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## June 23, Monday

### Oral Session 1: Modeling & Simulation. Chairs: Dragan Maksimovic, Javier Sebastián

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- 01-1** REAL-TIME SIMULATION OF SUBSYNCHRONOUS RESONANCE IN TYPE-III WIND TURBINES 1  
9:00-9:20 *Ignacio Vieta, Jian Sun.* Rensselaer Polytechnic Institute
- 01-2** MULTILEVEL SYNCHRONOUS OPTIMAL PULSEWIDTH MODULATION GENERALIZED FORMULATION 9  
9:20-9:40 *Jackson Lago, Marcelo Lobo Heldwein.* Federal University of Santa Catarina, Brazil
- 01-3** LAYERED FOIL AS AN ALTERNATIVE TO LITZ WIRE: MULTIPLE METHODS FOR EQUAL CURRENT SHARING AMONG LAYERS 16  
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- 01-4** A CANONICAL SWITCHED CAPACITOR DC-DC CONVERTER 23  
10:00-10:20 *Marek S. Makowski.* Gdańsk University of Technology, Poland
- 01-5** DECOUPLING OUTPUT POWER CONTROL OF TWO SERIES RESONANT INVERTERS SHARING RESONANT CAPACITOR FOR DOMESTIC INDUCTION HEATING 31  
10:20-10:40 *A. Dominguez<sup>1</sup>, L.A. Barragan<sup>1</sup>, A. Otin<sup>1</sup>, D. Puya<sup>2</sup>, I. Urriza<sup>1</sup>, D. Navarro<sup>1</sup>.*  
<sup>1</sup> Univ. of Zaragoza, Spain; <sup>2</sup> Bosh & Siemens Home Appliances Group, Zaragoza, Spain

### Oral Session 2: Digital Control. Chairs: Paolo Mattavelli, Pablo Zúmel

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11:55-12:15 *R. Velázquez, O. Lucia, D. Navarro, L.A. Barragán, J.I. Artigas.* Univ. of Zaragoza, Spain
- 02-4** A NOVEL HALF-CYCLE SAMPLED DISCRETE CONTROL OF SERIES-PARALLEL RESONANT CONVERTER 53  
12:15-12:35 *Junbing Tao, Zhiyu Cao, Norbert Fröhleke, Joachim Böcker.* Universität Paderborn
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12:35-12:55 *David C. Jones, Dragan Maksimović.* University of Colorado at Boulder, USA

### Oral Session 3: System Power Management. Chairs: Jian Sun, Toshiji Kato

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- 03-1** HIGH-FREQUENCY INTEGRATED GATE DRIVERS FOR HALF-BRIDGE GAN POWER STAGE 68  
14:30-14:50 *Yuanzhe Zhang, Miguel Rodríguez, Dragan Maksimović.* Colorado Power Electronics Center
- 03-2** ENERGY DENSITY ENHANCEMENT OF UNIPOLAR SSC ENERGY BUFFERS THROUGH CAPACITANCE RATIO OPTIMIZATION 77  
14:50-15:10 *Yu Ni<sup>1</sup>, Saad Pervaiz<sup>1</sup>, Minjie Chen<sup>2</sup>, Khurram K. Afridi<sup>1</sup>.* <sup>1</sup> University of Colorado Boulder; <sup>2</sup> Massachusetts Institute of Technology
- 03-3** NESTLED SECONDARY POWER LOOPS IN MULTILEVEL MODULAR CONVERTERS 85  
15:10-15:30 *Jan.A. Ferreira.* Delft University of Technology, The Netherlands
- 03-4** MODELING POWER INVERTER INTERACTIONS IN A LOW VOLTAGE GRID 94  
15:30-15:50 *Mauro Calabria, Walter Schumacher.* Technische Universität Braunschweig, Germany
- 03-5** PERFORMANCE ANALYSIS OF SiC MOSFET BASED 3-LEVEL ANPC GRID-CONNECTED INVERTER WITH NOVEL MODULATION SCHEME 103  
15:50-16:10 *Emre Gurpinar<sup>1</sup>, Davide Barater<sup>2</sup>, Dipankar De<sup>1</sup>, Giampaolo Buticchi<sup>2</sup>, Alberto Castellazzi<sup>1</sup>, Giovanni Francheschini<sup>2</sup>.* <sup>1</sup> Univ. of Nottingham, UK; <sup>2</sup> Univ. of Parma, Italy

## June 24, Tuesday

### Oral Session 4: Circuit Modeling & Simulation. Chairs: Regan Zane, Jesús Oliver

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- O4-1** 9:00-9:20 REDUCED DYNAMIC MODEL OF THE ALTERNATE ARM CONVERTER 110  
*C. E. Sheridan, M. M. C. Merlin, T. C. Green.* Imperial College London, UK
- 
- O4-2** 9:20-9:40 SMALL-SIGNAL MODELING OF UNIFORMLY SAMPLED PHASE-SHIFT MODULATORS  
*Luca Scandola, Luca Corradini, Giorgio Spiazzi.* University of Padova, Italy
- 
- O4-3** 9:40-10:00 MODELING AND SIMULATION OF CONVENTIONALLY WIRED PHOTOVOLTAIC SYSTEMS BASED ON DIFFERENTIAL POWER PROCESSING SUBMIC-ENHANCED PV MODULES  
*Carlos Olalla<sup>1</sup>, Chris Deline<sup>2</sup>, Dragan Maksimović<sup>3</sup>.* <sup>1</sup> Univ. Rovira i Virgili, Tarragona, Spain; <sup>2</sup> National Renewable Energy Laboratory, Colorado; <sup>3</sup> Univ. of Colorado Boulder
- 
- O4-4** 10:00-10:20 AUTOMATIC CIRCUIT PARTITIONING FOR PARALLEL SIMULATION OF A POWER ELECTRONIC SYSTEM  
*Toshiji Kato, Kaoru Inoue, Takumi Ogawa.* Doshisha University, Kyoto
- 
- O4-5** 10:20-10:40 MODELING CAPACITIVE NON-LINEARITIES AND DISPLACEMENT CURRENTS OF HIGH-VOLTAGE SUPERJUNCTION MOSFETS IN A NOVEL ANALYTICAL SWITCHING LOSS MODEL  
*Ignacio Castro<sup>1</sup>, Jaume Roig<sup>2</sup>, Diego G. Lamar<sup>1</sup>, Filip Bauwens<sup>2</sup>.* <sup>1</sup> University of Oviedo, Gijón, SPAIN; <sup>2</sup> ON Semiconductor, BELGIUM

### Oral Session 5: Advanced Control of Converters. Chairs: José A. Cobos, Jan A. Ferreira

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- O5-1** 11:15-11:35 MULTI-MODE CONTROL OF SERIES AND PARALLEL CONVERTERS FOR BIDIRECTIONAL POWER SYSTEMS  
*Daniel Seltzer<sup>1</sup>, Regan Zane<sup>2</sup>.* <sup>1</sup> University of Colorado Boulder; <sup>2</sup> Utah State University
- 
- O5-2** 11:35-11:55 AC CURRENTS SYNCHRONIZATION TECHNIQUE BASED ON THE NORMALIZED PHASE-LOCKED LOOP FOR MODULATION OF A THREE-PHASE PWM DELTA SWITCH RECTIFIER  
*Daniel Augusto Figueiredo Collier, Márcio Silveira Ortmann, Marcelo Lobo Heldwein.* Universidade Federal de Santa Catarina, Brasil
- 
- O5-3** 11:55-12:15 A LOW-POWER, SELF-TUNING RESONANT DRIVER FOR GENERATING SINUSOIDAL PULSE TRAINS WITH PIEZOELECTRIC ELEMENT LOADS  
*Regan Zane<sup>1</sup>, Michael Evzelman<sup>1</sup>, Xiaoliang Zhao<sup>2</sup>.* <sup>1</sup> Utah State University; <sup>2</sup> Inteligent Automation Inc.
- 
- O5-4** 12:15-12:35 A CMOS CONTROLLER FOR SUBMODULE INTEGRATED CONVERTERS IN PHOTOVOLTAIC SYSTEMS  
*Beomseok Choi, Daniel Clement, Dragan Maksimović.* University of Colorado at Boulder
- 
- O5-5** 12:35-12:55 ANALYSIS AND DESIGN OF VIRTUAL SYNCHRONOUS MACHINE BASED STATCOM CONTROLLER  
*Chi Li, Rolando Burgos<sup>1</sup>, Igor Cvetkovic<sup>1</sup>, Dushan Boroyevich<sup>1</sup>, Lamine Mili<sup>1</sup>, Pedro Rodriguez<sup>2</sup>.* <sup>1</sup> Virginia Polytechnic Institute and State University, USA; <sup>2</sup> Abengoa Research, Spain

### Oral Session 6: PV Systems. Chairs: Marek Makowski, Luca Corradini

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- O6-1** 14:30-14:50 DIGITAL CONTROL OF PV SYSTEMS: DYNAMIC-GAIN MPPT ALGORITHM AND EFFECTS OF RESOLUTION  
*Alon Blumenfeld, Mor Mordechai Peretz.* Ben-Gurion University of the Negev, Israel
- 
- O6-2** 14:50-15:10 ANALYSIS OF UNINTENTIONAL ISLANDING IN LOW VOLTAGE GRIDS WITH PV GENERATORS  
*Riccardo Sgarbossa, Stefano Lissandron, Paolo Mattavelli, Roberto Turri.* Univ. of Padova, Italy
- 
- O6-3** 15:10-15:30 ASYNCHRONOUS AND DISTRIBUTED MAXIMUM POWER POINT TRACKING OF PHOTOVOLTAIC SUB-MODULES USING DIFFERENTIAL POWER PROCESSING  
*Roy Bell, Robert C. N. Pilawa-Podgurski.* University of Illinois at Urbana-Champaign
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**O6-4** AUTO-DESIGN SIMULATION SET UP OF PV VSC WITH GRID SUPPORTING FUNCTIONS  
15:30-15:50 *Luis Reguera Castillo<sup>1</sup>, Antoni Lázaro<sup>2</sup>, Isabel Quesada<sup>2</sup>, Andrés Barrado<sup>2</sup>. <sup>1</sup> University of Strathclyde, UK; <sup>2</sup> UC3M, Spain*

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**O6-5** MAXIMUM POWER POINT TRACKING CONTROL FOR PHOTOVOLTAIC SYSTEM WITH RIPPLE CURRENT  
15:50-16:10 *Chin-Sien Moo, Gwo-Bin Wu.* National Sun Yat-sen University, Taiwan

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## June 25, Wednesday

### **Oral Session 7: Device and Component Modeling & Simulation. Chairs: Jesús Acero, Charles Sullivan**

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**O7-1** ENERGY-BASED SWITCHES LOSSES MODEL FOR THE OPTIMIZATION OF PWRSoC BUCK CONVERTER  
9:00-9:20 *Vladimir Šviković, Jorge Cortés, Pedro Alou, Jesús Oliver, Jose A. Cobos.* UPM, Spain

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**O7-2** DEVICE CHARACTERIZATION AND MODELING FOR THE DESIGN OF UHF CLASS-E INVERTERS AND SYNCHRONOUS RECTIFIERS  
9:20-9:40 *L. Rizo, M.N. Ruiz, J. A. García.* University of Cantabria, Spain

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**O7-3** REAL-TIME THERMAL MONITORING OF POWER SEMICONDUCTORS IN POWER ELECTRONICS USING LINEAR PARAMETER-VARYING MODELS FOR VARIABLE COOLANT FLOW SITUATIONS  
9:40-10:00 *Manuel Warwel<sup>1</sup>, Gerd Wittler<sup>1</sup>, Michèle Hirsch<sup>2</sup>, Hans-Christian Reuss<sup>3</sup>.* <sup>1</sup> University of Applied Sciences Esslingen, Germany; <sup>2</sup> Robert Bosch GmbH, Schwieberdingen, Germany; <sup>3</sup> University of Stuttgart, Germany

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**O7-4** A SYSTEMATIC APPROACH TO MODELING IMPEDANCES AND CURRENT DISTRIBUTION IN PLANAR MAGNETICS  
10:00-10:20 *Minjie Chen<sup>1</sup>, Mohammad Araghchini<sup>1</sup>, Khurram K. Afrid<sup>2</sup>, Jeffrey H. Lang<sup>1</sup>, David J. Perreault<sup>1</sup>.* <sup>1</sup> Massachusetts Institute of Technology; <sup>2</sup> University of Colorado, Boulder

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**O7-5** PERFORMANCE EVALUATION OF DIODES IN 27.12 MHz CLASS-D RESONANT RECTIFIERS UNDER HIGH VOLTAGE AND HIGH SLEW RATE CONDITIONS  
10:20-10:40 *Luke C. Raymond, Wei Liang, Juan M. Rivas-Davila.* Stanford University

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### **Oral Session 8: Control Techniques. Chairs: David Perreault, Ramón Leyva**

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**O8-1** SPLIT-PHASE CONTROL: ACHIEVING COMPLETE SOFT-CHARGING OPERATION OF A DICKSON SWITCHED-CAPACITOR CONVERTER  
11:15-11:35 *Yutian Lei, Ryan May, Robert Pilawa-Podgurski.* University of Illinois

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**O8-2** AUTONOMOUS LOCAL CONTROL AND STABILITY OF MULTI-TERMINAL HVDC SYSTEMS  
11:35-11:55 *Jian Sun.* Rensselaer Polytechnic Institute, Troy, USA

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**O8-3** THEORETICAL AND EXPERIMENTAL COMPARISON OF DIFFERENT CONTROL STRATEGIES FOR MODULAR MULTILEVEL CONVERTERS  
11:55-12:15 *Xudan Liu, Andreas Lindemann, Hadi Amiri.* Otto-von-Guericke Universität Magdeburg, Germany

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**O8-4** CONTROL OF ENERGY STORAGE ENABLED MODULAR MULTILEVEL CONVERTERS WITH MINIMUM STORAGE REQUIREMENTS  
12:15-12:35 *Theodore Soong, Peter W. Lehn.* University of Toronto

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**O8-5** DESIGN AND IMPLEMENTATION OF HIGH POWER CLOSED-LOOP AC-DC RESONANT CONVERTER FOR WIRELESS POWER TRANSFER  
12:35-12:55 *Liu Junwei, C.Y. Chung, H.L.Chan.* The Hong Kong Polytechnic University

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## June 23, Monday

### Poster Session 1

16:45-18:45

#### **Education.** Chair: *Cristina Fernández*

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- P1-1 DEVELOPMENT OF BRUSHLESS DC MOTOR DRIVE SYSTEM FOR TEACHING PURPOSES USING VARIOUS PWM CONTROL TECHNIQUES FOR SPEED CONTROL  
*N. Tadrict, H. Zeroug.*  
Algiers University
- 
- P1-2 TEACHING MODELING, CONTROL, AND SIMULATION IN A MODULAR KIT FOR POWER ELECTRONICS  
*Anas Al Bastami, Al-Thaddeus Avestruz, Steven B. Leeb.*  
Massachusetts Institute of Technology
- 
- P1-3 PVID: AN INTERACTIVE MATLAB APPLICATION FOR PARAMETER IDENTIFICATION OF COMPLETE AND SIMPLIFIED SINGLE-DIODE PV MODELS  
*S. Cannizzaro, M. C. Di Piazza, M. Luna, G. Vitale.*  
Consiglio Nazionale delle Ricerche (CNR), Palermo, Italia

#### **Design & Simulation Tools.** Chair: *Ángel de Castro*

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- P1-4 DESIGN AND OPTIMIZATION TOOL OF A BUCK DERIVED ENVELOPE AMPLIFIER FOR AN EER RFPA  
*Daniel Díaz<sup>1</sup>, Moisés Patiño<sup>2</sup>, Óscar García<sup>1</sup>, Jesús Oliver<sup>1</sup>, Pedro Alou<sup>1</sup>, José Cobos<sup>1</sup>, Francisco J Ortega<sup>2</sup>*  
<sup>1</sup> DIE-UPM, Spain; <sup>2</sup> GIRA-UPM, Spain
- 
- P1-6 COMPUTER AIDED ANALYSIS OF THE DESIGN SPACE OF CONTROLLERS FOR SWITCHING CONVERTERS  
*Cristina Fernández, Pablo Zumel, Antonio Lázaro, Marina Sanz, Andrés Barrado*  
Universidad Carlos III de Madrid, Spain
- 
- P1-7 HARDWARE-IN-THE-LOOP BASED SYSML FOR MODEL AND CONTROL DESIGN OF INTERLEAVED BOOST CONVERTERS  
*Harold Chamorro, Alonso Gutiérrez, Fernando Jiménez*  
Universidad de los Andes, Bogota, Colombia

#### **Control of Power Electronics.** Chairs: *Carlos Olalla, Antonio Lázaro*

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- P1-8 DESIGN AND EXPERIMENTAL VALIDATION OF A SILICON CARBIDE 100kW BATTERY CHARGER OPERATING AT 60kHz  
*Alejandro Rujas<sup>1</sup>, Ion Etxeberria<sup>1</sup>, Jon San Sebastián<sup>1</sup>, Uxue Larrañaga<sup>2</sup>, Txomin Nieva<sup>2</sup>*  
<sup>1</sup> IKERLAN S.Coop.; <sup>2</sup> CAF Power & Automation
- 
- P1-9 DESIGN OF A 2.5kW PFC BOOST FULL-SIC CONVERTER BASED ON CLOSED-COUPLED INDUCTORS  
*Kevin Martín, Alejandro Rujas, Irma Villar, Igor Pérez de Arenaza, Ion Etxebarria-Otadui*  
IKERLAN S.Coop.
- 
- P1-10 MODEL PREDICTIVE CONTROL OF A HYBRID SI/SIC 3L-NPC CONVERTER  
*Tobias Barth, Felipe Filsecker, Steffen Bernet*  
Technische Universität Dresden, Germany
- 
- P1-11 MODEL PREDICTIVE CONTROL FOR THE QUANTUM SERIES-PARALLEL LCC-TYPE RESONANT CONVERTER WITH CAPACITIVE OUTPUT FILTER  
*Tobias Barth, Jens Weber, Steffen Bernet.* Technische Universität Dresden, Germany
- 
- P1-12 A NOVEL HIGH PERFORMANCE AND ROBUST DIGITAL CURRENT CONTROLLER FOR DC-DC CONVERTERS  
*Fazel Taaed, Morten Nymand*  
University of Southern Denmark
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- P1-14 MONOLITHIC IMPLEMENTATION OF PHASE SHIFTED SWITCHED CAPACITOR BUCK DC-DC CONVERTER FOR PORTABLE POWER APPLICATIONS  
*Sutej Reddy Challa<sup>1</sup>, Dragan Maksimović<sup>1</sup>, Debaprasad Kastha<sup>2</sup>, Amit Patra<sup>2</sup>*  
<sup>1</sup> University of Colorado at Boulder; <sup>2</sup> I. I. T Kharagpur, India
- 
- P1-15 LOAD IDENTIFICATION OF DOMESTIC INDUCTION HEATING BASED ON PARTICLE SWARM OPTIMIZATION (PSO)  
*A. Dominguez, A. Otin, I. Urriza, L.A. Barragan, D. Navarro, J.I. Artigas*  
University of Zaragoza, SPAIN
- 
- P1-16 ANALYSIS AND CONTROL OF FAULT TOLERANT OPERATION OF FIVE-LEVEL ANPC INVERTERS  
*Jun Li*  
ABB
- 
- P1-19 NEAR TIME OPTIMAL PID TUNING IN A DIGITALLY CONTROLLED SYNCHRONOUS BUCK CONVERTER  
*Santanu Kapat*  
Indian Institute of Technology Kharagpur
- 
- P1-20 GEOMETRIC CONTROL BREAKS TRACKING PERFORMANCE LIMITS USING LINEAR CONTROL IN A BUCK CONVERTER  
*V.Inder Kumar, Santanu Kapat*  
Indian Institute of Technology Kharagpur
- 
- P1-22 AN OPTIMIZATION ALGORITHM TO DESIGN FAST AND ROBUST ANALOG CONTROLS FOR BUCK CONVERTERS  
*Jorge Cortes, Vladimir Svikovic, Pedro Alou, Jesus A. Oliver, Jose A. Cobos*  
UPM, Spain

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**Modeling & Simulation. Chairs: Diego González, Juri Jatskevich**

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- P1-23 DYNAMIC MODELING OF MODULAR MULTILEVEL DC/DC CONVERTERS FOR HVDC SYSTEMS  
*Gregory J. Kish, Connor Holmes, Peter W. Lehn*  
University of Toronto
- 
- P1-24 LOSS ANALYSIS OF MULTISTRANDED TWISTED WIRES BY USING 3D-FEA SIMULATION  
*Jesús Acero, C. Carretero, I. Lope, R. Alonso, J.M. Burdío*  
University of Zaragoza, Spain
- 
- P1-25 GENERIC CIRCUIT PARTITIONING METHOD FOR EFFICIENT SIMULATION OF MODULAR MULTILEVEL CONVERTER TOPOLOGIES  
*Jeroen Tant<sup>1</sup>, Willem LETERME<sup>1</sup>, Jef BEERTEN<sup>1</sup>, Wim MICHIELS<sup>2</sup>, Johan DRIESEN<sup>1</sup>*  
<sup>1</sup> Research Group ELECTA, Belgium; <sup>2</sup> Scientific Computing Research Group, Belgium
- 
- P1-27 ROBUSTNESS EVALUATION OF TRANSFORMERLESS PV INVERTER TOPOLOGIES  
*Holger Jedtberg<sup>1</sup>, Alberto Pigazo<sup>2</sup>, Marco Liserre<sup>1</sup>*  
<sup>1</sup> Christian-Albrecht University of Kiel, Germany; <sup>2</sup> U. Cantabria, Spain
- 
- P1-29 ON THE ESTIMATION OF THE SPECTRUM OF DISCRETE PULSEWIDTH MODULATED SIGNALS  
*Pablo F. Miaja, Alberto Rodríguez, Javier Sebastián, Rafael G. Ayestarán*  
University of Oviedo, Spain
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- P1-31 AUTO-COMMISSIONING AND ADAPTIVE TUNING OF SERVO CONTROL PARAMETERS IN AN ELECTRO-HYDRAULIC SYSTEM BASED ON PHYSICAL PLANT MODEL  
*Xiaomeng Cheng<sup>1</sup>, Shibo Zhang<sup>1</sup>, Yilun Chen<sup>1</sup>, Haicong Zhang<sup>2</sup>, Xu Zhu<sup>1</sup>*  
<sup>1</sup> Eaton Corporation, Corporate Research Technology, Shanghai, China;  
<sup>2</sup> Harbin Institute and Technology, Harbin, China

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**System Power Management. Chairs: Mor Peretz, Alberto Pigazo**

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- P1-33 DIGITAL CONTROL OF A UNIDIRECTIONAL BATTERY CHARGER FOR ELECTRIC VEHICLES  
*A. Marcos-Pastor, E. Vidal-Idiarte, A. Cid-Pastor, L. Martínez-Salamero*  
Universitat Rovira i Virgili, Tarragona, Spain
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- P1-34 LOAD EMULATION IN AN INVERTER-DOMINATED MEDIUM VOLTAGE ISLAND GRID  
*Markus Meißner, Albrecht Gensior, Carsten Reincke-Collon, Peter Merk*  
Dresden University of Technology, Younicos AG
- 
- P1-35 BIDIRECTIONAL VEHICLE-TO-GRID INTERFACE UNDER A MICROGRID PROJECT  
*Vicente Leite, Ângela Ferreira, José Batista*  
Polytechnic Institute of Bragança, Portugal
- 
- P1-36 ANOMALOUS STEP-UP BEHAVIOR ON DISCONTINUOUS SERIES RESONANT CONVERTERS  
*Federico Martin IBANEZ*  
CEIT, San Sebastián, Spain
- 
- P1-37 MODELING AND CONTROL OF ULTRA-CAPACITOR BASED ENERGY STORAGE AND POWER CONVERSION SYSTEM  
*Petar J. Grbović<sup>1</sup>, Philippe Delarue<sup>2</sup>, Philippe Le Moigne<sup>2</sup>*  
<sup>1</sup> HUAWEI Technologies Dusseldorf GmbH, Munich, Germany;  
<sup>2</sup> Laboratoire d'Electrotechnique et d'Electronique de Puissance de Lille, France
- 
- P1-38 MASTER-SLAVE TECHNIQUE FOR IMPROVING THE EFFICIENCY OF INTERLEAVED SYNCHRONOUS BOOST  
*Aitor Vázquez, Alberto Rodríguez, Diego G. Lamar, Marta M. Hernando*  
University of Oviedo, Spain
- 
- P1-39 DESIGN AND CONTROL OF A SMALL-SCALE HVDC LAB PROTOTYPE  
*Xudan Liu, Andreas Lindemann, Steffen Rabe, Marc Richter*  
Otto-von-Guericke Universität Magdeburg, Germany
- 
- P1-40 FPGA BASED COMMUNICATION MODULE FOR CONTROL OF POWER INVERTERS AND DRIVES  
*Daniel Vila<sup>1</sup>, Marcelo Pozo<sup>1</sup>, Mario Pacas<sup>1</sup>, Juan José Rodríguez Andina<sup>2</sup>*  
<sup>1</sup> University of Siegen, Germany; <sup>2</sup> U. Vigo, Spain
- 
- P1-41 ADAPTIVE SENSORLESS MAXIMUM POWER POINT TRACKING CONTROL OF A PMSG WIND ENERGY CONVERSION SYSTEM  
*Radhakrishna Kotti, Shyam Janakiraman, Wajjha Shireen.* University of Houston
- 
- P1-42 ISOLATED BIDIRECTIONAL DC/AC AND AC/DC THREE-PHASE POWER CONVERSION USING SERIES RESONANT CONVERTER MODULES AND A THREE-PHASE UNFOLDER  
*Weilun Chen<sup>1</sup>, Kevin Kennedy<sup>1</sup>, Regan Zane<sup>1</sup>, Daniel Seltzer<sup>2</sup>, Luca Corradini<sup>3</sup>*  
<sup>1</sup> Utah State University; <sup>2</sup> University of Colorado; <sup>3</sup> University of Padova
- 
- P1-43 INTELLIGENT ELECTRICAL EVENT RECOGNITION ON GENERAL HOUSEHOLD POWER APPLIANCES  
*Lei Jiang<sup>1</sup>, Suhuai Luo<sup>1</sup>, Jiaming Li<sup>2</sup>*  
<sup>1</sup> University of Newcastle, Australia;  
<sup>2</sup> ICT Centre, Commonwealth Scientific and Industrial Research Organization, Australia
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- P1-44 OPTIMUM CONTROL OF REACTIVE AND REAL POWER IN CONVERTER EXCITED INDUCTION GENERATOR SYSTEM FOR WIND POWER GENERATION  
*Noriyuki Kimura<sup>1</sup>, Shuta Kashiwagi<sup>1</sup>, Toshimitsu Morizane<sup>1</sup>, Hideki Omori<sup>1</sup>, Yasuyuki Nishida<sup>2</sup>*  
<sup>1</sup> Osaka Institute of Technology, Japan; <sup>2</sup> Chiba Institute of Technology, Japan

**June 24, Tuesday**

**Poster Session 2**

**16:45-18:45**

**Modeling & Simulation. Chairs: *Juan M. Rivas-Dávila, José Ángel García***

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- P2-1 ONLINE INDIRECT MEASUREMENT OF ESR AND CAPACITY FOR PHM OF CAPACITORS  
*Daniel Astigarraga Trespaderne*  
CEIT, San Sebastián, Spain
- 
- P2-2 CHARACTERIZATION OF A DC LINE FOR POWER LINE COMMUNICATION IN SMART GRIDS  
*Gianpaolo Vitale*  
Consiglio Nazionale delle Ricerche, CNR. Palermo
- 
- P2-3 ANALYTICAL MODEL FOR EFFECTS OF TWISTING ON LITZ-WIRE LOSSES  
*Charles R. Sullivan*  
Thayer School of Engineering at Dartmouth
- 
- P2-5 A SIMPLIFIED AVERAGE MODEL AND ANALYSIS FOR AN N-PARALLEL CONNECTED INVERTERS  
*T. Zebbadji, S. Hadji, R. Ibtouen*  
Ecole Nationale Polytechnique, LRE, Alger
- 
- P2-6 REAL-TIME HARDWARE-IN-THE-LOOP SIMULATION FOR OPTIMAL DC MICROGRID CONTROL DEVELOPMENT  
*Wayne Weaver, Gordon G. Parker*  
Michigan Technological University
- 
- P2-7 OPTIMIZATION OF TRANSCUTANEOUS ENERGY TRANSFER COILS FOR HIGH POWER MEDICAL APPLICATIONS  
*Oliver Knecht, R. Bosshard, J. W. Kolar*  
Swiss Federal Institute of Technology Zurich (ETHZ)
- 
- P2-8 MONOLITHIC SWITCHED-CAPACITOR DC-DC TOWARDS HIGH VOLTAGE CONVERSION RATIOS  
*Hans Meyvaert, Michiel Steyaert*  
Katholieke Universiteit Leuven, Belgium
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*Anthony Pinar, Wayne W. Weaver*  
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*Pablo Zumel, Cristina Fernández, Antonio Lázaro, Marina Sanz, Andrés Barrado*  
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*Fazel Taeed<sup>1</sup>, Ziwei Ouyang<sup>2</sup>, Morten Nymand<sup>1</sup>, Michael A. E. Andersen<sup>2</sup>*  
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- P2-20 HANDLING INPUT VOLTAGE FREQUENCY VARIATIONS IN POWER FACTOR CORRECTORS WITH PRECALCULATED DUTY CYCLES  
*Fernando López-Colino, Alberto Sánchez, Gabriel Alvarez, Angel de Castro, Javier Garrido*  
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- P2-25 A SIMPLE APPROACH TO A LINEAR CONTROL OF SWITCHED CAPACITOR DC/DC CONVERTER IN SYSTEM-ON-CHIP ENVIRONMENT  
*Thomas Souvignet<sup>1</sup>, Bruno Allard<sup>2</sup>, Severin Trochut<sup>3</sup>*  
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*Ramon Leyva, Dragan Maksimović, Rui Ling*  
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*Jinyeong Moon, Steven B. Leeb*  
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*Santanu Kapat, K.Hariharan*  
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*Petar J. Grbović*  
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*Noriyuki Kimura, Koji Nijima, Toshimitsu Morizane, Hideki Omori*  
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*Luo Cheng Wang, Ali Bazzi*  
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*Ahmed Farahat<sup>1</sup>, Anna Florea<sup>1</sup>, José L. Martínez Lastra<sup>1</sup>, Christian Brañas<sup>2</sup>, F. J. Azcondo<sup>2</sup>*  
<sup>1</sup> University of Tampere, Finland; <sup>2</sup> U. Cantabria, Spain
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*Jan. A. Ferreira, Abel.A. Taffese*  
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*E. Sanchis-Kilders, A. Ferreres, J.L. Gasent-Blesa, D. Osorno, D. Gilabert, E. Maset, J.B. Ejea, V. Esteve, J. Jordán*  
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*Che Cheng Huang, Jia Jing Yeh, Chien Kai Tseng*  
National Space Organization, HsinChu, Taiwan
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*Kaitlyn J. Bunker, Wayne W. Weaver*  
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- P2-40 DESIGN METHODOLOGY OF P-RES CURRENT CONTROLLER WITH HARMONIC COMPENSATION AND ACTIVE DAMPING OF LCL OUTPUT FILTER RESONANCE FOR DISTRIBUTED GENERATION SYSTEM BASED ON THREE-PHASE DC-AC INVERTER  
*Paulo S. Nascimento, Tarcio A. S. Barros, Marcelo G. Villalva, Ernesto Ruppert*  
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- P2-41 VECTOR OPTIMIZED HARMONIC ELIMINATION IN MULTILEVEL INVERTERS/CONVERTERS – A SOLUTION  
*Seddik Hadji<sup>1</sup>, O. Touhami<sup>1</sup>, R. Ouar<sup>1</sup>, A. Naami<sup>1</sup>, C.J. Goodman<sup>2</sup>*  
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P2-42 A NEW STABILITY ASSESSMENT CRITERION FOR DC POWER SYSTEMS USING MULTI-LEVEL VIRTUAL CONDUCTORS

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P2-43 A CASE STUDY OF SHARE OF ICT INFRASTRUCTURE IN ENERGY CONSUMPTION OF DISCRETE MANUFACTURING FACILITY

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P2-44 ANALYTICAL SIZING METHODOLOGY FOR INDUCTIVE POWER TRANSFER SYSTEMS

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