Han Byung-Moon

Active Power Transfer Capability of Shunt Family of FACTS Devices Based on Angle Control

Babak Parkhideh and Subhashish Bhattacharya

All Nodes Voltage Regulation and Line Loss Minimization in Loop Distribution Systems Using UPFC

Mahmoud Sayed and Takaharu Takeshita

DPFC Control during the Shunt Converter Failure

Zhihui Yuan, Sjoerd de Haan and Jan Abraham Ferreira

Evaluation of AFD Islanding Detection Methods Based on NDZs Described in Power Mismatch Space

Zhu Xuancai, Shen Guoqiao and Dehong Xu

Control Algorithm for a SSSC with a predictive synchronization algorithm.

Pablo Fernandez-Comesana, Jesus Doval-Gandoy, Francisco Freijedo and Jano Malvar

Digital Control of Switch-mode Pulsed GMAW Welding Power

Deshang Sha and Xiaozhong Liao

Energy recovery circuit using an address voltage source for PDPs

Kang-Hyun Yi, Bong-Chul Kim and Gun-Woo Moon

A Wide-Speed High Torque Capability utilizing Overmodulation Strategy for Direct

Auzani Jidin, Nik Rumzi Nik Idris, Halim Yalim and Malik Elbuluk

Design Considerations for a Stator Side Voltage Regulated Permanent Magnet AC Generator

Neal Clements, Giri Venkataramanan and Thomas Jahns

Single-Phase PFC boost converter operating at instantaneous power interruption

Tiago K. Jappe and Samir A. Mussa

Bit-Stream Control of Three Phase Reversible Rectifiers

Jonathan Bradshaw, Udaya Madawala and Nitish Patel

Shunt Active Filter with Optimum Reference Generation Algorithm for Power Factor and Harmonic Current Compensation

Nils Hoffmann, Lucian Asiminoaei, Steffan Hansen and Friedrich W. Fuchs

Dynamic Performance of Grid Connected AC/DC Voltage Source Converter under Voltage Dips Transient Conditions

Daniel Roiu, Leonardo Limongi, Radu Bojoi and Alberto Tenconi

Zero Sequence Circulating Current Control of Interleaved Three Phase Voltage Source Converters with Discontinuous Space Vector Modulation

Di Zhang, Fred Wang, Rolando Burgos and Dushan Boroyevich

Session P8-8: PM Machines, Linear Machines and Generators

Performance Characteristics of an Inverse-Saliency PM Machine in a Vector Control Drive Configuration

Roberto Moncada, Juan Tapia and Thomas Jahns

Sensorless Characteristics of Hybrid PM Machines at Zero and Low Speed

Torben Matzen and Peter Rasmussen

Development of Electric Powertrain with a Boost Converter for the Fuel Cells Plug-in Electric Scooter

Chen-Yen Yu, Ming-Shi Huang and Jung-Ho Cheng

Double Channel PM Motor for avionic applications: Impact of Winding Topology

Nicolas Velly, Noureddine Takorabet, Farid Meibody-Tabar, Pierre-Yves Liegeois, Florent Nierlich, F.N. Leynaert and G. Humbert

Comparison of Efficiency for a PI and a FLC Based IPMSM Drive Incorporating Loss Minimization Algorithm Over Wide Speed Range

Mohammad Uddin and Ronald Rebeiro

Stator Design of a Multi-Consequent-pole Bearingless Motor with Toroidal Winding

Ryo Nakamura, Kosuke Kamiya, Akira Chiba, Junichi Asama and Tadashi Fukao

The Shape Design of Interior Type Permanent Magnet BLDC Motor for Minimization of Mechanical Vibration

Kang Gyu-Hong, Hur Jin, Lee Byoung-Kuk and Kim Byoung-Woo

An Improved AC Standstill Method for Testing Inductances of Interior PM Synchronous Motor Considering Cross-magnetizing Effect

Tao Sun, Soon-O Kwon, Jeong-Jong Lee and Jung-Pyo Hong

Lumped Parameter Magnetic Circuit Model for Fractional-Slot Concentrated-Winding Interior Permanent Magnet Machines

Jagadeesh Tangudu, Thomas Jahns, Ayman EL-Refaie and Z.Q. Zhu

Optimization of a High Force Tubular Linear Drive Concept with Discrete Wound Coils to Fullfill Safety Standards in Industrial Applications

Sebastian Gruber, Christian Junge, Florian Senicar and Stefan Soter

Design of linear alternators for thermoacoustic machines

Andrea Rossi, Fabio Immovilli, Claudio Bianchini, Alberto Bellini and Giovanni Serra

A Miniature Short Stroke Linear Actuator and its Position Control for a Haptic Key

Gregory Savioz and Yves Perriard

Suitable Design of a PMSG for a Large-scale Wind Power Generator

Hiroshi Haraguchi, Masayuki Sanada and Shigeo Morimoto

Optimal Design of PM Assisted Synchronous Reluctance Generators using Lumped Parameter Model and Differential Evolution Strategy

Jeihoon Baek, Mina M. Rahimian and Hamid A. Toliyat

Voltage Control in Starter/Generator SRM Based Systems

Augusto Silveira, Augusto Fleury, Darizon Andrade, Luciano Gomes, Carlos Bissochi and Roberto Dias

Session S9-1a: ac-ac Converters and Applications

Generalized Pulse-Width-Modulation to Reduce Common-Mode Voltage in Matrix Converters

Fabricio Bradaschia, Marcelo C. Cavalcanti, Edorta Ibarra, Francisco A. S. Neves and Emilio Bueno

A Three-Port Interface Converter by Using an Indirect Matrix Converter with the Neutral Point of the Motor

Teck Chiang Goh and Jun-ichi Itoh

Application of Three-phase to Single-phase Matrix Converter to Gas Engine Cogeneration System

Yushi Miura, Satoshi Horie, Tomofumi Amano, Shinichiro Kokubo, Toshifumi Ise, Toshinari Momose and Yuki Sato

Comparison of IGBT Cycling Capabilities For Different AC/AC Topologies

Lixiang Wei, Thomas A. Lipo and Richard Lukaszewski

Session S9-2a: Digital Control of dc-dc Converters

Oversampled Digital Power Controller with Bumpless Transition Between Sampling Frequencies

Simon Effler, Zdravko Lukic and Aleksandar Prodic

Fully Digital Hysteretic Modulator for DC-DC Switching Converters

Luca Corradini, Aleksandar Bjeletic, Regan Zane and Dragan Maksimovic

Digital Charge Balance Controller with Low Gate Count to Improve the Transient Response of Buck Converters

Eric Meyer, Zhiliang Zhang and Yan-Fei Liu

Near Time-Optimal Transient Response in DC-DC Buck Converters Taking into Account the Inductor Current Limit

Amir Babazadeh, Luca Corradini and Dragan Maksimovic

Session S9-3a: Solar Photovoltaic Systems

Study on Unified Control of Grid-connected Generation and Harmonic Compensation in Dual-stage High-capacity PV system

Jing Li, Fang Zhuo, Xianwei Wang, Bo Wen, Lin Wang, Song Ni and Jinjun Liu

A Photovoltaic Module Thermal Model Using Observed Insolation and Meteorological Data to Support a Long Life, Highly Reliable Module-Integrated Inverter Design by Predicting Expected Operating Temperature

Robert S. Balog, Yingying Kuai and Greg Uhrhan

Analytical versus Neural Real-time Simulation of a Photovoltaic Generator

Maria Carmela Di Piazza, Marcello Pucci, Antonella Ragusa and Gianpaolo Vitale

Performance Evaluation of Solar Photovoltaic Arrays Including Shadow Effects using Neural Network

Dzung Nguyen, Brad Lehman and Sagar Kamarthi

Session S9-4a: Distributed Generation and Utility Applications

An Accurate Power Control Strategy for Inverter Based Distributed Generation Units Operating In a Low Voltage Microgrid

Yun Wei Li and ChingNan Kao

Single-Phase Islanding Detection based on Phase-Locked Loop Stability

Timothy Thacker, Rolando Burgos, Fred Wang and Dushan Boroyevich

Novel Islanding Detection Method for Distributed Generation

Byung-Moon Han, Hye-Yeon Lee and Han-Ju Cha

Fault Current Contribution of Various Distributed Generation Technologies for Different Power System Topologies

Ahmed Massoud, Shehab Ahmed, Steven Finney and Barry Williams

Session S9-5a: Modeling, Design and Control Techniques

Designing Multiple Inverter Systems with Evolutionary Multiobjective Optimisation

Adam Berry and David Cornforth

Modified Projected Cross Point Control - A Small Signal Analysis

Mostafa Khazraei and Mehdi Ferdowsi

Power Conversion Modeling Methodology Based on Building Block Models

Leonardo Laguna, Roberto Prieto, Oliver Jesus Angel, Jose Antonio Cobos, Horacio Visairo-Cruz and Pavan Kumar

Dynamic Modeling of Power Electronic Systems

Luis Garces, Xianghui Huang, Chunchun Xu and Paul Szczesny

Session S9-6a: EMI Analysis and Suppression Techniques

Modeling of integrated EMI filter with Flexible multi-layer (FML) foils

Wu Xiaofeng, Wen Zhiwei, Dehong Xu, Okuma Yasuhiro and Mino Kazuaki

Quantification of benefits and drawbacks in power conversion based on complementary MOS structures

Manh Hung Tran, Jean-Christophe Crebier and Schaeffer Christian

Far field extrapolation from near field interactions and shielding influence investigations based on a FE-PEEC coupling method

Jeremie Aime, Thanh Son Tran, Edith Clavel, James Roudet, Jacques Ecrabey and Kien Lai-Dac

DM EMI Noise Prediction in Constant On-time PFC

Zijian Wang, Shuo Wang, Chuanyun Wang, Fred C. Lee and Pengju Kong

Session S9-7a: PM Machine Noise, Vibration and Suspension

Influence of Slot and Pole Number Combination on Radial Force and Vibration Modes in Fractional Slot PM Brushless Machines having Single- and Double-layer Windings

Z.Q. Zhu, Z.P. Xia, L.J. Wu and G.W. Jewell

Improvements of Radial Force Control for a SPM Type PMSM Self-Bearing Motor Drive

Sheng-Ming Yang and Chih-Chun Chen

Vibrationless alignment algorithm for incremental encoder based BLDC drives

Carlo Concari, Giovanni Franceschini and Andrea Toscani

Analytical Model for Predicting Noise and Vibration in Permanent Magnet Synchronous Motors

Rakib Islam and Iqbal Husain

Session S9-8a: Motor Drive Applications and Fault Modes

Prediction of Mechanical Shaft Failures due to Pulsating Torques of Variable Frequency Drives

Joseph Song-Manguelle, Stefan Schroeder, Tobias Geyer, Gabriel Ekemb and Jean-Maurice Nyobe-Yome

Reliability Considerations and Fault Handling Strategies for Multi-MW Modular Drive Systems

Tobias Geyer and Stefan Schroeder

Performance Evaluation of a Large Capacity VSD System for Oil and Gas Industry

Masahiko Tsukakoshi, Mostafa Al Mamun, Kazunori Hashimura, Hiromi Hosoda and Tetsuya Kojima

Comparison of topologies to drive the machine of an automotive electrical power steering with higher voltage levels

Thomas Hackner and Johannes Pforr

Session S9-1b: Switched-Capacitor Converters

Generic and Unified Model of Switched Capacitor Converters

Sam Ben-Yaakov and Micahel Evzelman

Improving Dynamic Performance and Efficiency of a Resonant Switched-Capacitor Converter Based on Phase-Shift Control

Kenichiro Sano and Hideaki Fujita

Zero-Current-Switching Multilevel Modular Switched-Capacitor DC-DC Converter

Dong Cao and Fang Z. Peng

Session S9-2b: Digital Control of dc-dc Converters

Adaptive Digital Slope Compensation for Peak Current Mode Control

Tobias Grote, Heiko Figge, Norbert Froehleke, Frank Schafmeister, Peter Ide and Joachim Boecker

A Novel Loop Gain Correction Method for Digitally-Controlled DC-DC Power Converters

Yu-Cheng Lin, Dan Chen, Yen-Tang Wang and Wei-Hsu Chang

Dynamic DC Ramp Shift Digital Control Technique for Improved Transient Response

Majd G. Batarseh, Ehab Shobaki, Haibing Hu, Chris Iannello and Issa Batarseh

Session S9-3b: Energy Harvesting

Power Electronic Circuitry for Energy Harvesting Backpack

Guanghui Wang, Cheng Luo, Lawrence Rome and Heath Hofmann

A Scoping Study of Electric and Magnetic Field Energy Harvesting for Wireless Sensor Networks in Power System Applications

Rohit Moghe, Yi Yang, Deepak Divan and Frank Lambert

Energy Harvest with Microbial Fuel Cell and Power Management System

Andrew Meehan, HongWei Gao and Zbigniew Lewandowski

Session S9-4b: Distributed Generation and Utility Applications

Active and Reactive Power Control Schemes for Distributed Generation Systems Under Voltage Dips

Fei Wang, Jorge Duarte and Marcel Hendrix

Control of Dynamic Capacitor

Anish Prasai and Deepak Divan

A Multi-cell Unified Power Quality Conditioner that Operates with Asymmetrical DC Links Voltages for Minimum THD

Eduardo E. Espinosa, Jose R. Espinoza, Luis A. Moran, Jorge A. Hidalgo and Javier A. Munoz

Session S9-5b: Surface PM Machines and Drives

Analysis and Tests of a Dual Three-Phase 12-slot 10-pole Permanent Magnet Motor

Nicola Bianchi, Massimo Barcaro and Freddy Magnussen

Development of a Hybrid MEMS BLDC Micromotor

Sebastiano Merzaghi, Christian Koechli and Yves Perriard

A miniature, 500 000 rpm, electrically driven turbocompressor

Daniel Kraehenbuehl, Christof Zwyssig, Hansjoerg Weser and Johann Walter Kolar

Session S9-6b: EMI Analysis and Suppression

"Black Box" EMC model for Power Electronics Converter

Mikael Foissac, Jean-Luc Schanen and Christian Vollaire

Effect of Duty Cycle on Common Mode Conducted Noise of DC-DC Converters

Qing Ji, Xinbo Ruan, Ming Xu and Fei Yang

Reducing Common Mode Noise in Two-Switch Forward Converter

Pengju Kong, Shuo Wang, Fred C. Lee and Zijian Wang

Session S9-7b: PM Generator Applications

Design and FE Analysis of Surface Mounted Permanent Magnet Motor/Generator for High-speed Modular Flywheel Energy Storage Systems

Parag Upadhyay and Ned Mohan

Design Aspects of Medium Power Double Rotor Radial Flux Air-cored Stator Permanent Magnet Wind Generators

Abraham Stegmann and Maarten Kamper

A Novel Permanent Magnet Tubular Linear Generator for Ocean Wave Energy

Joe Prudell, Martin Stoddard, Ted Brekken and Annette von Jouanne

Session S9-8b: Motor Drive Design and Control Issues

Experimental Verification of Deep Flux-weakening Operation of a 50 kW IPM Machine by Using Single Current Regulator

Yuan Zhang, Longya Xu, Mustafa Guven, Song Chi and Mahesh Illindala

The Influence of the DC Link Inductor Design on the Rectifier Voltage Stress in an Adjustable Speed Drive During a Mains Voltage Surge

Zoran Vrankovic, Lixiang Wei, Craig Winterhalter and Bok Young Hong

Common-Mode Voltage Reduction PWM Algorithm for AC Drives

Rangarajan Tallam, Russel Kerkman, David Leggate and Richard Lukaszewski

Session S10-1a: Resonant and Z-Source Inverters

Dual-Input Dual-Output Z-Source Inverter

Seyed Mohammad Dehghan, Mustafa Mohamadian, Ali Yazdian and Farhad Ashrafzadeh

Current-fed Quasi-Z-Source Inverter with Voltage Buck-Boost and Regeneration Capability

Yang Shuitao, Peng Fang Z., Lei Qin, Inoshita Ryosuke and Qian Zhaoming

Current-fed Quasi-Z-Source Inverter with Coupled Inductors

Shuitao Yang, Qin Lei, Fang Z. Peng, Inoshita Ryosuke and Zhaoming Qian

Session S10-2a: Integrated dc-dc Converters

Design and realization of highly integrated isolated DC/DC micro-converter

Olivier Deleage, Jean-Christophe Crebier, Magali Brunet, Yves Lembeye and Manh Hung Tran

A 65-nm-CMOS 100-MHz 87%-Efficient DC-DC Down Converter Based on Dual-Die System-in-Package Integration

Henk Jan Bergveld, Kasia Nowak, Ravi Karadi, Sebastien Iochem, Jorge Ferreira, Sophie Ledain, Eric Pieraerts and Mickael Pommier

An 800mW Fully-Integrated 130nm CMOS DC-DC Step-Down Multi-Phase Converter, With On-Chip Spiral Inductors and Capacitors

Mike Wens and Michiel Steyaert

Session S10-3a: Wave Energy Conversion

A Multi-Chamber Oscillating Water Column using Cascaded Savonius Turbines

David Dorrell, Min-Fu Hsieh and Chi-Chien Lin

Ocean Wave Energy Harvesting Buoy for Sensors

Steven Bastien, Raymond Sepe, Annette Grilli, Stephan Grilli and Malcolm Spaulding

Design and Optimization of a Novel Hybrid Transverse / Longitudinal Flux, Wound-Field Linear Machine for Ocean Wave Energy Conversion

Jennifer Vining, Thomas A. Lipo and Giri Venkataramanan

Session S10-4a: Grid-Connected Converter Applications

Experimental Verification of Autonomous Decentralized UPS system with Instantaneous Power Detection using FPGA based Hardware Controller

Toshiya Ishioka, Nobuaki Doi and Tomoki Yokoyama

Power Decoupling Methods for single-phase three-poles AC/DC converters

Kuo-Hen Chao and Po-Tai Cheng

A Three-Phase Voltage-Source Solar Power Conditioner Using a Single-Phase PWM Control Method

Hideaki Fujita

Session S10-5a: Single-Phase Rectifiers

Light Load Efficiency Improvement for PFC

Qian Li, Fred C. Lee, Ming Xu and Chuanyun Wang

Two-Stage AC/DC Converter Employing Load-Adaptive Link-Voltage-Adjusting Technique with Load Power Estimator for Notebook Computer Adaptor

Seong-Wook Choi, Byoung-Woo Ryu and Gun-Woo Moon

Concepts for High Efficiency Single-Phase Three-Level PWM Rectifiers

Marcio Silveira Ortmann, Samir A. Mussa and Marcelo Lobo Heldwein

Session S10-6a: Power Semiconductors and ICs

Parallel Connection of Super-Junction MOSFETs in a PFC Application

Filippo Chimento, Salvatore Musumeci, Angelo Raciti, Alessandro Cannone and Antonino Gaito

A Circuit-Level Substrate Current Model for Smart-Power IC

Fabrizio Lo Conte, Marc Pastre, Francois Krummenacher, Jean-Michel Sallese and Maher Kayal

Analysis of the switching process of power MOSFETs using a new analytical losses model

Miguel Rodriguez, Alberto Rodriguez, Pablo Fernandez and Javier Sebastian

Session S10-7a: Fractional-Slot Winding PM Machines

End Effects in Multi-Phase Fractional-Slot Concentrated-Winding Surface Permanent Magnet Synchronous Machines

Ayman EL-Refaie and Manoj Shah

Self-sensing Comparison of Fractional Slot Pitch Winding vs. Distributed Winding for FW- and FI-IPMSMs Based On Carrier Signal Injection at Very Low Speed

David Reigosa, Kan Akatsu, Natee Limsuwan, Yuichi Shibukawa and Robert Lorenz

Segregation of Torque Components in Fractional-Slot Concentrated-Winding Interior PM Machines Using Frozen Permeability

Jagadeesh Tangudu, Thomas Jahns, Z.Q. Zhu and Ayman EL-Refaie

Session S10-8a: Sensorless Control of Drives

Wide speed range sensorless control of PM-RSM via "active flux model"

Mihaela-Codruta Paicu, Lucian Tutelea, Gheorghe-Daniel Andrescu, Frede Blaabjerg, Cristian Lascu and Ion Boldea

Integration of Alternating Carrier Injection in Position Sensorless Control Without any Filtering

Wolfgang Hammel and Ralph M. Kennel

Ringed-pole Permanent Magnet Synchronous Motor for Position Sensorless Drives

Silverio Bolognani, Adriano Faggion and Nicola Bianchi

Session S10-1b: Resonant and Z-Source Inverters

Extended boost Z-source inverters

Chandana Jayampathi Gajanayake, Fang Lin Luo, Hoay Beng Gooi, Ping Lam So and Lip Kian Siow

Research on third harmonic injection control strategy of improved Z-source inverter

Shaojun Xie, Yu Tang and Chaohua Zhang

Design of Class-E_M Power Amplifier with One Input Signal

Ryosuke Miyahara and Hiroo Sekiya

Session S10-2b: Integrated dc-dc Converters

A DMOS integrated 320mW capacitive 12V to 70V DC/DC-converter for LIDAR applications

Tom Van Breussegem, Mike Wens, Jean-Michel Redoute, David Geys, Eldert Geukens and Michiel Steyaert

Digitally Controlled Low-Power DC-DC Converter with Segmented Output Stage and Gate Charge Based Instantaneous Efficiency Optimization

Amir Parayandeh and Aleksandar Prodic

Resonant Gate Drive for Silicon Integrated DC/DC Converters

Malal Bathily, Bruno Allard, Jacques Verdier and Frederic Hasbani

Session S10-3b: Power Converters for Solar Energy Systems

Multifunctional Photovoltaic Inverter Systems - Energy Management and Improvement of Power Quality and Reliability in Industrial Environments

Dominik Geibel

A Novel Current Sensing DC Offset Compensation Strategy in Transformerless Grid Connected Power Converters

Emilio Lorenzani, Giovanni Franceschini, Carla Tassoni, Alberto Bellini and Giampaolo Buticchi

High Efficiency Converter with Charge Pump and Coupled Inductor for Wide Input Photovoltaic AC Module Applications

Wensong Yu, Chris Hutchens, Jih-Sheng Lai, Jianhui Zhang, Gianpaolo Lisi, Ali Djabbari, Greg Smith and Tim Hegarty

Session S10-4b: Grid-Connected Converter Modeling and Control

State-Space Model Identification of a LCL Filter used as interface between a Voltage Source Converter and the Electrical Grid

Francisco Huerta, Santiago Cobreces, Francisco J. Rodriguez, Emilio Bueno and Daniel Pizarro

Ubiquitous Power Flow Control on Meshed Grids

Frank Kreikebaum, Debrup Das, Jorge Hernandez and Deepak Divan

PI State Space Current Control of Grid-Connected PWM Converters with LCL Filters

Joerg Dannehl, Friedrich W. Fuchs and Paul B. Thogersen

Session S10-5b: Plug-in Vehicle Utility Interface

A low-cost, digitally-controlled charger for plug-in hybrid electric vehicles

Lixin Tang and Gui-Jia Su

Multi-Function Bi-directional Battery Charger for Plug-in Hybrid Electric Vehicle Application

Xiaohu Zhou, Gangyao Wang, Srdjan Lukic, Subhashish Bhattacharya and Alex Huang

Real-Time Modeling of Distributed Plug-in Vehicles for V2G Transactions

Ganesh Kumar Venayagamoorthy, Pinaki Mitra, Keith Corzine and Chris Hutson

Session S10-6b: Power Semiconductors and ICs

Assessment of uni-axial mechanical stress on Trench IGBT under severe operating conditions: a 2D physically-based simulation approach

Yassine Belmehdi, Stephane Azzopardi, Jean-Yves Deletage and Eric Woirgard

Modeling of Internal Transparent Collector IGBTs and the Extraction of Electron Lifetime in Nano-Voids Layer

Dongqing Hu, Johnny K.O. Sin, Yu Wu, Baowei Kang and Yunpeng Jia

Characterization of a new 4.5 kV Press Pack SPT+ IGBT for Medium Voltage Converters

Rodrigo Alvarez, Felipe Filsecker and Steffen Bernet

Session S10-7b: Machine Design and Analysis Techniques

Reduction of Magnet Eddy Current Loss in Interior Permanent Magnet Motors with Concentrated Windings

Katsumi Yamazaki, Yuji Kanou, Yu Fukushima, Shunji Ohki, Akira Nezu, Takeshi Ikemi and Ryouichi Mizokami

Calculation of Starting Torque in Skewed-Rotor Cage Induction Motor with Broken Bar and Rotor Eccentricity using Hybrid Analytical/Finite Element Analysis Technique

David Dorrell, Lucia Frosini, Marcello Bottani and Giacomo Galbiati

A Computationally Efficient Finite-Element/Analytical-Solver-Based Technique for Simulating Rotor Movement in Electric Machines

Danhong Zhong and Heath Hofmann

Session S10-8b: Sensorless Control of Drives

Sensorless Control of Three-Pole Active Magnetic Bearings Using Saliency-tracking Based Methods

Pablo Garcia, Juan M. Guerrero, Fernando Briz and David Reigosa

Sensorless Operation of an Ultra-High Speed Switched Reluctance Machine

Christopher Bateman, Barrie Mecrow, Andrew Clothier, Paul Acarnley and Nicholas Tuftnell

Sensorless Direct Torque and Flux Control for Matrix Converter IPM Synchronous Motor Drives Using Adaptive Sliding Mode Observer Combined with High Frequency Signal Injection

Dan Xiao, Gilbert Foo and Muhammed Rah