

# Monday 5th of July

## PE - 7: Converters I

Meeting Room 01

Specchi

Monday 5th of July

Hour: 14:00 – 16:00

**Chair/s:** Ted K. A. Brekken (Oregon State University, USA), Alex Ruderman (Elmo Motion Control Ltd., Israel)

Power Electronics Applications in Bulk Power Transmission over Long Distances (**Invited Paper**)

Mauricio Aredes, UFRJ - Federal University of Rio de Janeiro, Brazil, Robson Dias, University of Toronto, Canada, Antonio Felipe Aquino, ONS - Brazilian ISO, Brazil, Carlos Portela, UFRJ - Federal University of Rio de Janeiro, Brazil, Edson Watanabe, UFRJ - Federal University of Rio de Janeiro, Brazil

A New Dual Chopper Prototype One Stage PFC Converter with Low Ripple Output Voltage Characteristics and Its Modified Circuit Topologies

Kazunori Nishimura, Hiroshima Institute of Tech., Japan, Nobuhiro Yokoyama, Hiroshima Institute of Tech., Japan, Katsuya Hirachi, Maizuru National College of Tech., Japan, Mutsuo Nakaoka, Kyungnam Univ./ Yamaguchi Univ., Japan

Linear Control of the “Buck” Converter with Unknown Loads

Hebertt Sira-Ramirez, Cinvestav-IPN, Mexico, Ciro Nunez, Univ. San Luis Potosi, Mexico, Nancy Visairo, Univ. San Luis Potosi, Mexico

Power System Stabilizer for Communicationless Parallel Connected Inverters

Rubens Santos, Cefet-Mg, Brazil, Paulo F. Seixas, Ufmg, Brazil, Porfirio C. Cortizo, Ufmg, Brazil, Guillaume Gateau, Inp / Laplace, France, Ernane A. A. Coelho, Ufu, Brazil

Medium Voltage Drives - Challenges and Requirements

Haitham Abu-Rub, Texas A&M University At Qatar, Qatar, Arkadiusz Lewicki, Gdansk University of Technology, Poland, Atif Iqbal, Texas A&M University at Qatar, Qatar, Jaroslaw Guzinski, Gdansk University of Technology, Poland

## PE - 10: Wind Turbine

Meeting Room 01

Specchi

## **Monday 5th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Friedrich W. Fuchs (Christian-Albrechts University of Kiel, Germany), Remus Teodorescu (Aalborg University, Denmark)

Overview of the energy storage systems for wind power integration enhancement (**Invited Paper**)

Maciej Swierczynski, Aalborg University, Denmark, Remus Teodorescu, Aalborg University, Denmark, Claus Nygaard Rasmussen, Aalborg University, Denmark, Pedro Rodriguez, Aalborg University, Denmark, Henrik Vikelgaard, Aalborg University, Denmark

Overview of FACTS Devices for Wind Power Plants Directly Connected to the Transmission Network (**Invited Paper**)

Andrzej Adamczyk, Aalborg University, Denmark, Remus Teodorescu, Aalborg University, Denmark, Ravindra N. Mukerjee, Aalborg University, Denmark, Pedro Rodriguez, Aalborg University, Denmark

Performance Improvement of a DFIG in a Wind Turbine under an Unbalanced Grid-Voltage Condition

Sol-Bin Lee, Ajou University, Korea (South), Kyo-Beum Lee, Ajou University, Korea (South)

Dynamic Voltage Restorer to allow Low Voltage Ride Through for DFIG Wind Turbine

Christian Wessels, University of Kiel, Germany, Fabian Gebhardt, University of Kiel, Germany, Friedrich W. Fuchs, University of Kiel, Germany

## **Dialog 1: Electric Machines / Signal Processing**

### **Meeting Room 02**

#### **Feste**

## **Monday 5th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Marco Martalo (University of Parma, Italy), Giammario Pellegrino (Politecnico di Torino, Italy), Nicola Bianchi (University of Padova, Italy)

Simulation of grid connected PM generator for wind turbines

Michel Van Dessel, Campus De Nayer, Belgium, Michael Gay, Campus De Nayer, Belgium, Geert Deconinck, K.U. Leuven ESAT / ELECTA, Belgium

Brushless DC Generator controlled by Constrained Predictive Algorithm

Gianluca Gatto, Università degli Studi di Cagliari, Italy, Ignazio Marongiu, Università degli Studi di Cagliari, Italy, Aldo Perfetto, Università di Napoli "Federico II", Italy, Alessandro Serpi, Università degli Studi di Cagliari, Italy

Dsp Based Switched Reluctance Motor/Generator

Augusto Silveira, Ufu, Brazil

Optimal Design of Slotted Iron Core Type Permanent Magnet Linear Synchronous Motor for Ropeless Elevator System

Yu-Wu Zhu, Dong-A University, Korea (South), Sang-Geon Lee, Dong-A University, Korea (South), Yun-Hyun Cho, Dong-A University, Korea (South)

High Performance Line Start Permanent Magnet Synchronous Motor for Pumping System

Jian Li, Dong-A University, Korea (South), Jungtae Song, Dong-A University, Korea (South), Yunhyun Cho, Dong-A University, Korea (South)

Synchronous Operation Control of the Brushless Doubly-Fed Machine

Farhad Barati, Sharif University of Technology, Iran, Shiyi Shao, University of Cambridge, United Kingdom, Ehsan Abdi, University of Cambridge, United Kingdom, Hashem Oraee, Sharif University of Technology, Iran, Richard McMahon, University of Cambridge, United Kingdom

Design and Analysis of High Speed 4/2 SRMs for Air-Blower Application

Jin-Woo Ahn, Kyungsoong University, Korea (South), Huynh Khac Minh Khoi, Kyungsoong University, Korea (South), Dong-Hee Lee, Kyungsoong University, Korea (South)

Micro-step Position Control with a Simple Voltage Controller using Low-cost Micro-processor

Dong-Hee Lee, Kyungsoong University, Korea (South), Wooseong Che, Kyungsoong University, Korea (South), Jin-Woo Ahn, Kyungsoong University, Korea (South)

Theoretical and Experimental Evaluation of the Power Losses in CM Active EMI Filters

Maria Carmela Di Piazza, Issia - Cnr, Italy, Antonella Ragusa, Issia - Cnr, Italy, Gianpaolo Vitale, Issia - Cnr, Italy

Designs of Experiments for Low Voltage Electrical Machines Insulation Lifetime Modelisation

Pascal Maussion, University of Toulouse, France, Jérôme Faucher, University of Toulouse, France

Variable Structure Direct Torque Control of Encoderless Synchronous Reluctance Motor Drive with Maximized Efficiency

Hossein Abootorabi Zarchi, Isfahan University of Technology, Iran, Jafar Soltani, Azad University of Khomeini-shahr, Iran, Gholamreza Arab Markadeh, Shahrekord University, Iran, Mahdi Fazeli, University of Malaya, Malaysia, Arash Khodaparastsichani, Shahrekord University, Iran

Spread Spectrum Scheme for Three-Level Inverters based on Space Vector Sigma Delta Modulator

Biji Jacob, College of Engineering, India, M. R. Baiju, College of Engineering, India

Steady State Performance Computation of a Synchronous Machine using Harmonic Resolution

Xavier Jannot, Supelec, France, Jean-Claude Vannier, Supelec, France, Mohamed Gabsi, Satie, France, Claude Marchand, Lgep, France, Jacques Saint-Michel, Leroy-Somer, France, Daniel Sadarnac, Supelec, France

On The Modeling and Control of a Novel Flywheel Energy Storage System

Trong Duy Nguyen, Nanyang Technological University, Singapore, King Jet Tseng, Nanyang Technological University, Singapore, Shao Zhang, Nanyang Technological University, Singapore, Hoan Thong Nguyen, Nanyang Technological University, Singapore

Hybrid Time-Frequency Domain Analysis for Inverter-Fed Induction Motor Fault Detection.

Teck Wee Chua, National University of Singapore, Singapore, Woei Wan Tan, National University of Singapore, Singapore, Zhaoxia Wang, National University of Singapore, Singapore, Che Sau Chang, National University of Singapore, Singapore

Robust Position Control of Induction Motor Drives

Patxi Alkorta Eiguren, University of the Basque Country, Spain, Oscar Barambones Caramazana, University of the Basque Country, Spain

FPGA Implementation of a Sensorless PMSM Drive Control Algorithm Based on Algebraic Method

Gianmarco Maragliano, University of Genova, Italy, Mario Marchesoni, University of Genova, Italy, Luis Vaccaro, University of Genova, Italy

Implementation and Signal Processing Aspects of Iterative Regression Tuning

Radu-Emil Precup, Politehnica University of Timisoara, Romania, Cosmin Borchescu, Politehnica University of Timisoara, Romania, Mircea-Bogdan Radac, Politehnica University of Timisoara, Romania, Stefan Preitl, Politehnica University of Timisoara, Romania, Claudia-Adina Dragos, Politehnica University of Timisoara, Romania, Emil M. Petriu, University of Ottawa, Canada, Jozsef K. Tar, Obuda University, Hungary

Distributed Bayesian Network Structure Learning

Yongchan Na, Sogang University, Korea (South), Jihoon Yang, Sogang University, Korea (South)

Low-Complexity In-Sensor Audio Detection with Experimental Validation

Marco Martalo', University of Parma, Italy, Gianluigi Ferrari, University of Parma, Italy, Claudio Malavenda, Elsag-Datamat S.p.A, Rome, Italy

High-bandwidth three-phase phase-locked loop

Ivan Furlan, SUPSI, Switzerland, Silvano Balemi, SUPSI, Switzerland

Identification system for smart homes using footstep sounds

Rafael Carvalho, Federal University of Tocantins, Brazil, Paulo Rosa, Military Institute of Engineering, Brazil

Wiener Filtration for Speech Extraction from the Intentionally Corrupted Signals

Rafał Samborski, AGH University of Science and Technology, Poland, Mariusz Ziółko, AGH University of Science and Technology, Poland, Bartosz Ziółko, AGH University of Science and Technology, Poland, Jakub Gałka, AGH University of Science and Technology, Poland

A Voltage Mode Integer Divider for Fast A/D Conversion

Nikos Petrellis, Analogies S.A., Greece, Michael Birbas, Analogies S.A., Greece, John Kikidis, Analogies S.A., Greece, Alexios Birbas, Analogies S.A., Greece

iFall - Case Studies in Unexpected Falls

Ralf Salomon, University of Rostock, Germany, Marian Lueder, University of Rostock, Germany, Gerald Bieber, Fraunhofer-Institute for Computer Graphics Rostock, Germany

Formation and Path Following for Multiple Mobile Robots

Hasan Mehrjerdi, Quebec University, Canada, Maarouf Saad, Quebec University, Canada, Jawhar Ghommam, Quebec University, Canada, Amel Zerigui, École Nationale d'Ingénieurs de Sfax, Tunisia.

## **SASI - 1: Sensors, Actuators and System Integration 1**

**Meeting Room 07**

**Ausonia**

**Monday 5th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Seta Bogosyan (Univ. Alaska Fairbanks, USA), Seiji Hata (Kagawa Univ., Japan), Antonio Moreno-Munoz (Universidad de Cordoba)

Embedding Measurement in Distribution Automation Systems (**Invited Paper**)

Antonio Moreno-Munoz, Universidad de Cordoba, Spain, Juan J. G. De-la-Rosa, Universidad de Cadiz, Spain

Effect of Node Distributions on Lifetime of Wireless Sensor Networks

Sara Nouh, American University in Cairo, Egypt, Rana A. Abbass, American University in Cairo, Egypt, Dalia Abou El Seoud, American University in Cairo, Egypt, Nora A. Ali, Cairo University, Egypt, Ramez M. Daoud, Kama, Egypt, Hassanein H. Amer, American University in Cairo, Egypt, Hany M. ElSayed, Cairo University, Egypt

Mobile Wireless Sensor System for Tracking and Environmental Supervision

David Sarmiento, KTH, Sweden

Estimation of the shaft position on low-cost DC actuators

Salvatore De Caro, University of Messina, Italy, Antonio Testa, University of Messina, Italy, Romeo Letor, ST Microelectronics, Italy

A New Functional Observer to Estimate Velocity, Acceleration and Disturbance for Motion Control Systems

Eray A. Baran, Sabanci University, Turkey, Edin Golubovic, Sabanci University, Turkey, Asif Sabanovic, Sabanci University, Turkey

## **SASI - 2: Sensors, Actuators and System Integration 2**

### **Meeting Room 07**

### **Ausonia**

### **Monday 5th of July**

### **Hour: 16:30– 18:30**

**Chair/s:** Seta Bogosyan (Univ. Alaska Fairbanks, USA), Antonio Luque (Univ. Seville, Spain), Antonio Moreno-Munoz (Universidad de Cordoba)

Magnetostrictive Actuating Device Utilizing Impact Forces Coupled with Friction Forces

Zu Guang Zhang, Tokyo University of Science, Japan, Toshiyuki Ueno, Kanazawa University, Japan, Toshiro Higuchi, The University of Tokyo, Japan

Planar 3-DOF Paper Sheet Manipulation Using Electrostatic Induction

Akio Yamamoto, University of Tokyo, Japan, Shinya Tsuruta, University of Tokyo, Japan, Toshiro Higuchi, University of Tokyo, Japan

The Charge Sensing Device Approach - Sensors for Textile Machines using the natural electrostatic Charge of the Yarn

Steffen Heinz, TU Chemnitz, Germany, Markus Boll, EDC Electronic Design Chemnitz GmbH, Germany, John Thomas Horstmann, TU Chemnitz, Germany, Andre Lange, EDC Electronic Design Chemnitz GmbH, Germany, Udo Neumann, Neumann Elektrotechnik GmbH, Germany, Jan Posvic, Neumann Elektrotechnik GmbH, Germany, Sven Seifert, Neumann Elektrotechnik GmbH, Germany, Stefan Zielke, EDC Electronic Design Chemnitz GmbH, Germany

Identification and Validation of a Lumped Parameters Model for the Dielectric Relaxation of a Piezoelectric Tactile Sensor

Davide Cattin, University of Padova, Italy, Roberto Oboe, University of Padova, Italy, Ravinder S. Dahiya, Italian Institute of Technology, Italy, Maurizio Valle, University of Genoa, Italy

Use of lipid bilayers as support for biomolecules integration in OTFT biosensors

Serafina Cotrone, University of Bari, Italy, Maria Magliulo, University of Bari, Italy, Maria Daniela Angione, University of Bari, Italy, Antonella Mallardi, CNR-Istituto per i Processi Chimico-Fisici, Italy, Marianna Ambrico, CNR-IMIP, Italy, Teresa Ligonzo, University of Bari, Italy, Matilde Colella, University of Bari, Italy, Gerardo Palazzo, University of Bari, Italy, Luisa Torsi, University of Bari, Italy

Improving the performance of piezoresistive force sensors by modeling sensor capacitance

Leonel Paredes, Institute of Industrial Automation - CSIC, Spain, Luis Emmi, Institute of Industrial Automation - CSIC, Spain, Pablo Gonzalez de Santos, Institute of Industrial Automation - CSIC, Spain

## **CSA - 3: Sliding Mode Control**

**Meeting Room 04**

**Messapia**

**Monday 5th of July**

**Hour 14:00 – 16:00**

**Chair/s:** Xinghuo Yu (RMIT University, Australia), Guido Maione (Politecnico di Bari, Italy), John Y. Hung (Auburn University, USA)

Sliding Mode Control - Basic Concepts and Current Trends (**Invited Paper**)

Andrzej Bartoszewicz, Technical University of Lodz, Poland, Justyna Zuk, Technical University of Lodz, Poland

Configuration Space Analysis Oriented to Robust Control and Obstacle Avoidance of Manipulators

Francesca Ballan, University of Pavia, Italy, Luca Capisani, University of Pavia, Italy, Tullio Facchinetti, University of Pavia, Italy, Antonella Ferrara, University of Pavia, Italy, Alessandro Martinelli, University of Pavia, Italy

The design and Implementation of output feedback based frequency shaped sliding mode controller for the smart structure

A. J. Mehta, G H Patel College of Engineering and Technology, India, B. Bandyopadhyay, Indian Institute of Technology, India

Sliding Mode and EKF Observers for Communication Delay Compensation in Bilateral Control Systems

Bindu Gadamsetty, University of Alaska Fairbanks, USA, Seta Bogosyan, University of Alaska Fairbanks, USA, Metin Gokasan, Istanbul Technical University, Turkey, Asif Sabanovic, Sabanci University, Turkey

Sliding Mode Optimum Control for APU of Series Hybrid Electric Vehicles

Murat Demirci, TUBITAK MRC Energy Institute, Turkey, Onder Biliroglu, TUBITAK MRC Energy Institute, Turkey, Metin Gokasan, Istanbul Technical University, Turkey, Seta Bogosyan, University of Alaska Fairbanks, USA

## **CSA - 2: Control Systems 2**

**Meeting Room 04**

**Messapia**

**Monday 5th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Mo-Yuen Chow (North Carolina State University, USA), Francesco Alonge, (University of Palermo, Italy)

Fuzzy Methodology for Frequency Response Estimation of Nonlinear Dynamic Systems

Carlos Cesar Teixeira Ferreira, Ginalber Luiz de Oliveira Serra, Federal Institute of Education, Science and Technology (IFMA), Brazil,

On Hysteresis in Magnetic Lenses of Electron Microscopes

P.J. van Bree, Eindhoven University of Technology, Netherlands, C.M.M. van Lierop, Eindhoven University of Technology, Netherlands, P.P.J. van den Bosch, Eindhoven University of Technology, Netherlands

Supervisory FNN Control for Two-Wheeled Mobile Vehicle System

Tien-Chi Chen, Kun Shan University, Taiwan, Tsai-Jiun Ren, Kun Shan University, Taiwan, Yu-Ren Chen, National Cheng Kung University, Taiwan

Hybrid fly-by-wire quadrotor controller

Matko Orsag, Faculty of Electrical Engineering and Computing, Croatia, Marina Poropat, Faculty of Electrical Engineering and Computing, Croatia, Stjepan Bogdan, Faculty of Electrical Engineering and Computing, Croatia

Hierarchical Fuzzy/Lyapunov Control for Horizontal Plane Trajectory Tracking of Underactuated AUV

Francesco M. Raimondi, University of Palermo, Italy, Maurizio Melluso, University of Palermo, Italy

Model Predictive Control using Prognosis and Health Monitoring of Actuators

Eduardo Pereira, Instituto Tecnológico de Aeronáutica, Brazil, Roberto Galvão, Instituto Tecnológico de Aeronáutica, Brazil, Takashi Yoneyama, Instituto Tecnológico de Aeronáutica, Brazil

## **EMD - 3: Electric Vehicle Applications**

**Meeting Room 03**

**Abbrescia**

**Monday 5th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Chris Mi (University of Michigan, USA), Yoichi Hori (University of Tokyo, Japan)

Modern Electrical Machine Analysis and Design Techniques Applied to Hybrid Vehicle Drive Machines (**Invited Paper**)

David G. Dorrell, University of Technology Sydney, Australia, Mircea Popescu, Motor Design Ltd, United Kingdom, Lyndon Evans, Motor Design Ltd, United Kingdom, David A. Staton, Motor Design Ltd, United Kingdom, Andrew M. Knight, University of Alberta, Canada

Pulse Rectifier Control for Electric Power Splitter of a Hybrid Propulsion System

Martin Novak, Czech Technical University in Prague, Czech Republic, Jaroslav Novak, Czech Technical University in Prague, Czech Republic, Zdenek Cerovsky, Czech Technical University in Prague, Czech Republic

Permanent Magnet Synchronous Machines: Performances during Driving Cycles for a Hybrid Electric Vehicle Application

Phi Hung Nguyen, SATIE-ENS Cachan, France, Emmanuel Hoang, SATIE-ENS Cachan, France, Mohamed Gabsi, SATIE-ENS Cachan, France, Luc Kobylanski, Valeo Systèmes Electriques, France, Dominique Condamine, Moteur Leroy Somer, France

Design Considerations for Switched Reluctance Machines with Higher Number of Rotor Poles for Plug-in Hybrid Electric Vehicles

Berker Bilgin, Illinois Institute of Technology, USA, Ali Emadi, Illinois Institute of Technology, USA, Mahesh Krishnamurthy, Illinois Institute of Technology, USA

Permanent magnet synchronous machine design for hybrid traction applications: impact of magnetic laminations materials

Nedjar Boumedyen, SATIE ENS Cachan, France, Hlioui Sami, SATIE ENS Cachan, France, Vido Lionel, Univ Cergy Pontoise, France, Gabsi Mohamed, SATIE ENS Cachan, France, Amara Yacine, GREAH Le Havre, France, Emmanuel Hoang, SATIE ENS Cachan, France, Miraoui Abdellatif, Set UTBM, France

## **EMD - 2: Current and Voltage Control**

**Meeting Room 03**

**Abbrescia**

**Monday 5th of July**

**Hour: 16:30– 18:30**

**Chair/s:** Gerard A. Capolino (University of Picardie, France), Maria I. Valla (Universidad Nacional de La Plata, Argentina)

A Comparative Evaluation of High Performance Current Regulation Strategies for Vector Controlled Induction Motor Drives (**Invited Paper**)

Donald G Holmes, RMIT University, Australia, Brendan B McGrath, RMIT University, Australia, Stewart G Parker, RMIT University, Australia

Fine Quick Servo System Considering Saturation of Voltage and Current for IPM Synchronous Motor

Kenji Takahashi, Nagaoka University of Technology, Japan, Kiyoshi Ohishi, Nagaoka University of Technology, Japan, Toshiyuki Kanmachi, Ishikawa National College of Technology, Japan

A Digital Current Control for Switched Reluctance Motor Drives

Baiming Shao, Illinois Institute of Technology, USA, Srdjan Lukic, North Carolina State University, USA, Ali Emadi, Illinois Institute of Technology, USA

Load Torque Compensator for Model Predictive Direct Current Control in High Power PMSM Drive Systems

Matthias Preindl, ETH Zurich, Switzerland, Erik Scholtz, Aalborg University, Denmark

Asymmetric Carrier Random PWM

Laszlo Mathe, Aalborg University, Denmark, Florin Lungeanu, Danfoss Drives, Denmark, Peter Omand Rasmussen, Aalborg University, Denmark, John K. Pedersen, Aalborg University, Denmark

## **ss18 - Control of Renewable Integrated Systems Targeting Advanced Landmarks (CRISTAL)**

**Meeting Room 08**

**Daunia**

**Monday 5th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Marcian Cirstea (Anglia Ruskin University, Cambridge, UK), Radu Bojoi (Politecnico di Torino, Italy)

Typical defects of PV-cells

Giuseppe Acciani, Politecnico di Bari, Italy, Ottavio Falcone, Politecnico di Bari, Italy, Silvano Vergura, Politecnico di Bari, Italy

Holistic Modeling, Design and Optimal Digital Control of a Combined Renewable Power System

Alin Tisan, North University of Baia Mare, Romania, Marcian Cirstea, Anglia Ruskin University, United Kingdom, Attila Buchman, North University of Baia Mare, Romania, Alberto Perera, Anglia Ruskin University, United Kingdom, Stefan Oniga, North University of Baia Mare, Romania, Danut Ilea, Transilvania University of Brasov, Romania

Enhanced Power Quality Control Strategy for Single-Phase Inverters in Distributed Generation Systems

Radu Bojoi, Politecnico di Torino, Italy, Daniel Roiu, Politecnico di Torino, Italy, Leonardo Limongi, Universidade Federal de Pernambuco, Brazil, Alberto Tenconi, Politecnico di Torino, Italy

Multilevel Inverters and Fuzzy Logic for Fuel Cells Power Conditioning and Control

Pierluigi Siano, University of Salerno, Italy, Carlo Cecati, University of L'Aquila, Italy, Alfredo Sindona, University of Salerno, Italy, Cristiano Calusi, University of L'Aquila, Italy, Antonio Piccolo, University of Salerno, Italy

Active power decoupling circuit for a single-phase battery energy storage system dedicated to autonomous microgrids

Ioan Serban, Transilvania University of Brasov, Romania, Corneliu Marinescu, Transilvania University of Brasov, Romania

Control Strategy of Battery State of Charge for Wind/Battery Hybrid Power System

Xiangjun Li, China Electric Power Research Institute, China

## **ss31 - Advances in Control of Mechatronic Systems**

### **Meeting Room 08**

### **Daunia**

### **Monday 5th of July**

### **Hour: 16:30 – 18:30**

**Chair/s:** Cesare Fantuzzi (University of Modena and Reggio Emilia, Italy), Giovanni Dongola, (University of Catania)

Control of Lateral Tape Motion Using Extrapolated Position Estimation

Iacopo Gentilini, Carnegie Mellon University, United States, Man seong Kim, Carnegie Mellon University, United States, William C. Messner, Carnegie Mellon University, United States

Vibration Damping for Machine Tool Servo Drives by Load Acceleration Feedback

Oliver Zirn, TU Clausthal, Germany, Christian Jaeger, Fässler AG, Switzerland

Interaction Control of Robotic Manipulators Without Force measurement

Francesco Alonge, University of Palermo, Italy, Antonino Bruno, University of Palermo, Italy, Filippo D'Ippolito, University of Palermo, Italy

Robustness Analysis of an Extended Kalman Filter for Sensorless Control of Induction Motors

Francesco Alonge, University of Palermo, Italy, Filippo D'Ippolito, University of Palermo, Italy

Modelling, identification and control of a force generator for vibration attenuation

Leonardo Riccardi, Politecnico di Bari, Italy, Chris May, Saarland University, Germany, David Naso, Politecnico di Bari, Italy, Hartmut Janocha, Saarland University, Germany, Biagio Turchiano, Politecnico di Bari, Italy

A Nonlinear Proportional Controller for Motion Control Application

Cesare Fantuzzi, Università di Modena e Reggio Emilia, Italy, Gabriele Canini, KPL Packaging, Italy

## **RM - 1: Haptic Systems in Robotics**

**Meeting Room 05**

**lapigia**

**Monday 5th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Yousef Ibrahim (Monash University, Australia), Kouhei Ohnishi (Keio University, Japan), Karel Jezernik (University of Maribor, Slovenia)

Trend & Prospects of Haptic Technology in Mobile Devices (**Invited Paper**)

Dong-Soo Kwon, Kaist, Korea (South), Tae-Heon Yang, Kaist, Korea (South), Joon Yeon Cho, Kaist, Korea (South)

Signal processing of direct teaching data for human-robot cooperation

Dong Il Park, Korea Institute of Machinery & Materials, Korea (South), Chanhun Park, Korea Institute of Machinery & Materials, Korea (South), Jin-Ho Kyung, Korea Institute of Machinery & Materials, Korea (South)

Hand Haptic Interface Incorporating 1D Finger Pad and 3D Fingertip Force Display Devices

Haruhisa Kawasaki, Gifu University, Japan, Yasuhiko Doi, Gifu University, Japan, Shinya Koide, Gifu University, Japan, Takahiro Endo, Gifu University, Japan, Tetsuya Mouri, Gifu University, Japan

A Constitution Method of Bilateral Teleoperation under Time Delay Based on Stability Analysis of Modal Space

Atsushi Suzuki, Keio University, Japan, Kouhei Ohnishi, Keio University, Japan

Bilateral Teleoperation by Sliding Mode Control and Reaction Force Observer

Aleš Hace, University of Maribor, Slovenia, Karel Jezernik, University of Maribor, Slovenia

Influence of Speed Estimation Methods and Encoder Resolutions on the Stiffness of a Haptic Interface

Ziad Jabbour, Cea-List, France, Sandrine Moreau, University of Poitiers, LAll, France, Alain Riwan, Cea-List, France, Jonathan Van Rhijn, Cea-List, France, Gérard Champenois, University of Poitiers, LAll, France

## **RM - 2: Multi-Sensor and Multi-Robot Systems**

**Meeting Room 05**

**lapigia**

**Monday 5th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Hiroshi Fujimoto (The University of Tokyo, Japan), Yousef Ibrahim (Monash University, Australia)

An Overview of the Issues and Perspectives for Multisensor Fusion and Integration in Mechatronics  
**(Invited Paper)**

Ren C. Luo, National Taiwan University, Taiwan, Chih-Chia Chang, National Taiwan University, Taiwan

Mechanical Communication in Multiple Robot System

Hiroyuki Kobayashi, Osaka Institute of Technology, Japan, Daichi Miyauchi, Kurita Machinery Mfg. co., Ltd., Japan, Hiroshi Hashimoto, Advanced Institute of Industrial Technology, Japan

On Cooperative Work of Distributed Robot Maintaining Retention of Swarm -in the case of going up slope-

Hiroshi Hashimoto, Advanced Institute of Industrial Technology, Japan, Hiroyuki Kobayashi, Osaka Institute of Technology, Japan, Sho Yokota, Setsunan University, Japan, Akinori Sasaki, Tokyo University of Technology, Japan, Yasuhiro Ohyama, Tokyo University of Technology, Japan

Robot localization by sparse and passive RFID tags

Emidio Di Giampaolo, Università di Roma Tor Vergata, Italy, Francesco Martinelli, Università di Roma Tor Vergata, Italy

New Approach to Detection of Incipient Slip Using Inductive Sensory System

Abdullah Al-Mamon, Monash University, Australia, Yousef Ibrahim, Monash University, Australia

A Heuristic Approach to Task Assignment and Control for Robotic Networks

Donato Di Paola, Institute of Intelligent Systems for Automation (ISSIA) - National Research Council (CNR), Italy, David Naso, Polytechnic of Bari, Italy, Biagio Turchiano, Polytechnic of Bari, Italy

**SPCI - 1: Signal Processing 1**

**Meeting Room 06**

**Ionias**

**Monday 5th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Carlos Cesar Teixeira Ferreira (IFMA, Brazil), Milos Manic (University of Idaho, USA), Antonio Moreno-Munoz (Universidad de Cordoba, Spain)

Real-Time Tracking and Identification System for Moving Face

Yiu-Sang Moon, The Chinese University of Hong Kong, Hong Kong, Kai-Chi Chan, The Chinese University of Hong Kong, Hong Kong, Kah-Kuen Fu, University of Waterloo, Canada, Shuang Yu, The Chinese University of Hong Kong, Hong Kong, Yuen-Chung Li, The Chinese University of Hong Kong, Hong Kong, Jiansheng Chen, Tsinghua University, China

Lossless data hiding for VQ indices based on neighboring correlation

Jiann-Der Lee, Chang Gung University, Taiwan, Yaw-Hwang Chiou, Chang Gung University, Taiwan

On the Fast Computation of Zernike Moments

Rajarshi Biswas, Netaji Subhash Engineering College, India, Sambhunath Biswas, Indian Statistical Institute, India

Hausdorff Distance for Template Detection and Efficient Implementation on Embedded Systems

Gaetano Petracca, University of Genoa, Italy, Alessio Leoncini, University of Genoa, Italy, Fabio Sangiacomo, University of Genoa, Italy, Rodolfo Zunino, University of Genoa, Italy

A New Approach for Smoke Detection with Texture Analysis and Support Vector Machine

Hidenori Maruta, Nagasaki University, Japan, Akihiro Nakamura, Nagasaki University, Japan, Fujio Kurokawa, Nagasaki University, Japan

An Unsupervised Evaluation Method based on Probability Density Function

Amir Masoud Eftekhari Moghadam, Qazvin-University, Iran

## **SPCI - 2: Signal Processing 2**

**Meeting Room 06**

**Ionia**

**Monday 5th of July**

**Hour: 16:30– 18:30**

**Chair/s:** Hocenski Željko (University J.J.Strossmayer in Osijek, Croatia), Milos Manic (University of Idaho, USA)

A New Refinement Criterion for Adaptive Sampling in Path Tracing

Qing Xu, Tianjin University, China, Mateu Sbert, University of Girona, Spain, Miquel Feixas, University of Girona, Spain, Riccardo Scopigno, Istituto Superiore Mario Boella, Italy

Automatic Classification of Power Quality Disturbances via Higher-Order Cumulants and Self-Organizing Networks

Juan Jose Gonzalez de la Rosa, Univ. Cadiz, Spain, Antonio Moreno Muñoz, Univ. Cordoba, Spain, Jose Carlos Palomares Salas, Univ. Cadiz, Spain, Agustin Aguera Perez, Univ. Cadiz, Spain

Uncertainty of Asynchronous Analog-to-Digital Converter Output State

Marek Jableka, AGH University of Science and Technology, Poland, Marek Miskowicz, AGH University of Science and Technology, Poland, Dariusz Koscielnik, AGH University of Science and Technology, Poland

Classification of power quality disturbances using Wavelet and Artificial Neural Networks

Alejandro Rodriguez, University of Malaga, Spain, Jose E. Ruiz, University of Malaga, Spain, Jose A. Aguado, University of Malaga, Spain, Jose J. Lopez, University of Malaga, Spain, Francisco I. Martin, University of Malaga, Spain, Francisco J. Muñoz, University of Malaga, Spain

Diagnostics of Gas Bubbles Using Wavelet Transform

Abhisek Ukil, ABB Corporate Research, Switzerland, Daniel Schrag, ABB Corporate Research, Switzerland, Kai Hencken, ABB Corporate Research, Switzerland

An FPGA Based Approach for Nonlinear Characterization of Electrocardiographic Data

Riccardo Caponetto, University of Catania, Italy, Antonio Gallo, University of Catania, Italy, Giovanni Dongola, University of Catania, Italy, Francesca Sapuppo, University of Catania, Italy, Maide Bucolo, University of Catania, Italy

## **SF - Student Forum**

### **Meeting Room 09**

#### **Appula**

#### **Monday 5th of July**

**Hour: 14:00 – 16: 00**

**Chair/s:** Pedro Rodriguez (Technical University of Catalonia, Spain), Marek Jasinski (Technical University of Warsaw, Poland), Giuseppe Acciani (Politecnico di Bari, Italy)

Kinematics Open Loop Control of Hexapod Robot with an Embedded Digital Signal Controller (DSC)

Márcio Totaki, Universidade São Judas Tadeu, Brazil, Raphael Carvalho, Universidade São Judas Tadeu, Brazil, Rodrigo Letang, Universidade São Judas Tadeu, Brazil, Rodrigo Schneiater, Universidade São Judas Tadeu, Brazil, Wagner Moraes, Universidade São Judas Tadeu, Brazil

Distributed Control Architectures for Multi-axis Positioning Systems

Puiu Dan, Transilvania University of Brasov, Romania

Multimedia Material for Teaching and e-Learning in Nonlinear Dynamics and Power Electronics

Peter Stumpf, Budapest University of Technology and Economics, Hungary

Manufacturing Control and Monitoring System - Concept and Implementation

Tomasz Mączka, Rzeszów University of Technology, Poland, Tomasz Czech, Rzeszów University of Technology, Poland

Comparison and evaluation of the PLL techniques for the design of the grid-connected inverter systems

Antonio Nicastrì, Politecnico di Bari, Italy, Antonella Nagliero, Politecnico di Bari, Italy

Direct Active and Reactive Power Regulation of Grid Connected Voltage Source Converters Using Sliding Mode Control Approach

Jiabing Hu, Zhejiang University, China, Yikang He, Zhejiang University, China, Bin Hu, Zhejiang Wind Power Development CO., LTD., China

## **SF - Student Forum**

### **Meeting Room 09**

#### **Appula**

#### **Monday 5th of July**

**Hour: 16:30 – 18: 30**

**Chair/s:** Pedro Rodriguez (Technical University of Catalonia, Spain), Marek Jasinski (Technical University of Warsaw, Poland), Giuseppe Acciani (Politecnico di Bari, Italy)

An Approach to the Performance-Oriented Model of Variable-Speed Wind Turbines

Alejandro Rolán Blanco, Technical University of Catalonia, Spain, Álvaro Luna Alloza, Technical University of Catalonia, Spain, Joan Rocabert Delgado, Technical University of Catalonia, Spain, Daniel Aguilar Galván, Technical University of Catalonia, Spain, Gerardo Vázquez Guzmán, Technical University of Catalonia, Spain

Control of Permanent Magnet Synchronous Generator for Large Wind Turbines

Daniel - Ioan Stroe, Aalborg University, Denmark, Ana - Irina Stan, Aalborg University, Denmark, Cristian Busca, Aalborg University, Denmark, Tiberiu Stanciu, Aalborg University, Denmark

Analysis and Design of a Low-Profile LLC Converter

Christian Oeder, University Erlangen, Germany

Space Vector PWM Modulator Reducing Switching Losses for Three-Level Flying-Capacitor Inverters

Sebastian Stynski, Warsaw University of Technology, Poland

Low-Profile Power Adapter Based on a Resonant LCC Converter

Alexander Pawellek, Friedrich-Alexander-University Erlangen-Nuremberg, Germany

## **FAIL - 1: Networks and Embedded Systems**

### **Meeting Room 10**

#### **Sveva-Egnazia**

#### **Monday 5th of July**

#### **Hour: 14:00 – 16:00**

**Chair/s:** Thilo Sauter (Austrian Academy of Sciences, Austria), Armando Walter Colombo (Schneider Electric, Germany)

Real Time Ethernet: standardization and implementations (**Invited Paper**)

Max Felser, Bern University of Applied Sciences, Switzerland

Performance Evaluation of an EtherCAT Master using Linux and the RT Patch

Marco Cereia, IEIIT-Cnr, Italy, Ivan Cibrario Bertolotti, Ieiiit-Cnr, Italy, Stefano Scanzio, IEIIT-Cnr, Italy

A high-performance application protocol for fault-tolerant CAN networks

Giuseppe Buja, University of Padova, Italy, Manuele Bertoluzzo, University of Padova, Italy

Improving Information Throughput and Transmission Predictability in Controller Area Networks

Imran Sheikh, University of Leicester, United Kingdom, Michael Short, University of Teeside, United Kingdom, Musharraf Hanif, University of Leicester, United Kingdom

An RTOS-Based Design for Inexpensive Distributed Embedded System

Gianluca Cena, Ieiiit-Cnr, Italy, Ranieri Cesarato, Creiven, Italy, Ivan Cibrario Bertolotti, Ieiiit-Cnr, Italy

## **FAIL - 2: Factory Automation and Industrial Informatics**

### **Meeting Room 10**

#### **Sveva-Egnazia**

#### **Monday 5th of July**

#### **Hour: 16:30 – 18:30**

**Chair/s:** Paulo Leitao (Polytechnic Institute of Braganca, Portugal), Armando Walter Colombo (Schneider Electric, Germany)

Usage of multicore in automation (**Invited Paper**)

Kai T. Hansen, ABB, Norway

Multi-source and multicore automotive ECUs - OS protection mechanisms and scheduling (**Invited Paper**)

Nicolas Navet, INRIA/RTaW, France, Aurélien Monot, Inria/Psa, France, Bernard Bavoux, Psa, France, Françoise Simonot-Lion, INRIA / Nancy Université, France

Device services as reusable units of modelling in a service-oriented environment - An analysis case study

Marcus Zinn, Axel Bepperling, Ronald Schoop, Schneider Electric Automation GmbH, Germany, Andy D. Phippen, Klaus Peter Fischer-Hellmann, University of Plymouth, United Kingdom

Towards Noise and Error Reduction on Foundry Data Gathering Processes

Igor Santos, University of Deusto, Spain, Javier Nieves, University of Deusto, Spain, Yoseba K. Penya, University of Deusto, Spain, Pablo G. Bringas, University of Deusto, Spain

## Tuesday 6th of July

**Panel Session: Cars of 20 Years Later - Do they really run by electricity?**

**Meeting Room 01**

**Specchi**

**Tuesday 6th of July**

**Hour: 08:30 – 12:30**

**Chair/s:** Yoichi Hori (University of Tokyo, Japan), Giuseppe Buja (University of Padova, Italy)

A Comparison Study of Road Condition Cognition by Visual and Torque Feedback

Yoshihide Igari, Keio University, Japan, Acar Cihan, Keio University, Japan, Toshiyuki Murakami, Keio University, Japan

Propulsion Systems for Light Electric Vehicles

Giuseppe Buja, University of Padova, Italy, Manuele Bertoluzzo, University of Padova, Italy

Application of Electric Motor, Supercapacitor, and Wireless Power Transfer to Enhance Operation of Future Vehicles

Yoichi Hori, University of Tokyo, Japan

Study on Maximum Air-gap and Efficiency of Magnetic Resonant Coupling for Wireless Power Transfer Using Equivalent Circuit

Takehiro Imura, University of Tokyo, Japan

Advanced Motion Control of Electric Vehicle Based on Lateral Force Observer with Active Steering

Hiroshi Fujimoto, University of Tokyo, Japan, Yuya Yamauchi, Yokohama National University, Japan

Front and Rear Wheel Independent Drive Type Electric Vehicle (FRID EV) for a Next Generation Eco-Vehicle

Nobuyoshi Mutoh, Tokyo Metropolitan, Japan

Reusable IP Cores Library for EV Propulsion Systems

Ricardo de Castro, Feup, Portugal, Rui Araújo, Feup, Portugal, Diamantino Freitas, Feup, Portugal

Efficient Use of Electric Double Layer Capacitor as Energy Source on Board of Electric Vehicles

Giuseppe Guidi, Yokohama National University, Japan, Atsuo Kawamura, Yokohama National University, Japan

## **Panel Session: PEBB Concept in the Industrial Power Electronics Systems**

### **Meeting Room 01**

### **Specchi**

### **Tuesday 6th of July**

### **Hour: 14:00 – 18:00**

**Chair/s:** Yuri Khersonsky (Chair IEEE 1662 and P1709 WG, USA)

PEBB Concept and the IEEE Power Electronics Standards

Yuri Khersonsky, USA

PEBB Concept for High Power Electronics

Narain Hingorani, USA

PEBB Standardization As Key Enabler for Power Control Flexibility

Antonello Monti, RWTH Aachen University, Germany, Ferdinanda Ponci, RWTH Aachen University, Germany

Power Electronic Systems

Terry Ericson, Office of Naval Research, USA

Pebb High Pulsed Power Demonstrator

Peter Steimer, Abb, Switzerland, Manfred Winkelkemper, Abb, Switzerland

PEBB Concepts - From Medium Voltage Drives to High Voltage Applications

Dietmar Retzmann, Siemens, Germany, Herbert Gambach, Siemens, Germany

Building Block Integration in Power Electronics

Dushan Boroyevich, Virginia Tech - CPES, United States

## **Dialog 2: Robotics, Mechatronics, and Control Systems**

### **Meeting Room 02**

#### **Feste**

**Tuesday 6th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Ju-Jang Lee (KAIST, Korea), Carlo Cecati (University of L'Aquila), Alberto Pigazo (University of Cantabria, Spain)

Applying Fuzzy Multiple Criteria Decision Making for Optimal Robots and Manipulators Selection

Ying Bai, Johnson C. Smith University, USA, Dali Wang, Christopher Newport University, USA

Development of a Reconfigurable Automatic Guided Vehicle Platform with Omni-Directional Sensing Capabilities

Ben Kotze, Central University of Technology, South Africa, Gerit Jordaan, Research Group in Evolvable Manufacturing Systems, South Africa, Herman Vermaak, Central University of Technology, South Africa

FIDD Bearing-Only SLAM

Rodrigo Munguia, UPC, Spain, Antoni Grau, UPC, Spain

3D Laser Scanning Vision System for Autonomous Robot Navigation

Luis C. Básaca, University of Baja California, Mexico, Julio C. Rodríguez, University of Baja California, Mexico, Oleg Sergiyenko, University of Baja California, Mexico, Vera V. Tyrsa, Politechnic University of Baja California, Mexico, Wilmar Hernandez, Politechnic University of Madrid, Spain, Juan Ivan Nieto Hipolito, University of Baja California, Mexico, Oleg Starostenko, Universidad de Las Americas, Mexico

Design and Simulation of an Active - Mechatronic Tracking System

Catalin Alexandru, Transilvania University of Brasov, Romania, Claudiu Pozna, Transilvania University of Brasov, Romania

Psychological Evaluation of Simple Self-Transfer Aid Robotic System with Horizontal Movement System

Yoshihiko Takahashi, Kanagawa Institute of Technology, Japan, Tatsuo Yamaguchi, Kanagawa Institute of Technology, Japan

Adaptive Multi-Robots Synchronization

Yassine Bouteraa, Université d'Orléans, France, Jawhar Ghommam, Research unit on Intelligent Control, design & Optimization of complex Systems (ICOS) Address A-BBP W, Tunisia, Nabil Derbel, Research unit on Intelligent Control, design & Optimization of complex Systems (ICOS) Address A-BBP W, Tunisia, Gérard Poisson, Institut PRISME, Université d'Orléans France

Study of Novel Heterogeneous Ant Colony Optimization Algorithm for Global Path Planning

Joon-Woo Lee, Kaist, Korea (South), Young-Im Cho, University of Suwon, Korea (South), Masanori Sugisaka, Nippon Bunri University, Japan, Ju-Jang Lee, Kaist, Korea (South)

Embedding Obstacle Avoidance in the Control of a Flexible Multi-Robot Formation

Vinicius Rampinelli, Federal University of Espirito Santo, Brazil, Alexandre Brandão, Federal University of Espirito Santo, Brazil, Mário Sarcinelli-Filho, Federal University of Espirito Santo, Brazil, Felipe Martins, Center-East College, Brazil, Ricardo Carelli, National University of San Juan, Argentina

Robust integrated design for dynamic systems in engineering design

Miguel Gabriel Villarreal-Cervantes, Upiita-Ipn, Mexico, Carlos Alberto Cruz-Villar, Cinvestav, Mexico, Jaime Alvarez-Gallegos, Cinvestav, Mexico

Design and Characterization of Piezoelectric Inkjet for Micro Patterning of Printed Electronics

Changsung Sean Kim, SAMSUNG Electro-Mechanics, Co., LTD., Korea (South), Wonchul Sim, SAMSUNG Electro-Mechanics, Co., LTD., Korea (South), Jae Sang Lee, SAMSUNG Electro-Mechanics, Co., LTD., Korea (South), Young-Seuck Yoo, SAMSUNG Electro-Mechanics, Co., LTD., Korea (South), Jaewoo Joung, SAMSUNG Electro-Mechanics, Co., LTD., Korea (South)

Nonlinear Robust Control of a Biped Robot

Peyman Aghabalaie, Amirkabir University of Technology, Iran, Mohammad Hosseinzadeh, Amirkabir University of Technology, Iran, Heidar ali Talebi, Amirkabir University of Technology, Iran, Masuod Shafiee, Amirkabir University of Technology, Iran

Discrete Time Variable Structure Control of Robotic Manipulators Based on Fully Tuned RBF Neural Networks

Andrea Giantomassi, Università Politecnica delle Marche, Italy, Maria Letizia Corradini, Università di Camerino, Italy, Gianluca Ippoliti, Università Politecnica delle Marche, Italy, Sauro Longhi, Università Politecnica delle Marche, Italy, Giuseppe Orlando, Università Politecnica delle Marche, Italy

Design considerations about a Photovoltaic Power System to Supply a Mobile Robot

Giuseppe Marco Tina, University of Catania, Italy, Cristina Ventura, University of Catania, Italy, Paolo Arena, University of Catania, Italy, Luca Patanè, University of Catania, Italy, Alfio Dario Grasso, University of Catania, Italy, Massimo Pollino, University of Catania, Italy

An Effective Generalized Predictive Control Scheme for Rotary Drilling Systems

Karim Salahshoor, Petroleum University of Technology, Iran, Hadi Dehghanzade, Petroleum University of Technology, Iran

Simulation Approach for Improving CNC Milling Machines Accuracy for Single Axis Motion

Radu E. Breaz, Lucian Blaga University of Sibiu, Romania, Octavian C. Bologa, Lucian Blaga University of Sibiu, Romania, Gabriel S. Racz, Lucian Blaga University of Sibiu, Romania, Valentin S. Oleksik, Lucian Blaga University of Sibiu, Romania, Claudia Girjob, Lucian Blaga University of Sibiu, Romania

The development of professional skills through robotics in electronic and electrical engineering

Julio Pastor, University of Alcala, Spain, Fco Javier Rodríguez, University of Alcala, Spain, Santiago Cóbreces, University of Alcala, Spain

Automatic Illumination Control System for Camera Based Barcode Reader

Samir Al-Gailani, Universiti Teknologi Malaysia, Yemen, Usman Ullah Sheikh, Universiti Teknologi Malaysia, Malaysia, Syed Abdul Rahman Abu-Bakar, Universiti Teknologi Malaysia, Malaysia

A Genetic-Based Optimization for Multi-Depot Vehicle Routing Problems

Wallace K.S. Tang, City University of Hong Kong, Hong Kong, J.J. Yin, City University of Hong Kong, Hong Kong, Kim F. Man, City University of Hong Kong, Hong Kong

Robust Model Predictive Attitude Control of an Unmanned Quadrotor Helicopter subject to atmospheric disturbances

Kostas Alexis, University of Patras, Greece, George Nikolakopoulos, University of Patras, Greece, Anthony Tzes, University of Patras, Greece

Input-State Linearisation of an Omni-Directional Mobile Robot

Salima Djebrani, ENSI de Bourges, France, Abderraouf Benali, ENSI de Bourges, France, Gérard Poisson, IUT de Bourges, France

Data-driven reconfigurability evaluation of linear systems: Simulation application in a DC motor

Brian Manuel Gonzalez-Contreras, Universidad Autonoma de Tlaxcala, Mexico, Ever Juarez, Universidad Autonoma de Tlaxcala, Mexico, Dominique Sauter, Henri Poincaré University, France, Didier Theilliol, Henri Poincaré University, France

Comparison of Bayesian Regularization and Optimal Brain Damage Methods in Optimization of Neural Estimators for Two-Mass Drive System

Marcin Kaminski, Wroclaw University of Technology, Poland, Teresa Orłowska-Kowalska, Wroclaw University of Technology, Poland

Innovations in Generalized Predictive Control Using TSK Fuzzy-Based Approach

Amir Hooshang Mazinan, Islamic Azad University, Iran, Mehdi Fallah Kazemi, Islamic Azad University, Iran, Hossein Shahbazi, Shahid Beheshti University, Iran

Ultracapacitor-based Storage: Modelling, Power Conversion and Energy Considerations

Xavier del Toro Garcia, University of Castilla-La Mancha, Spain, Pedro Roncero-Sánchez, University of Castilla-La Mancha, Spain, Alfonso Parreño, Science and Technology Park of Albacete, Spain, Vicente Feliu Batlle, University of Castilla-La Mancha, Spain

Sliding Mode Control and Unit Power Factor applied to Embarked Supercapacitors for Electrical Train Traction

M. Y. Ayad, SeT Laboratory, UTBM University, France, M. Becherif, FC-Lab fuel Cell Laboratory, France, A. Henni, Alstom Power System, Energy Management Business, Alstom, France, A. Aboubou, LMSE Laboratory, Biskra University, Algeria, M. Wack, SeT Laboratory, UTBM University, France

Integrated Control Of A Stand-Alone Photovoltaic System Based On Decentralized Dc-Dc Converters

Diogo Brum Cândido, Federal University of Santa Maria, Brazil, Leandro Michels, Federal University of Santa Maria, Brazil, Hélio Leães Hey, Federal University of Santa Maria, Brazil

Fault diagnosis using vibration measurements of a flux-switching permanent magnet motor

Xavier Ojeda, SATIE ENS Cachan, France, Guangjin Li, SATIE ENS Cachan, France, Mohamed Gabsi, SATIE ENS Cachan, France

## **Dialog 3: Sensors, Actuators and Control Systems**

### **Meeting Room 02**

#### **Feste**

**Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Francescomaria Marino (Politecnico di Bari, Italy), Ettore Stella (ISSIA CNR, Italy), Thilo Sauter (Austrian Academy of Sciences, Austria)

OBSEA an Oceanographic Seafloor Observatory

Marc Nogueras, Upc - Sarti, Spain, Joaquin del Rio, Upc - Sarti, Spain, Javier Cadena, Upc - Sarti, Spain, Jordi Sorribas, Csic - Utm, Spain, Carla Artero, Upc - Sarti, Spain, Juanjo Dañobeitia, Csic - Utm, Spain, Antoni Mànuel, Upc - Sarti, Spain

An Omnidirectional Range Sensor for Environmental 3D Reconstruction

Pasquale De Ruvo, Issia-Cnr, Italy, Gianluigi De Ruvo, Issia-Cnr, Italy, Arcangelo Distanto, Issia-Cnr, Italy, Massimiliano Nitti, Issia-Cnr, Italy, Ettore Stella, Issia-Cnr, Italy, Francesco Marino, Politecnico di Bari, Italy

Using LMS-100 Laser Rangefinder for Indoor Metric Map Building

János Rudan, Pázmány Péter Catholic University, Hungary, Zoltán Tuza, Pázmány Péter Catholic University, Hungary, Gábor Szederkényi, Pázmány Péter Catholic University, Hungary

Design of multi-dimensional magnetic position sensor systems based on HallinOne® technology

Jörg Bretschneider, Fraunhofer Institute for Integrated Circuits, Andreas Wilde, Fraunhofer Institute for Integrated Circuits, Germany, Peter Schneider, Fraunhofer Institute for Integrated Circuits, Germany, Hans-Peter Hohe, Fraunhofer Institute for Integrated Circuits, Germany, Ulrich Köhler, Hella KGaA Hueck & Co., Lippstadt, Germany

A localization system based on buried magnets and dead reckoning for mobile robots

Thierry Capitaine, Laboratoire MIS/UPJV, France, Valéry Bourny, Laboratoire MIS/UPJV, France, Ludovic Barrandon, Laboratoire MIS/UPJV, France, Claude Pégard, Laboratoire MIS/UPJV, France, Aurélien Lortois, Insset/Upjv, France

Analysis of self-powered vibration-based energy scavenging system

Luigi Pinna, University of Genoa, Italy, Ravinder Dahiya, Italian Institute of Technology, Italy, Fabrizio De Nisi, Canova Tech, Srl, Italy, Maurizio Valle, University of Genoa, Italy

Heating of samples by acoustic microagitation for improving reaction of biological fluids

Susana Oliveira Catarino, University of Minho, Portugal, José Gerardo Rocha, University of Minho, Portugal, Senentxu Lanceros-Méndez, University of Minho, Portugal, Ramiro G. Correia, University of Minho, Portugal, Vanessa Fernandes Cardoso, University of Minho, Portugal, Graça Minas, University of Minho, Portugal

Synthesis of organic semiconductors functionalized with biological molecules

Gianluca M. Farinola, Università degli Studi di Bari, Italy, Omar Hassan Omar, CNR ICCOM, Università degli Studi di Bari, Italy, Alessandra Operamolla, Università degli Studi di Bari, Italy, Francesco Babudri, Università degli Studi di Bari, Italy

Application of Time-Series Methods to Disturbance Estimation in Predictive Control Problems

Andrzej Pawlowski, Universtiy of Almeria, Spain, Jose Luis Guzman, University of Almeria, Spain, Francisco Rodriguez, University of Almeria, Spain, Manuel Berenguel, University of Almeria, Spain, Jorge Sanchez, University of Almeria, Spain

Adaptive Composite Control of Electronic Throttle using Local Learning Method

Robert Grepl, Brno University of Technology, Czech Republic

Algorithms of Real-Time Correction of the Fuel Map and the Ignition Map of a Race Combustion Engine with Spark Ignition

Dariusz Koscielnik, AGH University of Science and Technology, Poland

Supercapacitor Based Energy Storage System for Effective Fault Ride Through of Wind Generation System

M. Ahsanul Alam, King Fahd Univerisity of Petroleum & Minerals, Saudi Arabia, A.H.M.A. Rahim, King Fahd Univerisity of Petroleum & Minerals, Saudi Arabia, M. A. Abido, King Fahd Univerisity of Petroleum & Minerals, Saudi Arabia

Modeling and Simulation for Common DC Bus Multi-motor Drive Systems Based on Activity Cycle Diagrams

Jifang Li, Shanghai Maritime University, China, Tianhao Tang, Shanghai Maritime University, China

Scheduling Non-periodic Tasks Using Sporadic Server in AUTOSAR Operating System

Li Zhou, Zhejiang University, China, Hong Li, Zhejiang University, China, Weimin He, R&D Center, China FAW Group Corporation, China, Chengshuo Zhang, Zhejiang University, China, Zhu Wang, Zhejiang University, China

Hw Acceleration for FPGA-based Drive Controllers

Slim Ben Othman, Lecap-Ept/Insat, Tunisia, Ahmed Karim Ben Salem, Lecap-Ept/Insat, Tunisia, Slim Ben Saoud, Lecap-Ept/Insat, Tunisia

From theoretical differentiation methods to low-cost digital implementation

Mehdi Dridi, Laboratoire AMPERE, France, Gérard Scorletti, Laboratoire AMPERE, France, Mohamed Smaoui, Laboratoire AMPERE, France, Tournier Dominique, Laboratoire AMPERE, France

Model Reference Adaptive Control with Inverse Compensation Applied to a pH Plant

Marcelo Vale, Ufrn, Brazil, Daniel Fonseca, Ufrn, Brazil, Kalinne Pereira, Ufrn, Brazil, André Maitelli, Ufrn, Brazil, Fábio Araújo, Ufrn, Brazil, Danielle Casillo, Ufersa, Brazil

Active Diagnosis of MLD Systems using Distinguishable Steady Outputs

Syedmojtaba Tabatabaeipour, Aalborg University, Denmark, Anders P. Ravn, Aalborg University, Denmark, Roozbeh Izadi-Zamanabadi, Danfoss, Denmark, Thomas Bak, Aalborg University, Denmark

Sample frequency effects on a new SC realization of Fractional Order Integrator

Riccardo Caponetto, University of Catania, Italy, Giovanni Dongola, University of Catania, Italy, Antonio Gallo, University of Catania, Italy, Gianluca Giustolisi, University of Catania, Italy

Neural network visual inspection with boundary learning based on the distance index in input space

Michiya Matsushima, Osaka University, Japan, Akira Soeda, Osaka University, Japan, Hiroyuki Fujie, Osaka University, Japan, Shinji Fukumoto, Osaka University, Japan, Kozo Fujimoto, Osaka University, Japan

Retrospective Angle Tracking for Fast Barcode Reading

Chun-Shun Tseng, National Taiwan Ocean University, Taiwan, Chang-Chai Fung, National Taiwan Ocean University, Taiwan, Meng-Lien Chen, National Taiwan Ocean University, Taiwan, Jung-Hua Wang, National Taiwan Ocean University, Taiwan

Classification of Silicon Solar Cells Using Electroluminescence Texture Analysis

Alessandro Bastari, Luccioni Group, Italy, Andrea Bruni, Luccioni Group, Italy, Cristina Cristalli, Luccioni Group, Italy

A potentiometric electronic tongue to monitor meat freshness

Luis Gil, Universidad Politecnica De Valencia, Spain, Jose M. Barat, Universidad Politecnica De Valencia, Spain, Diana Baigts, Universidad Politecnica De Valencia, Spain, Ramón Martínez-Máñez, Universidad Politecnica De Valencia, Spain, Eduardo Garcia-Breijo, Universidad Politecnica De Valencia, Spain, Juan Soto, Universidad Politecnica De Valencia, Spain, Eduard Llobet, Universitat Rovira I Virgili, Spain

New instrument for measuring sunlight extinction in water columns

Javier Ibáñez, Universidad Politecnica De Valencia, Spain, Julio Gonzalez del Rio, Universidad Politecnica De Valencia, Spain, Inmaculada Romero, Universidad Politecnica De Valencia, Spain, Nicolás Laguarda, Universidad Politecnica De Valencia, Spain, Eduardo Garcia-Breijo, Universidad Politecnica De Valencia, Spain, Luis Gil, Universidad Politecnica De Valencia, Spain

Wind Turbine Output Power Maximization based on Sliding Mode Control Strategy

Oscar Barambones, Universidad del País Vasco, Spain, Patxi Alkorta, Universidad del País Vasco, Spain, Manuel De La Sen, Universidad del País Vasco, Spain

Implementing Self-Organisation and Self-Management in Evolvable Assembly Systems

Regina Frei, Birkbeck, United Kingdom, Giovanna Di Marzo Serugendo, Birkbeck, United Kingdom, Nuno Pereira, Uninova, Portugal, Jose Belo, Uninova, Portugal, Jose Barata, Uninova, Portugal

Dynamic Modeling of a Hysteretic Modulator

Santanu Mishra, IIT Kanpur, India

### **SASI - 3: Sensors, Actuators and System Integration 3**

#### **Meeting Room 07**

#### **Ausonia**

**Tuesday 6th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Juan J. Rodriguez-Andina (Univ. Vigo, Spain), Luis Gomes (Univ. Nova Lisboa, Portugal)

Non-contact sensor for monitoring catenary-pantograph interaction

Carlos A. Luna, High Polytechnic School, Alcalá University, Spain, Manuel Mazo, High Polytechnic School, Alcalá University, Spain, Marta Marrón, High Polytechnic School, Alcalá University, Spain

Stereo Vision Blossom Mapping for Automated Thinning in Peach

Michael Nielsen, Aalborg University, Denmark, David C. Slaughter, University of California, USA, Chris Gliever, University of California, USA

Touchscreen based on acoustic pulse recognition with piezoelectric polymer sensors

Jose G. Rocha, University of Minho, Portugal, Silvia Reis, University of Minho, Portugal, Vitor Correia, University of Minho, Portugal, Marcos Martins, University of Minho, Portugal, Gabriel Barbosa, University of Minho, Portugal, Ricardo Sousa, University of Minho, Portugal, Senentxu Lanceros-Mendez, University of Minho, Portugal, Graca Minas, University of Minho, Portugal

A Low-Cost VFC for Low-Power Sensor Interfaces

Belen Calvo, University of Zaragoza, Spain, Cristina Azcona, University of Zaragoza, Spain, Nicolas Medrano, University of Zaragoza, Spain, Santiago Celma, University of Zaragoza, Spain

Comparative Evaluation of Two Chattering-free Sliding Mode Controllers for the Control of MEM Optical Switches

Ahmet Kuzu, Tubitak-Uekae-Bte, Turkey, Seta Bogosyan, University of Alaska Fairbanks, USA, Metin Gokasan, Istanbul Technical University, Turkey

Development of 6-axis force/moment sensor for measuring the fingers' muscular strength of human

Gab-Soon Kim, Gyeongsang National University, Korea (South), Hyeon-Min Kim, Gyeongsang National University, Korea (South), Hoe-In Kim, Gyeongsang National University, Korea (South), Ming-guo Piao, Gyeongsang National University, China, Jungwon Yoon, Gyeongsang National University, Korea (South), Hee-Suk Shin, Gyeongsang National University, Korea (South)

## **ss19 - FPGAs for Industrial Control Systems**

### **Meeting Room 07**

#### **Ausonia**

#### **Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Eric Monmasson (University of Cergy-Pontoise, France), Raul Mateos Gil (University of Alcala, Spain)

Real-time evaluation of power quality using FPGA based measurement system

Alben Cardenas, Universite Du Quebec A Trois-Rivieres, Canada, Cristina Guzman, Universite Du Quebec A Trois-Rivieres, Canada, Kodjo Agbossou, Universite Du Quebec A Trois-Rivieres, Canada

FPGA implementation of grid synchronization algorithms based on DSC, DSOGI\_QSG and PLL for distributed power generation systems

Vanessa Saez, University of Alcala, Spain, Alberto Martin, University of Alcala, Spain, Mario Rizo, University of Alcala, Spain, Ana Rodríguez, University of Alcala, Spain, Emilio Bueno, University of Alcala, Spain, Álvaro Hernández, University of Alcala, Spain, Agustín Miron, Sedecal, Spain

Extended Kalman Filter for AC Drive Sensorless Speed Controller - FPGA-Based solution or DSP-Based solution

Lahoucine Idkhajine, Iup Geii Ucp, France, Eric Monmasson, Iup Geii Ucp, France, Amira Maalouf, Iup Geii Ucp, France

SoPC-based current controller for Permanent Magnet Synchronous Machines drive

Bahri Imen, Satie / Etis, France, Monmasson Eric, Satie, France, Verdier François, Etis, France, Ben Khelifa Mohamed El-Amin, Etis, France

A FPGA/DSP Design for Real-Time Fracture Detection Using Low Transient Pulse

Akash Mathur, Njit, USA, Timothy Chang, Njit, USA

FPGA-based High Resolution Synchronous Digital Pulse Width Modulator

Denis Navarro, Universidad de Zaragoza, Spain, Luis A. Barragán, Universidad de Zaragoza, Spain, José I. Artigas, Universidad de Zaragoza, Spain, Isidro Urriza, Universidad de Zaragoza, Spain, Óscar Lucía, Universidad de Zaragoza, Spain, Óscar Jiménez, Universidad de Zaragoza, Spain

## **ss4 - Distributed Generation and Microgrids 1**

### **Meeting Room 07**

#### **Ausonia**

**Tuesday 6th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Josep M. Guerrero (Technical University of Catalonia, Spain), Ramon Blasco-Gimenez (Universitat Politecnica de Valencia, Spain)

Robust Decentralized Control for Islanded Operation of Two Radially Connected DG Systems

Ramin Moradi, Sharif University of Technology, Iran, Houshang Karimi, Sharif University of Technology, Iran, Masoud Karimi Ghartemani, Queens University, Canada

Recycling Conventional Control Strategy and Hierarchy for Future DG Control

Worpong Sinsukthavorn, South Westphalia University of Applied Sciences, Germany, Egon Ortjohann, South Westphalia University of Applied Sciences, Germany, Max Lingemann, South Westphalia University of Applied Sciences, Germany, Samer Jaloudi, South Westphalia University of Applied Sciences, Germany, Nedzad Hamsic, South Westphalia University of Applied Sciences, Germany, Andreas Schmelter, South Westphalia University of Applied Sciences, Germany, Danny Morton, The University of Bolton, United Kingdom

An active Anti-islanding method based on phase-PLL perturbation

David Velasco De La Fuente, Universidad Politécnica de Valencia, Spain, Cesar Leonardo Trujillo Rodriguez, Universidad Distrital Francisco José de Caldas, Colombia, Gabriel Garcera Sanfeliu, Universidad Politécnica de Valencia, Spain, Emilio Figueres Amoros, Universidad Politécnica de Valencia, Spain, Oscar Carranza Castillo, Instituto Politecnico Nacional, Mexico

Optimal autonomous control of an inverter-based microgrid using particle swarm optimization

Mohamed Hassan, King Fahd University of Petroleum & Minerals, Saudi Arabia, Mohammed Abido, King Fahd University of Petroleum & Minerals, Saudi Arabia

Intelligent Control Agent for Transient to an Island Grid

Joan Rocabert, Technical University of Catalonia, Spain, Gustavo Azevedo, Federal University of Pernambuco, Brazil, Gerardo Vazquez, Technical University of Catalonia, Spain, Jose Ignacio Candela, Technical University of Catalonia, Spain, Pedro Rodriguez, Technical University of Catalonia, Spain, Josep Maria Guerrero, Technical University of Catalonia, Spain

Optimal Set Points Regulation of Distributed Generation Units in Microgrids under Islanded Operation

Gaetano Zizzo, University of Palermo, Italy, Eleonora Riva Sanseverino, University of Palermo, Italy, Mariano Ippolito, University of Palermo, Italy, Giorgio Graditi, ENEA Portici Napoli, Italy

## **ss21 - Multisensor Signal Processing for Applications in Intelligent Spaces**

### **Meeting Room 07**

## **Ausonia**

**Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Marta Marron (University of Alcalá, Spain), Alvaro Hernandez (University of Alcalá, Spain)

Auto-localization in Local Positioning Systems: a closed-form range-only solution

Jorge Guevara, Instituto de Automática Industrial, Spain, Antonio Jimenez, Instituto de Automática Industrial, Spain, Stephen Morse, Yale university, United States, Jia Fang, Yale university, United States, Carlos Prieto, Instituto de Automática Industrial, Spain, Fernando Seco, Instituto de Automática Industrial, Spain

Motion Segmentation and 3D Positioning of Multiple Mobile Robots Using an Array of Static Cameras in an Intelligent Space

Cristina Losada, Universidad de Alcalá, Spain, Manuel Mazo, Universidad de Alcalá, Spain, Sira Palazuelos, Universidad de Alcalá, Spain, Daniel Pizarro, Universidad de Alcalá, Spain, Marta Marron, Universidad de Alcalá, Spain

Simultaneous mobile robot positioning and LPS self-calibration in a smart space

Daniel Ruiz, University of Alcalá, Spain, Jesús Ureña, University of Alcalá, Spain, Juan C. García, University of Alcalá, Spain, Álvaro Hernández, University of Alcalá, Spain, Enrique García, University of Alcalá, Spain, Joaquín Aparicio, University of Alcalá, Spain

Accurate 3D localization of reflectors with an EMFi sensor array

Fernando J. Álvarez, Universidad de Extremadura, Spain, Ana Jiménez, Universidad de Alcalá, Spain, Jesús Ureña, Universidad de Alcalá, Spain, Isaac Gude, Universidad de Alcalá, Spain, Daniel Ruíz, Universidad de Alcalá, Spain, Álvaro Hernández, Universidad de Alcalá, Spain, Carlos De Marziani, Universidad Nacional de la Patagonia San Juan Bosco, Spain, M. Carmen Pérez, Universidad de Alcalá, Spain, Joaquín Aparicio, Universidad de Alcalá, Spain

Augmented Reality Stereoscopic Visualization for Intuitive Robot Teleguide

Salvatore Livatino, University of Hertfordshire, United Kingdom, Giovanni Muscato, University of Catania, Italy, Davide De Tommaso, University of Catania, Italy, Marco Macaluso, University of Catania, Italy

Tracking multiple agents in an intelligent space with probabilistic algorithms and a camera ring

Marta Marron-Romera, Alcalá University, Spain, Daniel Pizarro, Alcalá University, Spain, Alvaro Marcos, Alcalá University, Spain, Raquel Jalvo, Alcalá University, Spain, Juan Carlos Garcia, Alcalá University, Spain, Manuel Mazo, Alcalá University, Spain

## **CSA - 1: Control Systems 1**

**Meeting Room 04**

**Messapia**

**Tuesday 6th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Igor Nai Fovino (Joint Reaserch Center, EU), Cesare Fantuzzi (University of Modena Reggio Emilia, Italy)

Design of Optimal-Robust Speed T-S Fuzzy Controller for a Wounded Rotor Induction Motor Coupled with a Nonlinear Load

Arash Khodaparastsichani, Shahr-e-Kord University, Iran, Golamreza Arabmarkade, Shahr-e-Kord University, Iran, Said Hoghoughiesfahani, Shahr-e-Kord University, Iran

A Global Robust Iterative Learning Position Control for Current-Fed Permanent Magnet Step Motors

Stefano Bifaretti, "Tor Vergata" University, Italy, Patrizio Tomei, "Tor Vergata" University, Italy, Cristiano Maria Verrelli, "Tor Vergata" University, Italy

Mixed Integer Nonlinear Model for Optimal Cutting in Continuous Steel Casting

Oswaldo Barbarisi, Menea d.o.o., Croatia, Luca Piedimonte, Centro Sviluppo Materiali s.p.a., Italy, Carmen Del Vecchio, University of Sannio, Italy, Daniele Fera, Centro Sviluppo Materiali s.p.a., Italy, Alessandro Cristallini, Centro Sviluppo Materiali s.p.a., Italy, Francesco Vasca, University of Sannio, Italy

Design of a Nonlinear Power System Stabilizer

Yasser Yasaei, Sharif University of Technology, Iran, Masoud Karimi Ghartemani, Queens University, Canada, Alireza Bakhshai, Queens University, Canada, Mostafa Parniani, Sharif University of Technology, Iran

Feedback Linearization Control for Grid-Interfacing of a Three-Phase Renewable Energy System

Masoud Karimi Ghartemani, Queens University, Canada, Sayed Ali Khajehoddin, Queens University, Canada, Praveen Jain, Queens University, Canada, Alireza Bakhshai, Queens University, Canada

An Adaptive Neuro-Fuzzy Architecture for Intelligent Control of a Servo System and its Experimental Evaluation

Ayşe Cisel Aras, Bogazici University, Turkey, Erdal Kayacan, Bogazici University, Turkey, Yesim Oniz, Bogazici University, Turkey, Okyay Kaynak, Bogazici University, Turkey, Rahib Abiyev, Near East University, Turkey

## **CSA - 4: Computers and Control**

**Meeting Room 04**

**Messapia**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Terry Martin (University of Arkansas, USA), Filippo D'Ippolito, (University of Palermo, Italy)

A Microcontroller Based Test Platform for Controller Design

Savas Sahin, Ege University, Turkey, Yalcin Isler, Zonguldak Karaelmas University, Turkey, Cuneyt Guzelis, Dokuz Eylül University, Turkey

Experience in Teaching a Course of Control Engineering by ECTS Methodology

Manuel Ferre, Universidad Politécnica de Madrid, Spain, Iván Santana, Universidad Central Marta Abreu de Las Villas, Cuba, Rafael Aracil, Universidad Politécnica de Madrid, Spain, Luis Hernández, Universidad Central Marta Abreu de Las Villas, Cuba

Modbus/DNP3 State-based Filtering System

Andrea Carcano, Insubria University, Italy, Igor Nai Fovino, European Commission- Joint Research Centre, Italy, Marcelo Masera, European Commission- Joint Research Centre, Italy

An Optimizing Compiler Method to Avoid Partial Invalid PLC Instructions

Yi Yan, Hangzhou Dianzi University, China, Haidan Chen, Hangzhou Dianzi University, China

Delay and its time-derivative dependent Stability of Teleoperation System

Emma Delgado, University of Vigo, Spain, Antonio Barreiro, University of Vigo, Spain, Miguel Díaz-Cacho, University of Vigo, Spain

Automatic Timed Automata Extraction from Ladder Programs for Model-Based Analysis of Control Systems

Kézia Oliveira, Uiversidade Federal de Campina Grande, Brazil, Leandro Silva, Uiversidade Federal de Alagoas, Brazil, Angelo Perkusich, Uiversidade Federal de Campina Grande, Brazil, Antônio Lima, Uiversidade Federal de Campina Grande, Brazil, Kyller Gorgônio, Uiversidade Federal de Campina Grande, Brazil

## **CSA - 5: Control of Power Generation**

### **Meeting Room 04**

### **Messapia**

### **Tuesday 6th of July**

### **Hour: 14:00 – 16:00**

**Chair/s:** Stefano Bifaretti (University of Rome "Tor Vergata", Rome, Italy), Pericle Zanchetta (University of Nottingham, UK)

Optimal Distribution of Load-Frequency Control Signal to Hydro Power Plants

Kresimir Vrdoljak, Koncar - Power Plant and Electric Traction Engineering, Croatia, Nedjeljko Peric, University of Zagreb, Croatia, Dino Sepac, University of Zagreb, Croatia

Control Strategy of Wind Power Output by Pitch Angle Control using Fuzzy Logic

Xiangjun Li, China Electric Power Research Institute, China

Black-box Identification for an Auto-tuned Current Controller working with Voltage Source Converters connected to the grid through a LCL Filter

Francisco Huerta, University of Alcala, Spain, Santiago Cóbreces, University of Alcala, Spain, Francisco J. Rodríguez, University of Alcala, Spain, Daniel Pizarro, University of Alcala, Spain, Francisco J. Meca, University of Alcala, Spain

Control Scheme for Low Voltage Ride-Through Compliance in Back-to-back NPC Converter Based Wind Power Systems

Salvador Alepuz, Technical University of Catalonia, Spain, Sergio Busquets-Monge, Technical University of Catalonia, Spain, Samir Kouro, Ryerson University, Canada, Bin Wu, Ryerson University, Canada, Josep Bordonau, Technical University of Catalonia, Spain, Alejandro Calle, Technical University of Catalonia, Spain

Energy Management of a Fuel Cell System: Influence of the Air Supply Control on the Water Issues

Loic Boulon, Université du Québec à Trois-Rivières, Canada, Kodjo Agbossou, Université du Québec à Trois-Rivières, Canada, Daniel Hissel, University of Franche-Comté, France, Andres Hernandez, 3Escuela Colombiana de Ingenieria Julio Garavito, Colombia, Alain Bouscayrol, University of Lille, France, Pierre Sicard, Université du Québec à Trois-Rivières, Canada

Dynamic Capacitor Voltage Control of High Power Current Source Converter Fed PMSM Drives for LC Resonance Suppression

Zheng Wang, Southeast University, China, Bin Wu, Ryerson University, Canada, Dewei Xu, Ryerson University, Canada, Navid Zargari, Medium-Voltage Drive R&D, Rockwell Automation, Canada

## **CSA - 6: Motion Control**

### **Meeting Room 04**

### **Messapia**

### **Tuesday 6th of July**

### **Hour: 16:30 – 18:30**

**Chair/s:** John Y. Hung (Auburn University, USA), Paolo Lino (Politecnico di Bari, Italy)

High Speed Position Control of A Swinging Load

Norbert Chang, Njit, USA, Naomi Chang, Mhs, USA, Timothy Chang, Njit, USA, Edwin Hou, Njit, USA

Online Trajectory Planner with Constraints on Velocity, Acceleration and Torque

Luigi Biagiotti, University of Modena, Italy, Roberto Zanasi, University of Modena, Italy

Driver Steering Sensitivity Design Using Road Reaction Torque Observer and Viscous Friction Compensation to Active Front Steering

Ryo Minaki, The University of Tokyo, Japan, Hiroshi Hoshino, Tokyo Denki University, Japan, Yoichi Hori, The University of Tokyo, Japan

Decoupling Basis Control of Dual-Drive Gantry Stages for Path-Tracking Applications

Ivan GarciaHerreros, Etel Sa, Switzerland, Xavier Kestelyn, Arts et Métiers Paristech, France, Julien Gomand, Arts et Métiers Paristech, France, Pierre-Jean Barre, Arts et Métiers Paristech, France

Enhanced feedforward control of non-minimum phase systems for tracking predefined trajectory

Gun Rae Cho, Korea Advanced Institute of Science and Technology, Korea (South), Pyung Hun Chang, Korea Advanced Institute of Science and Technology, Korea (South), Yi Jin, Korea Advanced Institute of Science and Technology, Korea (South)

A Comparative Study of PID Control Algorithms Adapted to Send-on-Delta Sampling

Volodymyr Vasyutynskyy, Dresden University of Technology, Germany, Klaus Kabitzsch, Dresden University of Technology, Germany

## **PE - 3: DC/DC Converters**

### **Meeting Room 03**

#### **Abbrescia**

#### **Tuesday 6th of July**

#### **Hour: 08:30 – 10:30**

**Chair/s:** Dushan Boroyevich (Virginia Tech - CPES, USA), Mario Marchesoni (University of Genova, Italy), Daniel Hissel (University of Franche-Comté, France)

Two-Stage Quasi-Z-Source Network Based Step-Up DC/DC Converter

Dmitri Vinnikov, Tallinn University of Technology, Estonia, Indrek Roasto, Tallinn University of Technology, Estonia, Ryszard Strzelecki, Gdynia Maritime University, Poland, Marek Adamowicz, Gdynia Maritime University, Poland

Analysis of Output Voltage of Switching Frequency Modulated DC-DC Converter Operating in Discontinuous Conduction Mode

Deniss Stepins, Riga Technical University, Latvia

Zero-Voltage Transition H-Bridge DC-DC Converter with Load-side Energy Recovery

Armando Bellini, University of Rome Tor Vergata, Italy, Stefano Bifaretti, University of Rome Tor Vergata, Italy, Vincenzo Iacovone, University of Rome Tor Vergata, Italy

A Step-Up DC-DC Converter for Non-Isolated On-Line UPS Applications

René P. Torrico-Bascopé, Federal University of Ceará, Brazil, Luiz D. S. Bezerra, Federal University of Ceará, Brazil, Carlos G. C. Branco, Federal University of Ceará, Brazil, Cícero M. T. Cruz, Federal University of Ceará, Brazil, Gean J. M. Sousa, Federal University of Ceará, Brazil

Analysis and Design of a Ground Isolated Switched Capacitor DC-DC Converter

Pradeep K. Peter, Indian Space Research Organisation, India, Vivek Agarwal, Indian Institute of Technology Bombay, India

250mV Input Boost Converter for Low Power Applications

Alessandro Bertacchini, University of Modena and Reggio Emilia, Italy, Stefano Scorcioni, University of Modena and Reggio Emilia, Italy, Marco Cori, University of Modena and Reggio Emilia, Italy, Luca Larcher, University of Modena and Reggio Emilia, Italy, Paolo Pavan, University of Modena and Reggio Emilia, Italy

## **PE - 4: Photovoltaic 1**

### **Meeting Room 03**

#### **Abrescia**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Mario Cacciato (DIEES-University of Catania, Italy), Maria Carmela Di Piazza (Issia-Cnr, Italy)

A Growing Neural Gas Network based MPPT Technique for Multi-String PV Plants

Maria Carmela Di Piazza, Issia-Cnr, Italy, Marcello Pucci, Issia-Cnr, Italy, Antonella Ragusa, Issia-Cnr, Italy, Gianpaolo Vitale, Issia-Cnr, Italy

A Maximum Power Point Tracker for a Photovoltaic System under Changing Luminosity Conditions

Dorin Petreus, Technical University of Cluj-Napoca, Romania, Daniel Moga, Technical University of Cluj-Napoca, Romania, Adina Rusu, Technical University of Cluj-Napoca, Romania, Toma Patarau, Technical University of Cluj-Napoca, Romania, Stefan Daraban, Technical University of Cluj-Napoca, Romania

Optimal Power Point Tracking For Stand-Alone PV System Using Particle Swarm Optimization

Mohamed Azab, Yanbu Industrial College, Saudi Arabia

Flexible Synchronous PWM Control of Cascaded Inverters for Photovoltaic Generation

Giovanni Griva, Politecnico di Torino, Italy, Valentin Oleschuk, Politecnico di Torino, Italy, Filippo Spertino, Politecnico di Torino, Italy

Isolated Buck-Boost DC/DC Converter for PV Grid-Connected System

Chuan Yao, Huazhong University of Science and Technology, China, Xinbo Ruan, Huazhong University of Science and Technology, China, Xuehua Wang, Huazhong University of Science and Technology, China

Analysis of Control Strategies for a 3 Phase 4 Wire Topology for Transformerless Solar Inverters

W.-Toke Franke, Christian-Albrechts-University, Germany, Claudia Kürtz, Christian-Albrechts-University, Germany, Friedrich W. Fuchs, Christian-Albrechts-University, Germany

## **PE - 5: Photovoltaic 2**

### **Meeting Room 03**

#### **Abbrescia**

**Tuesday 6th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Francisco Neves (Federal University of Pernambuco, Brazil), Chiara Boccaletti, (University of Rome, Italy), Dorin Petreus (Technical University of Cluj-Napoca, Romania)

A High Voltage Gain DC/DC Converter for Energy Harvesting in Single Module Photovoltaic Applications

Mario Cacciato, University of Catania, Italy, Alfio Consoli, University of Catania, Italy, Vittorio Crisafulli, University of Catania, Italy

MPPT Algorithm for Current Balancing of Partially Shaded Photovoltaic Modules

Armando Bellini, University of Rome Tor Vergata, Italy, Stefano Bifaretti, University of Rome Tor Vergata, Italy, Vincenzo Iacovone, University of Rome Tor Vergata, Italy

Multifunctional Interleaved Boost Converter for PV Systems

Ibrahim Sefa, Gazi University, Turkey, Saban Ozdemir, Gazi University, Turkey

Comparison of Transformerless Converter Topologies for Photovoltaic Application Concerning Efficiency and Mechanical Volume

W.-Toke Franke, Christian-Albrechts-University, Germany, Nils Oestreich, Christian-Albrechts-University, Germany, Friedrich W. Fuchs, Christian-Albrechts-University, Germany

Transformerless Photovoltaic Systems Using Neutral Point Clamped Multilevel Inverters

Kleber C. Oliveira, Federal University of Pernambuco, Brazil, Marcelo C. Cavalcanti, Federal University of Pernambuco, Brazil, João L. Afonso, University of Minho, Portugal, Alexandre M. Farias, Federal University of Pernambuco, Brazil, Francisco A.S. Neves, Federal University of Pernambuco, Brazil

Soft-Switching Interleaved Boost Converter with High Voltage Gain Applied to a Photovoltaic System

Ranoyca Silva, Federal University of Ceara, Brazil, Gustavo Henn, Federal University of Ceara, Brazil, Paulo Praça, Federal University of Ceara, Brazil, Raphael Camara, Federal University of Ceara, Brazil, Demercil Oliveira Jr., Federal University of Ceara, Brazil, Luiz Henrique Barreto, Federal University of Ceara, Brazil

## **PE – 6: Soft Switching and Resonant Converters**

### **Meeting Room 03**

#### **Abbrescia**

## **Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Adel Nasiri (University of Wisconsin-Milwaukee, USA), Pericle Zanchetta (University of Nottingham, UK)

High-Efficiency and Low-Cost Tightly-Regulated Dual-Output LLC Resonant Converter

Sang-Ho Cho, Kookmin university, Korea (South), Sang-Kyoo Han, Kookmin university, Korea (South), Chung-Wook Roh, Kookmin university, Korea (South), Sung-Soo Hong, Kookmin university, Korea (South)

Generalized Average Model of Series - Parallel Resonant Converter with Capacitive Output Filter for High Power Application.

Sibue Jean-Romain, G2elab/Alstom, France, Ferrieux Jean-Paul, G2elab, France

Meunier Gérard, G2elab, France, Periot Robert, Alstom, France, Clavel Edith, G2elab, France

PID Digital Control Applied to a High Voltage Gain Converter with Soft-Switching Cells

Ranoyca Silva, Federal University of Ceara, Brazil, Gustavo Henn, Federal University of Ceara, Brazil, Paulo Praça, Federal University of Ceara, Brazil, Raphael Camara, Federal University of Ceara, Brazil, Demercil Oliveira Jr., Federal University of Ceara, Brazil, Luiz Henrique Barreto, Federal University of Ceara, Brazil

An Improved Resonant Converter for Long-Pulse Generation in High-Energy Physics Applications

Chao Ji, University of Nottingham, United Kingdom, Pericle Zanchetta, University of Nottingham, United Kingdom, Fabio Carastro, University of Nottingham, United Kingdom, Jon Clare, University of Nottingham, United Kingdom

A Tightly Regulated Series-Parallel Resonant Converter based on Robust  $H^\infty$  Control Approach

Majid Pahlevaninezhad, Queen's University, Canada, Suzan Eren, Queen's University, Canada, Alireza Bakhshai, Queen's University, Canada, Praveen Jain, Queen's University, Canada

Multi-frequency Model of a Single Switch ZVS Class E Inverter

Carlos Bernal, University of Zaragoza, Spain, Estanis Oyarbide, University of Zaragoza, Spain, Pilar Molina, University of Zaragoza, Spain, Arturo Mediano, University of Zaragoza, Spain

## **ET - Emerging Technologies**

**Meeting Room 08**

**Daunia**

**Tuesday 6th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Olivier Bethoux (Universite Paris Sud, France), Luciano Mescia (Politecnico di Bari, Italy)

Fault Detection and Identification using Simple and Non-Intrusive On-line Monitoring Techniques for PEM Fuel Cell

Emmanuel Frappe, Inrets, France, Alexandre De Bernardinis, Inrets, France, Olivier Bethoux, Lgep, France, Gerard Coquery, Inrets, France, Claude Marchand, Lgep, France

Interconnection and Damping Assignment Passivity-based control of a fuel cell system

Mickael Hilairet, Lgep, France, Olivier Bethoux, Lgep, France, Azib Toufik, Lgep, France, Reine Talj, Lgep, France

Basic Study on Improving Efficiency of Wireless Power Transfer via Magnetic Resonance Coupling Based on Impedance Matching

Teck Chuan Beh, University of Tokyo, Japan, Takehiro Imura, University of Tokyo, Japan, Masaki Kato, University of Tokyo, Japan, Yoichi Hori, University of Tokyo, Japan

Analysis and Design of a Solar Rectenna

Bozzetti Michele, Politecnico of Bari, Italy, De Candia Gennaro, Politecnico of Bari, Italy, Gallo Michele, Politecnico of Bari, Italy, Losito Onofrio, Politecnico of Bari, Italy, Mescia Luciano, Politecnico of Bari, Italy, Prudeniano Francesco, Politecnico of Bari, Italy

Advanced Speeding-up Techniques for SEU Sensitivity Assessment

Michelangelo Grosso, Politecnico di Torino, Italy, Hipolito Guzman-Miranda, Universidad de Sevilla, Spain

## **ss8 - Integration of Renewable Energy Sources in the Power Network 1**

### **Meeting Room 08**

#### **Daunia**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Marta Molinas (NTNU, Trondheim, Norway), Elisabetta Tedeschi (NTNU, Trondheim, Norway)

Distribution Loss Minimization by Token Ring Control of Power Electronic Interfaces in Residential Micro-Grids

Paolo Tenti, University of Padova, Italy, Daniela Trombetti, University of Padova, Italy, Paolo Mattavelli, University of Padova, Italy, Alessandro Costabeber, University of Padova, Italy

Reliability and Availability Performances of a Universal and Flexible Power Management System

Stefano Savio, University of Genova, Italy, Micaela Caserza Magro, University of Genova, Italy

ISWEC: application of linear tubular generators

Giovanni Bracco, Politecnico di Torino, Italy, Ermanno Giorcelli, Politecnico di Torino, Italy, Fabrizio Marignetti, Università di Cassino, Italy, Giuliana Mattiazzo, Politecnico di Torino, Italy

Impact of Control Strategies on the Rating of Electric Power Take Off for Wave Energy Conversion

Elisabetta Tedeschi, Norwegian University of Science and Technology, Norway, Marta Molinas, Norwegian University of Science and Technology, Norway

Optimal use of power electronic interfaces for loads in distributed systems

Nadeem Jelani, Norwegian University Of Science And Technology, Norway, Marta Molinas, Norwegian University Of Science And Technology, Norway

Active Voltage Ripple Compensation in PV Systems for Domestic Uses

Antonio Testa, University of Messina, Italy, Salvatore De Caro, University of Messina, Italy

## **ss9 - Methods and Systems for Smart Grids Optimization**

### **Meeting Room 08**

#### **Daunia**

**Tuesday 6th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Carlo Cecati (University of L'Aquila, Italy), Pierluigi Siano (University of Salerno, Italy)

Electricity Customers' Attitudes towards Smart Metering

Eva Fosby Livgard, TNS Gallup Norway, Norway

Communication between substations and diffuse generators: experimental activity in ERSE

Diana Moneta, Erse, Italy, Gianluigi Proserpio, Erse, Italy, Giovanni Colombo, Erse, Italy, Paolo Gramatica, Erse, Italy

Improving Reliability System by Optimal Sectionalizer Placement in Smart Distribution Grid

Vito Calderaro, University of Salerno, Italy, Vincenzo Galdi, University of Salerno, Italy, Antonio Piccolo, University of Salerno, Italy, Pierluigi Siano, University of Salerno, Italy

Optimal Dispatching of Distributed Generators in an MV Autonomous Micro-Grid to Minimize Operating Costs and Emissions

Stefania Conti, University of Catania, Italy, Rosario Nicolosi, University of Catania, Italy, Santi Agatino Rizzo, University of Catania, Italy

Voltage Sensitivity Analysis in Radial MV Distribution Networks using Constant Current Models.

Stefania Conti, University of Catania, Italy, Salvatore Raiti, University of Catania, Italy, Guido Vagliasindi, University of Catania, Italy

Implementation of a new control system for low voltage switchboards

Francesco Muzi, University of L'Aquila, Italy, Flavio D'Innocenzo, University of L'Aquila, Italy

# **ss10 - Active Filtering and Advanced Signal Processing in Power Electronics**

## **Meeting Room 08**

**Daunia**

**Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Mariusz Malinowski (Warsaw University of Technology, Poland), Jose Espinoza (University of Concepcion, Chile), Dorin O. Neacsu (consultant, USA)

Series-Shunt Power Active Filter for High Penetration of Embedded Production one Dynamic Approach

Jose Puga, Isep, Portugal, Maria Ferreira, Isep, Portugal

Design and Control of LCL Filter with Active Damping for Active Power Filter

Guohong Zeng, Beijing Jiaotong University, China, Tonny Rasmussen, Technical University of Denmark, Denmark, Lin Ma, Beijing Jiaotong University, China, Remus Teodorescu, Aalborg University, Denmark

Design of a Discrete-Time Linear Control Scheme for a Modular UPQC

Javier Munoz, Concepcion University, Chile, Jose Espinoza, Concepcion University, Chile, Eduardo Espinosa, Concepcion University, Chile, Carlos Baier, Concepcion University, Chile, Pedro Melin, Concepcion University, Chile

Stability Issues of Current Controllers based on Repetitive-Based Control and Second Order Generalized Integrators for Active Power Filters

Ana Rodriguez, University of Alcala, Spain, Carlos Giron, University of Alcala, Spain, Vanessa Saez, University of Alcala, Spain, Emilio Bueno, University of Alcala, Spain

Francisco J. Meca, University of Alcala, Spain, Francisco J. Rodriguez, University of Alcala, Spain

Refined Control of a Unified Power Quality Conditioner under Nonlinear and Asymmetrical Loads

Claudio Molina, Concepcion University, Chile, Jose Espinoza, Concepcion University, Chile, Eduardo Espinosa, Concepcion University, Chile, Felipe Villarroel, Concepcion University, Chile, Jorge Hidalgo, Concepcion University, Chile

Predictive Control of High Power Active Filter System with LCL Circuit

Daniel Wojciechowski, Gdynia Maritime University, Poland

Finite State Predictive Control of a Hybrid Active Power Filter

Mehrdad Chapariha, Isfahan University of Tech., Iran, Hamid Karshenas, Isfahan University of Tech., Iran, Alireza Bakhshai, Queen's University, Canada, Praveen Jain, Queen's University, Canada

## **EMD - 1: Sensorless Control**

**Meeting Room 05**

**Iapigia**

**Tuesday 6th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Ali Emadi (Illinois Institute of Technology, USA), Ion Boldea (University Politehnica of Timisoara, Romania)

Rotor Position Estimation of PMSM by Sliding Mode EMF Observer under Improper Speed

Mihai Comanescu, Penn State Altoona, USA

A Ringed-Pole SPM Motor for Sensorless Drives - Electromagnetic analysis, prototyping and tests

Nicola Bianchi, University of Padova, Italy, Silverio Bolognani, University of Padova, Italy, Adriano Faggion, University of Padova, Italy

Novel Position and Speed Estimator for PM Single Phase Brushless D.C. Motor Drives: Validation with Experiments

Liviu Iepure, University Politehnica of Timisoara, Romania, Gheorghe Daniel Andreescu, University Politehnica of Timisoara, Romania, Dorin Iles, ebm-papst St. Georgen GmbH & Co, Germany, Frede Blaabjerg, Institute of Energy Technology, Denmark, Ion Boldea, University Politehnica of Timisoara, Romania

A Sensorless PMSM Drive Operating in the Field Weakening Region Using Only One Current Sensor

Mario Marchesoni, University of Genova, Italy, Matteo Carpaneto, University of Genova, Italy, Gianluca Parodi, University of Genova, Italy

Implementation of Sensorless Techniques for Switched Reluctance Motor Drive Systems

Ching-Guo Chen, Tunghan University, Taiwan, Ming-Tsan Lin, Tunghan University, Taiwan

A Novel Model Reference Adaptive Controller for Estimation of Speed and Stator Resistance for Vector Controlled Induction Motor Drives

A. V. Ravi Teja, Indian Institute of Technology Kharagpur, India, Chandan Chakraborty, Indian Institute of Technology Kharagpur, India

## **EMD - 4: Optimization Techniques**

**Meeting Room 05**

**Iapigia**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** David G. Dorrell (University of Technology - Sydney, Australia), Giammario Pellegrino (Politecnico di Torino, Italy)

Parameter Estimation of an Induction Machine using a Dynamic Particle Swarm Optimization Algorithm

Duy Huynh, Heriot-Watt University, United Kingdom, Matthew Dunnigan, Heriot-Watt University, United Kingdom

Maximum Efficiency of an Induction Machine Operating in a Wide Range of Speed and Torque Part 1 (Theoretical Analysis)

Pavel Vorel, Brno University of Technology, Czech Republic, Petr Hutak, Brno University of Technology, Czech Republic, Petr Prochazka, Brno University of Technology, Czech Republic

Maximum Efficiency of an Induction Machine Operating in a Wide Range of Speed and Torque - Part 2 (Calculation, Simulation and Measurement Results)

Pavel Vorel, Brno University of Technology, Czech Republic, Petr Hutak, Brno University of Technology, Czech Republic, Petr Prochazka, Brno University of Technology, Czech Republic

Surface Permanent Magnet Synchronous Motor Optimization Design: Hooke Jeeves Method Versus Genetic Algorithms

Lucian N. Tutelea, University of Politehnica Timișoara, Romania, Ion Boldea, University of Politehnica Timișoara, Romania

IPM motor rotor design by means of FEA-based multi-objective optimization

Gianmario Pellegrino, Politecnico di Torino, Italy, Francesco Cupertino, Politecnico di Bari, Italy

HF induction motor modeling using Genetic Algorithms and experimental impedance measurement

Marco Degano, University of Nottingham, United Kingdom, Pericle Zanchetta, University of Nottingham, United Kingdom, Jon Clare, University of Nottingham, United Kingdom, Lee Empringham, University of Nottingham, United Kingdom

## **EMD - 5: Induction Machines**

### **Meeting Room 05**

**lapigia**

**Tuesday 6th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Aldo Boglietti (Politecnico di Torino, Italy), Cyril Staines Spiteri (University of Malta)

Low switching PWM strategy to reduce acoustic noise radiated by inverter-fed induction motors

Antonio Ruiz-Gonzalez, University of Malaga, Spain, Francisco Vargas-Merino, University of Malaga, Spain, Mario J. Meco-Gutierrez, University of Malaga, Spain, Juan R. Heredia-Larrubia, University of Malaga, Spain, Francisco Perez-Hidalgo, University of Malaga, Spain

Slip Independent Monitoring of Wound-Rotor Induction Machines

Shahin Hedayati Kia, ESIEE Amiens, France, Augustin Mpanda, ESIEE Amiens, France, Roger Ceschi, ESIEE Amiens, France

Properties of Selected Direct Torque Control Methods of Induction Motor

Pavel Brandstetter, VSB-Technical University of Ostrava, Czech Republic, Libor Hrdina, VSB-Technical University of Ostrava, Czech Republic, Petr Simonik, VSB-Technical University of Ostrava, Czech Republic

A Novel Direct Torque Control Strategy for High Power Induction Motor Drives

Gianmarco Maragliano, University of Genova, Italy, Mario Marchesoni, University of Genova, Italy, Luis Vaccaro, University of Genova, Italy

No-Load Operations of Induction Motors under PWM Supply

Aldo Boglietti, Politecnico di Torino, Italy, Radu Bojoi, Politecnico di Torino, Italy, Andrea Cavagnino, Politecnico di Torino, Italy, Luca Ferraris, Politecnico di Torino, Italy

POG Modeling of a Cascaded Doubly-Fed Induction Generator

Roberto Zanasi, University of Modena e Reggio Emilia, Italy, Giovanni Azzone, University of Modena e Reggio Emilia, Italy

## **EMD - 6: Electric Drives With Reduced DC-Link Storage**

### **Meeting Room 05**

#### **Iapigia**

#### **Tuesday 6th of July**

#### **Hour: 16:30 – 18:30**

**Chair/s:** Gerardo Escobar (ABB, Switzerland), Roberto Cardenas, (University of Santiago, Chile)

Control of a Doubly fed Induction Generator with an Indirect Matrix Converter with Changing DC voltage

Eduardo Reyes, University of Magallanes, Chile, Ruben Peña, University of Concepcion, Chile, Roberto Cardenas, University of Santiago, Chile, Jon Clare, University of Nottingham, United Kingdom, Pat Wheeler, University of Nottingham, United Kingdom

Power Control of Doubly Fed Induction Machine using a Rotor Side Matrix Converter

Kenneth Spiteri, Uni of Malta, Malta, Cyril Spiteri Staines, Uni of Malta, Malta, Maurice Apap, Uni of Malta, Malta

Active Damping Technique for Small DC-link Capacitor based Drive System

RamKrishan Maheshwari, Aalborg University, Denmark, Stig Munk-Nielsen, Aalborg University, Denmark, Bjarne Henriksen, Grundfos A/S, Denmark, Palle M. Obel, Grundfos A/S, Denmark, Henrik Kragh, Grundfos A/S, Denmark

DC-Link Compensation Method for Slim DC-Link Drives Fed by Soft Grid

Laszlo Mathe, Danfoss Drives, Denmark, Henrik Rosendal Andersen, Danfoss Drives, Denmark, Radu Lazar, Danfoss Drives, Denmark, Mihai Ciobotaru, IET Aalborg University, Denmark

Predictive Direct Torque Control of Matrix Converter fed Permanent Magnet Synchronous Machines

Carlos Ortega, Euss, Spain, Antoni Arias, Upc, Spain, Jordi Espina, Upc, Spain

A High-Speed CSC Based PMSM Drive with a switching frequency of 420Hz

Zheng Wang, Southeast University, China, Bin Wu, Ryerson University, Canada, Dewei Xu, Ryerson University, Canada, Navid Zargari, Medium-Voltage Drive R&D, Rockwell Automation, Canada

### **SPCI - 3: Imaging Processing**

#### **Meeting Room 06**

#### **Ionia**

#### **Tuesday 6th of July**

#### **Hour: 08:30 – 10:30**

**Chair/s:** Xinghuo Yu. (RMIT, Australia), Alejandro Rodriguez (University of Malaga, Spain)

Crowd Density Estimation on Real Scenes

Wei Li, Shandong University, China, Xiaojuan Wu, Shandong University, China, Hua-An Zhao, Kumamoto University, Japan, Yuncai Liu, Shanghai Jiao Tong University, China

Classification of Fingerprint Based on Traced Orientation Flow

Jing-Wein Wang, National Kaohsiung University of Applied Sciences, Taiwan

LED Panel Illumination Design of a Control System for Visual Inspection of Ceramic Tiles

Zeljko Hocenski, University J.J.Strossmayer in Osijek, Croatia; Krešimir Sobol, University J.J.Strossmayer in Osijek, Croatia; Robert Mijaković, University J.J.Strossmayer in Osijek, Croatia

Image Based Smoke Detection with Two-Dimensional Local Hurst Exponent

Hidenori Maruta, Nagasaki University, Japan, Takeshi Yamamichi, Nagasaki University, Japan, Akihiro Nakamura, Nagasaki University, Japan, Fujio Kurokawa, Nagasaki University, Japan

Ontology based Geometry Recognition for STEP

Qingmai Wang, Rmit, Australia, Wei Peng, Rmit, Australia, Xinghuo Yu, Rmit, Australia

Gray Level Topological Angle Detection of High Curvature Points

Ibrahim Kiivanc Cihan, HAVELSAN EHSiM A.S., Turkey, Hakan Guray Senel, Anadolu University, Turkey

## **RM - 3: Robotic Actuation and Control**

### **Meeting Room 06**

**Ionia**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Hasan Komurcugil (Eastern Mediterranean University, Turkey), Salvatore Livatino (University of Hertfordshire, UK)

Three DOF Wrist Joint - Control of Joint Stiffness and Angle-

Koichi Koganezawa, Tokai University, Japan, Hiroshi Yamashita, Tokai University, Japan

Realization Of Wire Tension Control For Tendon-Driven Rotary Actuator With A Pe Line

Yusuke Suzuki, Keio University, Japan, Kouhei Ohnishi, Keio University, Japan

A New Adaptive Algorithm for Adjusting the HDD Actuator Arm's Position

Akaraphunt Vongkunghae, Naresuan University, Thailand, Anuchit Chumthong, Naresuan University, Thailand

A Robust Feedback linearization approach for tracking control of flexible-link manipulators using an EKF Disturbance Estimator

Seyed Farokh Atashzar, Amirkabir university of technology, Iran, Heidar Ali Talebi, Amirkabir university of technology, Iran, Farzad Towhidkhal, Amirkabir university of technology, Iran

Proposal of Long Sampling Short Cycle Observer for Quantization Error Reduction

Koichi Sakata, Yokohama National University, Japan, Hiroshi Fujimoto, The University of Tokyo, Japan

Estimation of Unobservable Oscillations in Sampled-Data Positioning Systems

Takenori Atsumi, Hitachi, Ltd., Japan, William C. Messner, Carnegie Mellon University, USA

## **ss3 - Multiphase Drives 1**

### **Meeting Room 06**

**Ionia**

**Tuesday 6th of July**

**Hour: 13:50 – 16:10**

**Chair/s:** Luca Zarri (University of Bologna, Italy), Federico Barrero (University of Seville, Spain)

Current Ripple in Inverter-Fed Five-Phase Drives with Space-Vector PWM

Martin Jones, Liverpool John Moores University, United Kingdom, Emil Levi, Liverpool John Moores University, United Kingdom, Drazen Dujic, ABB Switzerland Corporate Research, Switzerland, Joel Prieto, University of Seville, Spain, Federico Barrero, University of Seville, Spain

Low Speed Control Improvements for Classic Direct Torque Control of a 2-level 5-phase Inverter-Fed Induction Machine

Liliang Gao, University of Strathclyde, United Kingdom, John Fletcher, University of Strathclyde, United Kingdom, Libo Zheng, University of Strathclyde, United Kingdom

Experimental Comparison between two Fault-Tolerant Fractional-Slot Multiphase PM Motor Drives

Massimo Barcaro, University of Padova, Italy, Nicola Bianchi, University of Padova, Italy, Emanuele Fornasiero, University of Padova, Italy, Freddy Magnussen, ABB Corporate Research, Sweden

Fault tolerant four-leg matrix converter drive topologies for aerospace applications

Sudarat Khwan-on, The University of Nottingham, United Kingdom, Liliana de Lillo, The University of Nottingham, United Kingdom, Patrick Wheeler, The University of Nottingham, United Kingdom, Lee Empringham, The University of Nottingham, United Kingdom

Carrier-Based Modulation of Non-Square Multi-Phase AC-AC Matrix Converters

Olorunfemi Ojo, Tennessee Tech University, United States, Meharegzi Abreham, Tennessee Tech University, United States, Sosthenes Karugaba, Tennessee Tech University, United States, Olusola Komolafe, Obafemi Awolowo University, Nigeria

Control of a High Torque Density Seven-Phase Induction Motor with Field-Weakening Capability

Domenico Casadei, University of Bologna, Italy, Michele Mengoni, University of Bologna, Italy, Leila Parsa, Rensselaer Polytechnic Institute, USA, Giovanni Serra, University of Bologna, Italy, Angelo Tani, University of Bologna, Italy, Luca Zarri, University of Bologna, Italy

A 5X5 Model of the Six Phase squirrel cage Induction Machine (6PIM) in faulted condition

M. A. Fnaiech, University of Picardie Jules Verne, France, F. Betin, University of Picardie Jules Verne, France G. A. Capolino, University of Picardie Jules Verne, France

## **ss4 - Distributed Generation and Microgrids 2**

### **Meeting Room 06**

**Ionía**

**Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Josep M. Guerrero (Technical University of Catalonia, Spain), Ramon Blasco-Gimenez (Universitat Politècnica de Valencia, Spain)

### Multifunctional Grid Front-End for Dispersed Energy Resources

Egon Ortjohann, South Westphalia University of Applied Sciences, Germany, Worpong Sinsukthavorn, South Westphalia University of Applied Sciences, Germany, Max Lingemann, South Westphalia University of Applied Sciences, Germany, Alaa Mohd, South Westphalia University of Applied Sciences, Germany, Samer Jaloudi, South Westphalia University of Applied Sciences, Germany, Nasic Hamsic, South Westphalia University of Applied Sciences, Germany, Danny Morton, The University of Bolton, Germany

### An Integrated Multifunction DC/DC Converter for PV Generation Systems

Lin Ma, Beijing Jiaotong University, China, Kai Sun, Tsinghua University, China, Remus Teodorescu, Aalborg University, Denmark, Josep M. Guerrero, Universitat Politècnica de Catalunya, Spain

### Proportional Load Sharing Method for Parallel Connected Inverters

Xiaotian Zhang, University of Liverpool, United Kingdom, Qing-Chang Zhong, University of Liverpool, United Kingdom, Hao Zhang, Xi'an Jiaotong University, China, Xikui Ma, Xi'an Jiaotong University, China

### New Voltage Regulation Techniques for Low Voltage Radial Feed PWM Inverter Based Distributed Networks

Khaled Ahmed, Strathclyde University, United Kingdom, Ahmed Massoud, Qatar University, Qatar, Steve Finney, Strathclyde University, United Kingdom, Barry Williams, Strathclyde University, United Kingdom

### Control of Grid Interactive AC Microgrids

Xiongfei Wang, Aalborg University, Denmark, Josep M. Guerrero, Technical University of Catalonia, Spain, Zhe Chen, Aalborg University, Denmark

### Control of Paralleled PEBBs to Facilitate the Efficient Operation of Microgrid

Xiaoxiao Yu, National Univ of Singapore, Singapore, Huan H. Wang, National Univ of Singapore, Singapore, Ashwin M. Khambadkone, National Univ of Singapore, Singapore

## **ss23 - Powerline Communications (PLC) Modeling and Applications**

### **Meeting Room 09**

### **Appula**

### **Tuesday 6th of July**

### **Hour: 08:30 – 10:30**

**Chair/s:** Giuseppe Acciani (Politecnico di Bari, Italy), Marco Raugi (Università di Pisa, Italy), Girolamo Fornarelli (Politecnico di Bari, Italy)

### Numerical Analysis of Synchronous Impulsive Noise on Naval Powerline Communications

Giuseppe Acciani, Politecnico di Bari, Italy, Vitantonio Amoroso, Politecnico di Bari, Italy, Girolamo Fornarelli, Politecnico di Bari, Italy, Antonio Giaquinto, Politecnico di Bari, Italy

Computer-Aided Design of Coupling Units for Naval-Network Power Line Communications

Rodolfo Araneo, Sapienza University Of Rome, Italy, Francescaromana Maradei, Sapienza University Of Rome, Italy, Giampiero Lovat, Sapienza University Of Rome, Italy, Salvatore Celozzi, Sapienza University Of Rome, Italy

Analysis of Transmission Properties of Naval Power Line Channels

Tao Zheng, University of Pisa, Italy, Marco Raugi, University of Pisa, Italy, Mauro Tucci, University of Pisa, Italy

FEM Analysis of a Naval PLC System

Giovanni Aiello, - Università degli Studi di Catania, Italy, Salvatore Alfonzetti, Università degli Studi di Catania, Italy, Emanuele Dilettoso, Università degli Studi di Catania, Italy, Nunzio Salerno, Università degli Studi di Catania, Italy, Salvatore Sindoni, Università degli Studi di Catania, Italy

Tabu-Search Procedure for PAPR Reduction in PLC Channels

Massimo Camplani, University of Cagliari, Italy, Barbara Cannas, University of Cagliari, Italy, Sara Carcangiu, University of Cagliari, Italy, Alessandra Fanni, University of Cagliari, Italy, Augusto Montisci, University of Cagliari, Italy, Mariangela Usai, University of Cagliari, Italy

## **ss11 - Diagnostics for AC Machine Based Complex Electromechanical Systems**

**Meeting Room 09**

**Appula**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Gerard-Andre Capolino (University of Picardie "Jules Verne", France), Claudio Rossi (University of Bologna, Italy), Teresa Orłowska-Kowalska (Wroclaw University of Technology, Poland)

Advanced rotor fault diagnosis for DFIM based on frequency sliding and wavelet analysis under time-varying condition

Yasser Gritli, National Institute of Applied Sciences and Technology, Tunisia, Andrea Stefani, University of Bologna, Italy, Abderrazak Chatti, National Institute of Applied Sciences and Technology, Tunisia, Claudio Rossi, University of Bologna, Italy, Fiorenzo Filippetti, University of Bologna, Italy

Simulation of Wound Rotor Synchronous Machine under Voltage Sags

Daniel Aguilar, Polytechnic University of Catalonia, Spain, Gerardo Vazquez, Polytechnic University of Catalonia, Spain, Alejandro Rolan, Polytechnic University of Catalonia, Spain, Joan Rocabert, Polytechnic University of Catalonia, Spain, Felipe Corcoles, Polytechnic University of Catalonia, Spain, Pedro Rodriguez, Polytechnic University of Catalonia, Spain

Rotor Fault Detection in Induction Motors Using the Fast Orthogonal Search Algorithm

Gregory King, Royal Military College, Canada, Mohammed Tarbouchi, Royal Military College, Canada, Donald McGaughey, Royal Military College, Canada

A Novel Fault Diagnosis Scheme for FOC Induction Motor Drives by Using Variable Structure Observers

Diego R. Espinoza-Trejo, Uaslp, Mexico, Daniel U. Campos-Delgado, Uaslp, Mexico, Ambrocio Loreda-Flores, Uaslp, Mexico

Variable Speed Evaluation of a Model-Based Fault Diagnosis Scheme for Induction Motor Drives

Diego R. Espinoza-Trejo, Uaslp, Mexico, Daniel U. Campos-Delgado, Uaslp, Mexico, Francisco J. Martinez-Lopez, Uaslp, Mexico

Experimental Inter-turn Short Circuit Fault Characterization of Wound Rotor Induction Machines

Amine Yazidi, University of Picardie, France, Humberto Henao, University of Picardie, France, Gerard Capolino, University of Picardie, France, Franck Betin, University of Picardie, France, Laurent Capocchi, University of Corsica, France

## **ss47 - Sensing and Control for Access Space: Human Centered Communication Environment**

### **Meeting Room 09**

### **Appula**

### **Tuesday 6th of July**

### **Hour: 14:00 – 16:00**

**Chair/s:** Seiichiro Katsura (Keio University, Japan), Philippe Fuchs (Robotics Center - Mines Paritech, France)

Reproduction of Real-World Haptic Information in Access Space

Yuki Yokokura, Keio University, Japan, Seiichiro Katsura, Keio University, Japan

Cognition-based contrast adjustment using neural network based face recognition system

Mitsuharu Matsumoto, University of Electro-Communications, Japan

Time Domain Reproduction-Precision of Haptic Motion

Baris Yalcin, Keio University, Japan, Kouhei Ohnishi, Keio University, Japan

A Communication Disturbance Observer with a Band-pass Filter for Delay Time Compensation

Daisuke Yashiro, Keio university, Japan, Kouhei Ohnishi, Keio university, Japan

Real time comfort enhancement in stereoscopic displays by disparity and content-adapted blur

Laure Leroy, Robotics Center - Mines Paritech, France, Philippe Fuchs, Robotics Center - Mines Paritech, France, Guillaume Moreau, Ecole Centrale de Nantes, France

Towards Outdoor Localization from GIS Data and 3D Content Extracted from Videos

Nicolas Bioret, Ecole Centrale Nantes, France, Guillaume Moreau, Ecole Centrale Nantes, France, Myriam Servières, Ecole Centrale Nantes, France

## **ss45 - Human Adaptive and Friendly Mechatronics: Robotics and Intelligence**

### **Meeting Room 09**

#### **Appula**

**Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Maki K. Habib (The American University in Cairo, Egypt), Ju-Jang Lee (KAIST, Korea)

New Approach to Force Sensor-Less Power Assist Control for High Friction and High Inertia Systems

Valerio Salvucci, University of Tokyo, Japan, Sehoon Oh, University of Tokyo, Japan, Yoichi Hori, University of Tokyo, Japan

Robust and Safe Control Based on Disturbance Observer for Train Doors

Takuya Koyanagi, The University of Tokyo, Japan, Shigeki Inatama, Fuji Electric Holdings Co., Ltd., Japan, Sehoon Oh, The University of Tokyo, Japan, Yoichi Hori, The University of Tokyo, Japan

A Strategy to Avoid Dynamic and Static Obstacles for Robotic Wheelchairs

Alexandre S. Brandão, Federal University of Espirito Santo, Brazil, Celso de la Cruz, Federal University of Espirito Santo, Brazil, Teodiano F. Bastos-Filho, Federal University of Espirito Santo, Brazil, Mario Sarcinelli-Filho, Federal University of Espirito Santo, Brazil

Position and Compliance Control of a Manipulator with Pneumatic Muscles for Enhanced Safety

Tae-Yong Choi, Kaist, Korea (South), Joon-Woo Lee, Kaist, Korea (South), Kyoung-Taik Park, Kimm, Korea (South), Ju-Jang Lee, Kaist, Korea (South)

Skillful Stick-Slip Motion Control of a Cartesian-Type Robot

Maki Habib, The American University in Cairo, Egypt, Fusaomi Nagata, Tokyo University of Science, Yamaguchi, Japan, Takanori Mizobuchi, Tokyo University of Science, Yamaguchi, Japan, Keigo Watanabe, Okayama University, Japan, Tetsuo Hase, Meiho Co. Ltd., Japan, Zenku Haga, Meiho Co. Ltd., Japan

Realization and Validation of Delay Tolerant Behavior Control based Adaptive Bandwidth Allocation for Networked Control System

Unnati Ojha, North Carolina State University, USA, Mo-Yuen Chow, North Carolina State University, USA

## **ss43 - Collaborative Systems in Industrial Automation**

### **Meeting Room 10**

**Sveva-Egnazia**

**Tuesday 6th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Paulo Leitao (Polytechnic Institute of Braganca, Portugal), Carlos Carneira (Technical University of Lisbon, Portugal)

Energy Aware Knowledge Extraction from Petri Nets Supporting Decision-making in Service-oriented Automation

Paulo Leitao, Polytechnic Institute of Braganca, Portugal, Joel Alves, Polytechnic Institute of Braganca, Portugal, J. Marco Mendes, University of Porto, Portugal, Armando Colombo, Schneider Electric, Germany

Integrating Transportation Scheduling with Production Scheduling for FMS: An Agent-Based Approach

Iman Badr, 1Institute of Industrial Automation and Software Engineering, Germany, Fabian Schmitt, Aradex Ag, Germany, Peter Göhner, 1Institute of Industrial Automation and Software Engineering, Germany

Improving Energy Efficiency in Service-oriented Production Automation Systems

Daniel Cachapa, Schneider Electric Automation, Germany, Robert Harrison, Loughborough University, United Kingdom, Armando Colombo, Schneider Electric Automation, Germany, Les Lee, Ford Motor Company, United Kingdom

A Society of Agents for Service Robots

Urko Esnaola, Fatronik-Tecnalia, Spain, Tim Smithers, Fatronik-Tecnalia, Spain, Jon Agirre Ibarbia, Fatronik-Tecnalia, Spain

Fast Wall-Following Exploration with Two Cooperating Mobile Robots

Mohammad Al-khawaldah, University of Hertfordshire, United Kingdom, Salvatore Livatino, University of Hertfordshire, United Kingdom

Reduced Overlap Frontier-based Exploration with Two Cooperating Mobile Robots

Mohammad Al-khawaldah, University of Hertfordshire, United Kingdom, Salvatore Livatino, University of Hertfordshire, United Kingdom, David Lee, University of Hertfordshire, United Kingdom

**ss2 - Fault Diagnosis in Robotic and Industrial Systems 1**

**Meeting Room 10**

**Sveva-Egnazia**

**Tuesday 6th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Gerasimos Rigatos (Industrial Systems Institute, Greece), Sauro Longhi (University Polytechnica delle Marche, Italy)

Fault detection and prognosis methods for a monitoring system of rotating electrical machines

Chiara Ciandrini, Università Politecnica delle Marche, Italy, Marco Gallieri, Università Politecnica delle Marche, Italy, Andrea Giantomassi, Università Politecnica delle Marche, Italy, Gianluca Ippoliti, Università Politecnica delle Marche, Italy, Sauro Longhi, Università Politecnica delle Marche, Italy

Actuator Fault Detection System for a Mini-Quadrotor

Alessandro Freddi, Università Politecnica delle Marche, Italy, Andrea Monteriù, Università Politecnica delle Marche, Italy, Sauro Longhi, Università Politecnica delle Marche, Italy

Sensor Fault Diagnosis for Manipulators Performing Interaction Tasks

Fabrizio Caccavale, Università degli Studi della Basilicata, Italy, Alessandro Marino, Università degli Studi della Basilicata, Italy, Francesco Pierri, Università degli Studi della Basilicata, Italy

Higher Order Sliding Mode Observers for Actuator Faults Diagnosis in Robot Manipulators

Luca Capisani, University of Pavia, Italy, Antonella Ferrara, Science University of Pavia, Italy, Alejandra Ferreira, National Autonomous University of Mexico, Mexico, Leonid Fridman, National Autonomous University of Mexico, Mexico

Identification of Mechanical Faults in Rotating Machinery for Power Generation

Paolo Pennacchi, Politecnico di Milano, Italy, Andrea Vania, Politecnico di Milano, Italy, Steven Chatterton, Politecnico di Milano, Italy

Diagnosis of the RSDS video signals on TFT color screens

Florian Germain, University Le Havre, France, Francois Guerin, University Le Havre, France, Edouard Leclercq, University Le Havre, France, Laurent Lardeux, Johnson Controls, France, Jan Faber, Johnson Controls, Germany, Hans-Ulrich Lauer, Johnson Controls, Germany, Olivier Lebrun, Johnson Controls, France

## **ss16 - Power Electronics for More Electric Aircraft**

### **Meeting Room 10**

### **Sveva-Egnazia**

### **Tuesday 6th of July**

### **Hour: 14:00 – 16:00**

**Chair/s:** Alberto Tenconi (Politecnico di Torino, Italy), Radu Bojoi (Politecnico di Torino, Italy)

On the Small-Signal Modeling of Parallel/Interleaved Buck/Boost Converters

Dorin O. Neacsu, Consultant, USA, William Bonnice SatCon Technology, USA, and Evgeny Holmanskyy, SatCon Technology, USA

Implementation of control and protection logics for a bidirectional DC/DC converter

Beniamino Guida, Seconda Università degli Studi di Napoli, Italy, Luigi Rubino, Seconda Università degli Studi di Napoli, Italy, Pompeo Marino, Seconda Università degli Studi di Napoli, Italy, Alberto Cavallo, Seconda Università degli Studi di Napoli, Italy

Buck-boost DC/DC converter for aeronautical applications

Luigi Rubino, Seconda Università degli Studi di Napoli, Italy, Beniamino Guida, Seconda Università degli Studi di Napoli, Italy, Felice Liccardo, Seconda Università degli Studi di Napoli, Italy, Pompeo Marino, Seconda Università degli Studi di Napoli, Italy, Alberto Cavallo, Seconda Università degli Studi di Napoli, Italy

A generic design method for robust performances and integration of Aircraft DC power systems

Matthieu Sautreuil, G2Elab, France, Delphine Riu, G2Elab, France, Nicolas Retiere, G2Elab, France, Olivier Senname, GIPSA-lab, France

Improved Dead Beat Control of a Shunt Active Filter for Aircraft Power Systems

Veronica Biagini, University of Pisa, Italy, Milijana Odavic, University of Nottingham, Great Britain (UK), Pericle Zanchetta, University of Nottingham, Great Britain (UK), Marco Degano, University of Nottingham, Great Britain (UK), Paolo Bolognesi, University of Pisa, Italy

Analytical Investigation of a Novel Solution to AC Waveform Tracking Control

Dorin Neacsu, Consultant, USA, United States

## **ss3 - Multiphase Drives and Sensorless Drives 2**

### **Meeting Room 10**

### **Sveva-Egnazia**

### **Tuesday 6th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Luca Zarri (University of Bologna, Italy), Xavier Kestelyn (Arts et Métiers ParisTech-L2EP, France)

Auto-Adaptive Fault Tolerant Control of a Seven-phase Drive

Xavier Kestelyn, Arts et Métiers ParisTech - L2EP, France, Eric Semail, Arts et Métiers ParisTech - L2EP, France, Yvan Crevits, Arts et Métiers ParisTech - L2EP, France

Time-Stepping Finite-Element Analysis of a Dual Three-Phase Salient-Pole Synchronous Motor under Voltage-Source Supply

Alberto Tessarolo, University of Trieste, Italy, Cristina Bassi, Ansaldo Sistemi Industriali, Italy

Selective Harmonic Elimination Techniques applied to Five-phase Inverter Drives

Martin Mandl, Graz University of Technology, Austria, Michael Buchner, Graz University of Technology, Austria, John Fletcher, University of Strathclyde, United Kingdom

MRAS-Based Speed Sensorless Control Of A Five-Phase Induction Motor Drive With A Predictive Adaptive Model

Mohammad Rizwan Khan, Aligarh Muslim University, India, Atif Iqbal, Texas A&M University At Qatar, Qatar, Haitham Abu-Rub, Texas A&M University at Qatar, Qatar, SK Moin Ahmed, Texas A&M University at Qatar, Qatar

Voltage multiscalar control of induction machine supplied by current source converter

Marcin Morawiec, Gdansk University of Technology, Poland, Arkadiusz Lewicki, Gdansk University of Technology, Poland, Zbigniew Krzeminski, Gdansk University of Technology, Poland

Speed observer based on extended model of induction machine

Zbigniew Krzeminski, Gdansk University of Technology, Poland, Arkadiusz Lewicki, Gdansk University of Technology, Poland, Marcin Morawiec, Gdansk University of Technology, Poland,

## Wednesday 7th of July

**PE - 1: Multilevel Converters 1**

**Meeting Room 01**

**Specchi**

**Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** K. Gopakumar (Indian Institute of Science, India), Kyo-Beum Lee (Ajou University, South Korea)

Carrier-Based PWM Strategies for the Comprehensive Capacitor Voltage Balance of Multilevel Multileg Diode-Clamped Converters

Sergio Busquets-Monge, Technical University of Catalonia, Spain, Alex Ruderman, Elmo Motion Control Ltd., Israel

The Effect of the Filter Inductor ESR on the Natural Balancing Time Constant of the Flying Capacitor Converter

J.W. van der Merwe, University of Stellenbosch, South Africa, H. du T. Mouton, University of Stellenbosch, South Africa

Dodecagonal Space Vector Diagram Using Cascaded H-Bridge Inverters

Gopakumar K, Indian Institute of Science, India, Anandarup Das, Indian Institute of Science, India, Mathew K, Indian Institute of Science, India, Chintan Patel, Indian Institute of Science, India, Rijil Ramchand, Indian Institute of Science, India

Analysis of DC-Link Capacitor Losses in Three-Level Neutral Point Clamped and Cascaded H-Bridge Voltage Source Inverters

Georgios I. Orfanoudakis, University of Southampton, United Kingdom, Suleiman M. Sharkh, University of Southampton, United Kingdom, Michael A. Yuratich, TSL Technology, United Kingdom

Nineteen Multilevel Asymmetric Cascaded with an Improved Modulation Strategy

Lucas Encarnação, Ufrj, Brazil, Luis Monteiro, Ufrj, Brazil, Mauricio Aredes, Ufrj, Brazil

Semiconductors Current Efforts and Losses Evaluation for Single-Phase Three-Level Regenerative PWM Rectifiers

Joselito Anastácio Heerd, Udesc, Brazil, Marcelo Lobo Heldwein, Ufsc, Brazil

Samir Ahmad Mussa, Ufsc, Brazil

## **PE - 8: Control of Power Electronics**

### **Meeting Room 01**

#### **Specchi**

#### **Wednesday 7th of July**

#### **Hour: 11:00 – 13:00**

**Chair/s:** Donald G Holmes (RMIT University, Australia), Giovanni Spagnuolo (University of Salerno, Italy)

Controls Strategies for High Frequency Voltage Source Converter for Ozone Generation

Jakson Paulo Bonaldo, State University of Campinas, Brazil, José Antenor Pomílio, State University of Campinas, Brazil

A New Sliding Mode Control for Single-Phase UPS Inverters Based On Rotating Sliding Surface

Hasan Komurcugil, Eastern Mediterranean University, Turkey

Sensorless Nonlinear Control for a Three-Phase PWM AC-DC Converter

Amira Marzouki, University of Tunis, Tunisia, Mahmoud Hamouda, University of Tunis, Tunisia, Farhat Fnaiech, University of Tunis, Tunisia

Common-Mode Voltage Cancellation in Dual Three-Phase Systems with Synchronized PWM

Valentin Oleschuk, Politecnico di Torino, Italy, Giovanni Griva, Politecnico di Torino, Italy

Analysis of an universal inverter working in grid-connected, stand-alone and micro-grid

Antonella Nagliero, Politecnico di Bari, Italy, Rosa Anna Mastromauro, Politecnico di Bari, Italy, Vito Giuseppe Monopoli, Politecnico di Bari, Italy, Marco Liserre, Politecnico di Bari, Italy, Antonio Dell'Aquila, Politecnico di Bari, Italy

## **PE - 9: Converters 2**

### **Meeting Room 01**

#### **Specchi**

**Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Kiyoshi Ohishi (Nagaoka University of Technology), Giovanni Griva (Politecnico di Torino, Italy)

Comparison of Losses between Matrix and Indirect Matrix Converters with an Improved Modulation

François Gruson, L2ep - Ec Lille, France, Philippe Le Moigne, L2ep - Ec Lille, France, Philippe Delarue, L2ep - Ustl, France, Michel Arpilliere, Stie, France, Xavier Cimetiere, L2ep - Ec Lille, France

A Z-source Sparse Matrix Converter with a Fuzzy Logic Controller based Compensation Method under Abnormal Input Voltage Conditions

Kiwoo Park, Ajou University, Korea (South), Eun-Sil Lee, Ajou University, Korea (South), Kyo-Beum Lee, Ajou University, Korea (South)

Resonant Controllers for 4-leg Matrix Converters

Roberto Cardenas, University of Santiago, Chile, Ruben Peña, University of Concepcion, Chile, Patrick Wheeler, University of Nottingham, United Kingdom, Jon Calre, University of Nottingham, United Kingdom

Design and Simulation of Unified Power Flow Controllers using Matrix Converters

Reza Norouzizadeh, Shahrood University of Technology, Iran, Ali Dastfan, Shahrood University of Technology, Iran, Mohammadreza Rafiei, Politecnico di Torino, Italy, Ahmadreza Amirahmadi, Shahrood University of Technology, Iran

Primary Traction Converter For Multi-System Locomotives

Pavel Drabek, West Bohemia university, Czech Republic, Martin Pittermann, West Bohemia university, Czech Republic, Marek Cedi, West Bohemia university, Czech Republic

Converter Based on Three-State Switching Cells for Stand-alone Application

René P. Torrico-Bascopé, Federal University of Ceara, Brazil, Luiz D. S. Bezerra, Federal University of Ceara, Brazil, Hermínio M. O. Filho, Federal University of Ceara, Brazil

Cícero M. T. Cruz, Federal University of Ceara, Brazil, Carlos G. C. Branco, Federal University of Ceara, Brazil, Demercil S. O. Jr, Federal University of Ceara, Brazil

## **PE - 2: Multilevel Converters 2**

### **Meeting Room 01**

#### **Specchi**

## **Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Luca Solero (University ROMA TRE, Italy), Luigi Piegari (Politecnico di Milano, Italy)

Sliding Mode Control for Cascaded H-Bridge Boost Rectifiers

Athanasios Kaletsanos, National Technical University Of Athens, Greece, Iakovos Manolas, National Technical University Of Athens, Greece, Konstantinos Pavlou, National Technical University Of Athens, Greece, Stefanos Manias, National Technical University Of Athens, Greece

Concepts of Decoupled Control for a Shunt Active Filter based on Multilevel Current Source Converters

Pedro Melin, Concepcion University, Chile, Jose Espinoza, Concepcion University, Chile, Javier Munoz, Concepcion University, Chile, Carlos Baier, Concepcion University, Chile, Eduardo Espinosa, Concepcion University, Chile

Multi-Level Configurations for Three-Phase AC-DC 48V Power Supply

Luca D'Errico, University Roma Tre, Italy, Alessandro Lidozzi, University Roma Tre, Italy, Giovanni Lo Calzo, University Roma Tre, Italy, Andrea Romanelli, Larcet, Italy, Luca Solero, University Roma Tre, Italy

A Modular Direct Converter for Transformerless Rail Interties

Manfred Winkelkemper, ABB, Switzerland, Arthur Korn, ABB, Switzerland, Peter Steimer, ABB, Switzerland

Two-level Operation of a Diode-Clamped Multilevel Inverter

Grain. P Adam, University of Strathclyde, United Kingdom, Stephen. J Finney, University of Strathclyde, United Kingdom, Barry.W Williams, University of Strathclyde, United Kingdom, Mohammed Mohammed, University of Strathclyde, United Kingdom

## **Dialog 4: Power Electronics**

**Meeting Room 02**

**Feste**

**Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Poul Soerensen (Risoe DTU, Denmark), Kiyoshi Ohishi (Nagaoka University of Technology), Donato Cafagna (University of Salento, Italy)

Estimating Aluminum Electrolytic Capacitors Condition Using a Low Frequency Transformer Together with a DC Power Supply

Acácio Amaral, Polytechnic Institute of Coimbra, Portugal, António Cardoso, University of Coimbra, Portugal

Influence of Connections as Boundary Conditions for the Thermal Design of PCB Traces

Luisa Coppola, ABB Switzerland Ltd., Corporate Research, Switzerland, Bruno Agostini, ABB Switzerland Ltd., Corporate Research, Switzerland, Roland Schmidt, ABB Switzerland Ltd., Corporate Research, Switzerland, Ricardo Faria Barcelos, ABB Switzerland Ltd., Corporate Research, Switzerland

Performance Analysis and Design Optimization of a Self-Powered Gate-Driver Supply Circuit

Sergio Busquets-Monge, Technical University of Catalonia, Spain, Dushan Boroyevich, Virginia Polytechnic Institute and State University, USA, Rolando Burgos, Virginia Polytechnic Institute and State University, USA, Zheng Chen, Virginia Polytechnic Institute and State University, USA

Modelling and Analysis of the Magnetic Field Radiated by a Three Phased Inverter

Cécile Labarre, Ecole des Mines de Douai, France, François Costa, SATIE - ENS Cachan, France, Ouafae Aouine, Ecole des Mines de Douai, France, Jacques Ecrabey, Schneider Electric, France

Isolated Low-Output-Voltage PFC Circuit with Integrated Magnetics: Design for Low THD

Stefan Mollov, Thales Aerospace, France, Philippe Bogdanik, Thales Aerospace, France

Lithium Battery Analysis: Probability of Failure Assessment Using Logistic Regression

Travis Moebes, Saic, United States,

Repeatable and Calibrated Arc Fault Generator

Jonathan Andrea, Lien, France, Patrick Schweitzer, Lien, France, Etienne Tisserand, Lien, France, Patrice Roth, Lien, France, Serge Weber, Lien, France

High-Speed Modeling Approach of Aircraft Electrical Power Systems Covering both Un-Faulted and Faulted Scenarios

Tao Wu, University of Nottingham, United Kingdom, Serhiy Bozhko, University of Nottingham, United Kingdom, Greg Asher, University of Nottingham, United Kingdom

A Novel On-line MRAS Rotor Resistance Identification Method Insensitive to Stator Resistance for Vector Control Systems of Induction Machines

Li Jie, Xi'an University of Technology, China, Ren Haipeng, Xi'an University of Technology, China, Huang Qifu, Xi'an University of Technology, China, Zhong Yanru, Xi'an University of Technology, China

Induction Cooking Systems with Single Switch Inverter Using New driving Techniques

Magdy Saoudi, University of Zaragoza, Spain, Diego Puyal, Bosch and Siemens Home Appliances Group, Spain, Carlos Bernal, University of Zaragoza, Spain, Daniel Anton, Bosch and Siemens Home Appliances Group, Spain, Arturo Mediano, University of Zaragoza, Spain

Magnetic Regulator Topologies for Dimmable Electronic Ballasts

Marina Perdigão, Instituto de Telecomunicações, Portugal, Bruno Baptista, Instituto de Telecomunicações, Portugal, Marcos Alonso, Universidad de Oviedo, Spain, Eduardo Saraiva, Instituto de Telecomunicações, Portugal

CAD-based Capacitors Selection for Switching Regulators

Andrea Cantillo, University of Salerno, Italy, Antonietta De Nardo, University of Salerno, Italy, Nicola Femia, University of Salerno, Italy, Walter Zamboni, University of Salerno, Italy

Time Average Approach for the Calculation of Subharmonics of PWM Technique in Ultra High Speed AC Motor Supply

Peter Stumpf, Budapest University of Technology and Economics, Hungary, Zoltán Varga, Budapest University of Technology and Economics, Hungary, Peter Bartal, Budapest University of Technology and Economics, Hungary, Rafael Kálmán Járdán, Budapest University of Technology and Economics, Hungary, Istvan Nagy, Budapest University of Technology and Economics, Hungary

Review: DC Power Supply of High Voltage Active Electronic Current Transformer

Haiming Wang, University of Pittsburgh, USA, Gregory Reed, University of Pittsburgh, USA, Alex K. Jones, University of Pittsburgh, USA

Geometric-Constants-Based Design of Transformers for Isolated Switching Converters

Antonietta De Nardo, University of Salerno, Italy, Giulia Di Capua, University of Salerno, Italy, Nicola Femia, University of Salerno, Italy, Giovanni Petrone, University of Salerno, Italy, Giovanni Spagnuolo, University of Salerno, Italy

Efficient procedures to design and characterize passive harmonic filters in low power applications

Ehsan Pashajavid, K. N. Toosi University of Technology, Iran, Masood A. A. Golkar, K. N. Toosi University of Technology, Iran

Synchronous state machine inner FPGA controlling PFC boost converter

Tiago K. Jappe, UFSC - Federal University of Santa Catarina, Brazil, Samir A. Mussa, UFSC - Federal University of Santa Catarina, Brazil, Richard H. S. Rosendo, FSC - Federal University of Santa Catarina, Brazil

Low Ripple Interleaved Converter for Fast PWM Dimming of Power LEDs

Jorge Garcia, University of Oviedo, Spain, Antonio J. Calleja, University of Oviedo, Spain, Emilio L. Corominas, University of Oviedo, Spain, David Gacio, University of Oviedo, Spain, Lidia Campa, University of Oviedo, Spain

Analysis and Design of TRAP and LCL Filters for Active Switching Converters

Yogesh Patel, Rockwell Automation, USA, Dan Pixler, Rockwell Automation, USA, Adel Nasiri, University of Wisconsin-Milwaukee, USA

operating temperature reduction of low-profile transformer in LLC resonant converter for PDP

Sihun Yang, Kyushu University, Japan, Seiya Abe, Isead, Japan, Masahito Shoyama, Kyushu University, Japan

A New Z-Source Dc Circuit Breaker

Keith Corzine, Creative Energy Solutions, USA, Robert Ashton, Creative Energy Solutions, USA

The Effect of Parameters On Output Characteristic of Z-source AC/AC Converter

Xinhui Qiao, Shanghai Jiao Tong University, China, Da Xie, Shanghai Jiao Tong University, China, Yanchi Zhang, Shanghai Jiao Tong University, China, Chuanwen Jiang, Shanghai Jiao Tong University, China, Qian Ai, Shanghai Jiao Tong University, China

State of the art of monoconverter multiloads applications and associated power electronic devices

Ledoux Christophe, Supelec, France, Lefranc Pierre, Supelec, France, Larouci Chérif, Estaca, France, Thomas Jean-Luc, Cnam, France

A Multi-Functional Converter for a Reduced Cost, Solar Powered, Water Pump

David Tschanz, Bern University of Applied Sciences, Switzerland, Howard Lovatt, CSIRO Material Science and Engineering, Australia, Andrea Vezzini, Bern University of Applied Sciences, Switzerland, Virginien Perrenoud, Bern University of Applied Sciences, Switzerland

Class D Power Amplifier used as an Electronic Ballast

Diogenes Simao Rodovalho, Universidade Federal de Uberlandia, Brazil, Fabio Vincisi Romualdo Silva, Universidade Federal de Uberlandia, Brazil, Ernane Antônio Alves Coelho, Universidade Federal de Uberlandia, Brazil, Luiz Carlos de Freitas, Universidade Federal de Uberlandia, Brazil, João Batista Vieira Jr., Universidade Federal de Uberlandia, Brazil

Simple Time Domain Averaging Methodology for Flying Capacitor Converter Voltage Balancing Dynamics Analysis

Alex Ruderman, Elmo Motion Control Ltd, Israel, Boris Reznikov, General Satellite Corp, Russian Federation

Analysis and Improvement of the Switching Behaviour of Low Voltage Power MOSFETs with High Current Ratings under Hard Switching Conditions

Bjoern Wittig, Christian-Albrechts-University of Kiel, Germany, Friedrich Wilhelm Fuchs, Christian-Albrechts-University of Kiel, Germany

A torque based MRAS observer applied to sensorless doubly fed induction machine drives

Maria S. Carmeli, Politecnico di Milano, Italy, Francesco Castelli-Dezza, Politecnico di Milano, Italy, Matteo Iacchetti, Politecnico di Milano, Italy, Roberto Perini, Politecnico di Milano, Italy

Unified Hybrid Power Quality Conditioner(UHPQC)

Carlos Henrique da Silva, Federal University of Itajuba, Brasil, Rondineli Rodrigues Pereira, Federal University of Itajuba, Brasil, Luiz Eduardo Borges da Silva, Federal University of Itajuba, Brasil, Germano Lambert-Torres, Federal University of Itajuba, Brasil, João Onofre P. Pinto, Federal University of Mato Grosso do Sul, Brasil

## **Dialog 5: Power Electronics / Emerging Technologies**

**Meeting Room 02**

## **Feste**

### **Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Christian Klumpner (University of Nottingham, UK), Ruben Pena (University of Concepcion, Chile), Donato Cafagna (University of Salento, Italy)

A Four-Quadrant Chaotic PWM AC-DC Converter for EMI Suppression

Jingxin Mao, Beijing Jiaotong Univ., China, Hong Li, Beijing Jiaotong Univ., China, Fei Lin, Beijing Jiaotong Univ., China, Xiaojie You, Beijing Jiaotong Univ., China, Trillion Q Zheng, Beijing Jiaotong Univ., China

Five-Level H-Bridge Flying Capacitor Converter Voltage Balance Dynamics Analysis

Steven Thielemans, Ghent University, Belgium, Alex Ruderman, Elmo Motion Control Ltd., Israel, Boris Reznikov, General Satellite Corp., Russian Federation, Jan Melkebeek, Ghent University, Belgium

Contactless Power Transfer to a Rotating Disk.

J.P.C. Smeets, Eindhoven University of Technology, Netherlands, D.C.J. Krop, Eindhoven University of Technology, Netherlands, J.W. Jansen, Eindhoven University of Technology, Netherlands, E.A. Lomonova, Eindhoven University of Technology, Netherlands

Simple design method of wireless power transfer system using 13.56MHz loop antennas

Hee-Seung Kim, Kookmin university Power Electronic Center, Korea (South), Do-Hyun Won, Kookmin university Power Electronic Center, Korea (South), Byung-Jun Jang, Kookmin university Power Electronic Center, Korea (South)

High Power Factor Control based on Load Resonant Frequency Auto-Tracking Phase Shift Inverter

Shotaro Shindo, Nagaoka University of Technology, Japan, Kiyoshi Ohishi, Nagaoka University of Technology, Japan, Yuta Terae, Nagaoka University of Technology, Japan, Itaru Ando, Akita National College of Technology, Japan, Mina Ogawa, Hitachi Medical Corporation, Japan

Circuitry Design for Direct Wind Energy Harvest System

Yung Ting, Chung Yuan Christian University, Taiwan, Chi-Yuan Chang, Chung Yuan Christian University, Taiwan, Hariyanto Gunawan, Chung Yuan Christian University, Taiwan

A Power Electronic Controlled Dump Load with Negligible Harmonics for Accurate Loading Used in Testing Small Wind Turbines

Christian Klumpner, University of Nottingham, United Kingdom, Baydu Al, University of Nottingham, United Kingdom, David Hann, University of Nottingham, United Kingdom

Comparision of Fixed and Variable Sampling Frequency Digital PLL Methods for Active Power Filters

Chuan Xie, Zhejiang University, China, Jing Zhang, Zhejiang University, China, Guozhu Chen, Zhejiang University, China

STATCOM and SVC Control Operations and Optimization during Network Fault Conditions

Tariq Masood, University of Bath, UK, R.K. Aggarwal, University of Engineering and Technology, Pakistan, S.A. Qureshi, Rachna College of Engineering and Technology, Pakistan, R.A.J Khan, Dukhan Industrial City State of Qatar

Optimization of Trench Manufacturing for a new High-Voltage Semiconductor Technology

Matthias Fritzsich, Chemnitz University of Technology, Germany, Michael Schramm, Chemnitz University of Technology, Germany, Klaus Erler, Chemnitz University of Technology, Germany, Steffen Heinz, Chemnitz University of Technology, Germany, John Horstmann, Chemnitz University of Technology, Germany, Uwe Eckoldt, X-FAB Semiconductor Foundries AG, Germany, Gabriel Kittler, X-FAB Semiconductor Foundries AG, Germany, Ralf Lerner, X-FAB Semiconductor Foundries AG, Germany, Klaus Schottmann, X-FAB Semiconductor Foundries AG, Germany

Evaluation of Selected Diagnostic Variables for the Purpose of Assessing the Ageing Effects in High-Power IGBTs

Wojciech Sleszynski, Gdansk University of Technology, Poland, Janusz Nieznanski, Gdansk University of Technology, Poland, Artur Cichowski, Gdansk University of Technology, Poland, Jaroslaw Luszcz, Gdansk University of Technology, Poland, Andrzej Wojewodka, Gdansk University of Technology, Poland

Design Considerations for a Bidirectional Battery Charger Circuits for PHEV Applications

Berker Bilgin, Illinois Institute of Technology, USA, Ali Emadi, Illinois Institute of Technology, USA, Mahesh Krishnamurthy, Illinois Institute of Technology, USA

Interleaved Bi-directional Dual Active Bridge DC-DC Converter for Interfacing Ultracapacitor In Micro-Grid Application

Haihua Zhou, National University of Singapore, Singapore, Duong Tran, National University of Singapore, Singapore, Tuck Sing Siew, National University of Singapore, Singapore, Ashwin M Khambadkone, National University of Singapore, Singapore

Discrete Sliding Mode Current Control of Grid-Connected Three-Phase PWM Converters with LCL Filter

Felix Fuchs, Christian Albrechts-University Kiel, Germany, Jörg Dannehl, Christian Albrechts-University Kiel, Germany, Friedrich-Wilhelm Fuchs, Christian Albrechts-University Kiel, Germany

Performance parametric analysis of a PEMFC model

Ermelinda Spampanato, University of Salerno, Italy, Marie-Cecile Pera, Universite de Franche-Comte, France, Daniel Hissel, Universite de Franche-Comte, France, Giovanni Spagnuolo, University of Salerno, Italy

A Self-Hosting Configuration Management System to Mitigate the Impact of Radiation-Induced Multi-Bit Upsets in SRAM-Based FPGAs

Marco Lanuzza, University of Calabria, Italy, Paolo Zicari, University of Calabria, Italy, Fabio Frustaci, University of Calabria, Italy, Stefania Perri, University of Calabria, Italy, Pasquale Corsonello, University of Calabria, Italy

CS Training: Introducing Mobile Educational Games in the Learning Flow

Roberto Tornero Santamarina, Complutense University of Madrid, Spain, Pablo Moreno-Ger, Complutense University of Madrid, Spain, Javier Torrente, Complutense University of Madrid, Spain, Baltasar Fernández-Manjón, Complutense University of Madrid, Spain

Application-Driven Co-design of Fault-Tolerant Industrial Systems

Felipe Restrepo-Calle, University of Alicante, Spain, Antonio Martínez-Álvarez, University of Alicante, Spain, Hipólito Guzmán-Miranda, University of Sevilla, Spain, Francisco Palomo, University of Sevilla, Spain, Sergio Cuenca-Asensi, University of Alicante, Spain

A knowledge-based RFID framework enabling decision support for healthcare

Michele Ruta, Politecnico di Bari, Italy, Floriano Scioscia, Politecnico di Bari, Italy, Eugenio Di Sciascio, Politecnico di Bari, Italy, Crescenzo Scioscia, Università di Bari, Italy

Electromagnetic Investigation About Composite Right/Left Handed Transmission Lines

Concettina Buccella, University of L'Aquila, Italy

## **ss42 - Wireless Communications: Technologies and Applications to Control Systems**

### **Meeting Room 07**

#### **Ausonia**

#### **Wednesday 7th of July**

#### **Hour: 08:30 – 10:30**

**Chair/s:** Vyacheslav Tuzlukov (Kyungpook National University, Korea), Rajesh Kumar (National University of Singapore, Singapore)

Characterization of Battery Consumption in 802.15.4/ZigBee Sensor Motes

E Casilari, U. Malaga, Spain

Fuzzy C-Means Clustering Protocol for Wireless Sensor Networks

Duc Chinh Hoang, National University of Singapore, Singapore, Rajesh Kumar, National University of Singapore, Singapore, Sanjib Kumar Panda, National University of Singapore, Singapore

Propagation Modeling and Placement Algorithms for Wireless Sensor Networks

Andriy Luntovskyy, BA Dresden University of Cooperative Education, Germany, Volodymyr Vasyutynskyy, Dresden University of Technology, Germany, Klaus Kabitzsch, Dresden University of Technology, Germany

WTB: a Token Based Wireless Communication over 802.11b

Orazio Mirabella, University of Catania, Italy, Antonino Rauceo, University of Catania, Italy, Michele Brischetto, University of Catania, Italy

Generalized Receiver under Blind Multiuser Detection in Wireless Communications

Vyacheslav Tuzlukov, Kyungpook National University, Korea (South)

Wireless Communication Protocol for Agricultural Machines Synchronization and Fleet Management

Afredo Revenaz, Ferrara University, Italy, Massimiliano Ruggeri, National Research Council, Italy, Massimo Martelli, National Research Council, Italy

## **ss27 - Speed Sensorless Control of Electrical Machines**

**Meeting Room 07**

**Ausonia**

**Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Haitham Abu-Rub (Texas A&M University at Qatar), Jaroslaw Guzinski (Gdansk University of Technology, Poland)

Speed sensorless ac drive with inverter output filter and fault detection using load torque signal

Jaroslaw Guzinski, Gdansk University of Technology, Poland, Haitham Abu-Rub, Texas A&M University at Qatar, Qatar, Hamid A. Toliyat, Texas A&M University, USA

A Reduced-Order Position Observer With Stator-Resistance Adaptation for PMSM Drives

Marko Hinkkanen, Aalto University, Finland, Toni Tuovinen, Aalto University, Finland, Lennart Harnefors, ABB Power Systems, Sweden, Jorma Luomi, Aalto University, Finland

Observer-Based Sensorless Speed Control of PM-Assisted SynRM for Direct Drive Applications

Anil K. Chakali, Texas A&M University, USA, Hamid A. Toliyat, Texas A&M University, USA, Haitham Abu-Rub, Texas A&M University at Qatar, Qatar

Sensorless Startup of Super High Speed Permanent Magnet Motor

Artur Cichowski, Gdansk University of Technology, Poland, Slawomir Bujacz, Gdansk University of Technology, Poland, Pawel Szczepankowski, Gdansk University of Technology, Poland, Janusz Nieznanski, Gdansk University of Technology, Poland

VHFIM Sensorless Control of PMSM

Viktor Bobek, University of Zilina, Slovak Republic, Rastislav Pavlanin, University of Zilina, Slovak Republic, Branislav Dobrucky, University of Zilina, Slovak Republic, Peter Sevcik, University of Zilina, Slovak Republic

## **ss28 - Predictive Control of Power Converters 1**

**Meeting Room 07**

**Ausonia**

**Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Patricio Cortes (Universidad Tecnica Federico Santa María, Chile), Sergio Vazquez (Universidad of Seville, Spain)

Predictive Torque and Flux Control of an Induction Machine fed by an Indirect Matrix Converter with Reactive Power Minimization

Marco Rivera, Universidad Federico Santa Maria, Chile, Jose Rodriguez, Universidad Federico Santa Maria, Chile, Johann W. Kolar, ETH Zurich, Switzerland, Jose Espinoza, Universidad de Concepcion, Chile, Christian Rojas, Universidad Federico Santa Maria, Chile

Patched LQR Control for Robust Protection of Multi-mass Electrical Drives with Constraints

Mario Vasak, University of Zagreb, Croatia, Nedjeljko Peric, University of Zagreb, Croatia, Krzysztof Szabat, Wroclaw University of Technology, Poland, Marcin Cychowski, Cork Institute of Technology, Ireland

Robust Generalized Predictive Control of Permanent Magnet Synchronous Motor with Anti-windup Compensator

Rachid Errouissi, University of Quebec at Chicoutimi, Canada, Mohand Ouhrouche, University of Quebec at Chicoutimi, Canada, Wen-Hua Chen, Loughborough University, United Kingdom

Model Predictive Control of a Switched Reluctance Machine using Discrete Space Vector Modulation

Javier Villegas, University of Seville, Spain, Sergio Vazquez, University of Seville, Spain, Juan Manuel Carraco, University of Seville, Spain, Isaac Gil, University of Seville, Spain

Predictive Control of a Direct Matrix Converter Operating under an Unbalanced AC Source

Christian Rojas, Universidad Federico Santa Maria, Chile, Marco Rivera, Universidad Federico Santa Maria, Chile, Jose Rodriguez, Universidad Federico Santa Maria, Chile, Jose Espinoza, Universidad de Concepcion, Chile, Patrick Wheeler, University of Nottingham, United Kingdom, Felipe Villarroel, Universidad de Concepcion, Chile, Alan Wilson, Universidad Federico Santa Maria, Chile

## **ss29 - Multilevel Converters**

**Meeting Room 07**

**Ausonia**

**Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Jose I. León (Universidad of Seville, Spain), Sergio Busquets-Monge (Technical University of Catalonia, Spain)

A space vector based pulse width modulation scheme for a 3-Level inverter realised by cascaded connection of two 2-Level inverters

Shiny G, College of Engineering Trivandrum, India, Baiju M.R., College of Engineering Trivandrum, India

An m-Level Active-Clamped Converter Topology - Operating Principle

Sergio Busquets-Monge, Technical University of Catalonia, Spain, Joan Nicolas-Apruzzese, Technical University of Catalonia, Spain

Novel Proposal of Multilevel Inverter Using Buck EIE Converter

Natalia M. A. Costa, Universidade Federal de Uberlândia, Brazil, Luiz C. G. Freitas, Universidade Federal de Uberlândia, Brazil, Joao B. V. Junior, Universidade Federal de Uberlândia, Brazil, Ernane A. A. Coelho, Universidade Federal de Uberlândia, Brazil, Luiz C. Freitas, Universidade Federal de Uberlândia, Brazil, Lucas S. Garcia, Universidade Federal de Uberlândia, Brazil, Valdeir J. Farias, Universidade Federal de Uberlândia, Brazil

Hexagon based Algorithm for Space Vector Modulation on Multilevel Voltage Source Inverters

Santiago de Pablo, University of Valladolid, Spain, Alexis B. Rey-Boué, Technical University of Cartagena, Spain, Luis C. Herrero, University of Valladolid, Spain, Fernando Martínez, University of Valladolid, Spain

A Novel Multi-Level CSI Based Topology with Inter-Cell Magnetic Couplings for Minimum DC Storage Components

Carlos Baier, Concepcion University, Chile, Jose Espinoza, Concepcion University, Chile, Pedro Melin, Concepcion University, Chile, Eduardo Espinosa, Concepcion University, Chile, Javier Munoz, Concepcion University, Chile

A novel six-band hysteresis control of the packed U cells seven-level converter

Youssef Ounejjar, Ecole de Technologie Superieure, Canada, Kamal Al-haddad, Ecole de Technologie Superieure, Canada

## **PE - 11: Power Quality Conditioners**

**Meeting Room 04**

**Messapia**

**Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Maria I. Valla (Universidad Nacional de La Plata, Argentina), Kamal Al-Haddad (ETS Montreal, Canada)

Systematic Design Comparison of Discrete-Time Linear Controllers for a DSTATCOM

Javier Munoz, Concepcion University, Chile, Jose Espinoza, Concepcion University, Chile, Eduardo Espinosa, Concepcion University, Chile, Carlos Baier, Concepcion University, Chile, Pedro Melin, Concepcion University, Chile

Robust high-order repetitive control of an active filter using an odd-harmonic internal model

Germán A. Ramos, Universidad Nacional de Colombia, Colombia, Ramon Costa-Castelló, Universitat Politècnica de Catalunya, Spain, Josep M. Olm, Universitat Politècnica de Catalunya, Spain, Rafel Cardoner, Universitat Politècnica de Catalunya, Spain

Sliding mode control of Three-Phase Shunt Hybrid Power Filter for Current Harmonics Compensation

Abdelhamid Hamadi, ETS Montreal, Canada, Salem Rahmani, ETS Montreal, Canada, Kamal Al-Haddad, ETS Montreal, Canada

Power Control Strategy for Unity Power Factor

Karel Jezernik, University of Maribor, Slovenia

Compensation Algorithms Applied to Power Quality Conditioners in Three-Phase Four-Wire Systems

Sergio Augusto Oliveira da Silva, Technological University of Parana - Technological University of Parana, Brazil, Rodrigo Augusto Modesto, Technological University of Parana Technological University of Parana, Brazil, Alessandro Goedel, Federal Technological University of Parana, Brazil, Claudionor F. Nascimento, Federal University of ABC, Brazil

Harmonic Compensation in Shunt Active Power Filters by Applying Kalman Filtering for Estimation of the Averaged Load Conductance

Alberto Pigazo, University of Cantabria, Spain, Víctor M. Moreno, University of Cantabria, Spain, Emilio J. Estébanez, University of Cantabria, Spain, Marco Liserre, Polytechnic of Bari, Italy, Antonio Dell'Aquila, Polytechnic of Bari, Italy

## **PE - 12: Components in Power Electronics**

### **Meeting Room 04**

### **Messapia**

### **Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** José R. Espinoza C. (University of Concepcion, Chile), Luca Dalessandro (Alstom Power, Switzerland)

Complementary LDMOSFET in 0.35 $\mu$ m BiCMOS technology-Characterization and Modeling

Mohamed Abouelatta-Ebrahim, Université de Lyon, France, Christian Gontrand, Université de Lyon, France, Abdelhalim Zekry, Shams University, Cairo, Egypt

Breaking the theoretical limits of silicon with innovative switch technologies

Samuel Araujo, University of Kassel, Germany, Mehmet Kazanbas, University of Kassel, Germany, Peter Zacharias, University of Kassel, Germany

Current Injection Gate Drive Circuit for Controlling the Turn-Off Characteristic of Low Voltage Power MOSFETs with High Current Ratings

Bjoern Wittig, Christian-Albrechts-University of Kiel, Germany, Friedrich Wilhelm Fuchs, Christian-Albrechts-University of Kiel, Germany

Reliability assessment of Low-Voltage MOSFETs driving inductive loads

Antonio Testa, University of Messina, Italy, Salvatore De Caro, University of Messina, Italy, Salvatore Patanè, University of Messina, Italy, Saverio Panarello, University of Messina, Italy, Romeo Letor, STMicroelectronics, Italy, Sebastiano Russo, STMicroelectronics, Italy, Davide Patti, STMicroelectronics, Italy, Santo Poma, STMicroelectronics, Italy

Temperature adaptive driving of power semiconductor devices

Alberto Castellazzi, University of Nottingham, United Kingdom, Liang Wu, University of Nottingham, United Kingdom

## **ss20 - Computational Intelligence for Safe and Secure Environments and Transport**

### **Meeting Room 04**

### **Messapia**

### **Wednesday 7th of July**

### **Hour: 14:00 – 16:00**

**Chair/s:** Marco Leo (Institute on Intelligent System for Automation (ISSIA-CNR), Italy), Ettore Stella (Institute on Intelligent System for Automation (ISSIA-CNR), Italy)

Key Technologies for Intelligent and Safer Cars: from Motion Estimation to Predictive Collision Avoidance

Davide Scaramuzza, ETH Zurich, Switzerland, Luciano Spinello, ETH Zurich, Switzerland, Rudolph Triebel, ETH Zurich, Switzerland, Roland Siegwart, ETH Zurich, Switzerland

Bivariate EMD Analysis for Aircraft Component Inspection

Marco Leo, Institute of Intelligent Systems for Automation ISSIA-CNR, Italy, David Looney, Imperial College of Science, technology and Medicine, United Kingdom, Tiziana D'Orazio, Institute of Intelligent Systems for Automation ISSIA-CNR, Italy, Danilo P. Mandic, Imperial College of Science, technology and Medicine, United Kingdom

Mobile Robot Perception Using an Inexpensive 3-D Laser Rangefinder

Giulio Reina, University of Salento, Italy, Nicola Giannoccaro, University of Salento, Italy, Arcangelo Messina, University of Salento, Italy, Angelo Gentile, Politecnico di Bari, Italy

Semi-Supervised Intelligent Surveillance System for Secure Environments

Clinton Fookes, Queensland University of Technology, Australia, Simon Denman, Queensland University of Technology, Australia, Ruan Lakemond, Queensland University of Technology, Australia, David Ryan, Queensland University of Technology, Australia, Sridha Sridharan, Queensland University of Technology, Australia, Massimo Piccardi, University of Technology Sydney, Australia

A Versatile Context-Aware Pervasive Monitoring System: validation and characterization in the health-care domain

Alessandra Esposito, University of Salento, Italy, Luciano Tarricone, University of Salento, Italy, Marco Zappatore, University of Salento, Italy

Mosaic Based Flexible Navigation for AGVs

Andre Lucas, TU Lisbon, Portugal, Camilo Christo, TU Lisbon, Portugal, Miguel Pedro Silva, TU Lisbon, Portugal, Carlos Cardeira, TU Lisbon, Portugal

## **ss7 - Intelligent Spaces and Assisted Living**

### **Meeting Room 04**

### **Messapia**

### **Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Juan Carlos García (University of Alcala, Spain), Teodiano Freire (Federal Univ. of Espirito Santo, Brazil)

Gaussian Mixture Models and Split-Merge Algorithm for AAL

GuoQing Yin, Vienna University of Technology, Austria, Dietmar Bruckner, Vienna University of Technology, Austria

An Automated Active Vision System for Fall Detection and Posture Analysis in Ambient Assisted Living Applications

Alessandro Leone, Imm-Cnr, Italy, Giovanni Diraco, Imm-Cnr, Italy, Pietro Siciliano, Imm-Cnr, Italy

Implementing Strategies for Cautious Navigation of Robotic Wheelchairs

Wanderley Celeste, Federal University of Espirito Santo, Brazil, Teodiano Bastos-Filho, Federal University of Espirito Santo, Brazil, Mario Sarcinelli-Filho, Federal University of Espirito Santo, Brazil

SLAM-Based Robotic Wheelchair Navigation System Designed for Confined Spaces

Celso De La Cruz, Universidade Federal do Espírito Santo, Brazil, Fernando A. Auat Cheein, National University of San Juan, Argentina, Teodiano F. Bastos Filho, Universidade Federal do Espírito Santo, Brazil, Ricardo Carelli, National University of San Juan, Argentina

Evolutionary algorithms for visual fall detection in intelligent spaces

José M. Cañas, Universidad Rey Juan Carlos, Spain, Sara Marugán, Universidad Rey Juan Carlos, Spain, Marta Marrón, Universidad de Alcalá, Spain, Juan C. García, Universidad de Alcalá, Spain

Proposal for an Ambient Assisted Wheelchair (A2W)

Juan Carlos Garcia, University of Alcala, Spain, Paulo F. S. Amaral, Universidade Federal de Espirito Santo, Brazil, Marta Marron, University of Alcala, Spain, Manuel Mazo, University of Alcala, Spain, Teodiano F. Bastos, Universidade Federal de Espirito Santo, Brazil

## **Industry Track**

### **Meeting Room 03**

#### **Abbrescia**

#### **Wednesday 7th of July**

#### **Hour: 08:30 – 12:30**

**Chair/s:** Michael W. Condry (Intel, USA), Luca Dalessandro (Alstom Power, Switzerland), Antonio Valentini (O3NEIDA, Italy)

MW-Rated Power Electronics for Sustainable and Low Carbon Industrial Revolution

Teruo Yoshino, Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan, Tatsuaki Amboh, Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan, Noriko Kawakami, Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan

Voltage Vector based Control for PMSM in Industry Applications

Sanjeet Dwivedi, Danfoss Drive A/s, Denmark, Michael Laursen, Danfoss Drive A/s, Denmark, Steffan Hansen, Danfoss Drive A/s, Denmark

A new approach to establish the thermal instability condition and the failure time during the drain current focusing process in a power MOSFET working in linear zone

Giuseppe Consentino, STMicroelectronics, Italy

Optimized Stair-Case Modulation for Modular Grid Connected Converters

Fainan Hassan, Areva T&D, United Kingdom, Will Crookes, Areva T&D, United Kingdom, Roger Critchley, Areva T&D, United Kingdom

Electromagnetic characterization of PCB cards for mobile phones

Ali Jazzar, G2elab, France, Edith Clavel, G2elab, France, Sebastien Guibert, ST Microelectronics, France

Technical Characteristics and Development of SRD Products

Chao Gao, China Tex Mechanical& Electrical Engineering Ltd., China, Zhixue Zhang, China Tex Mechanical& Electrical Engineering Ltd., China, Xue Li, China Tex Mechanical& Electrical Engineering Ltd., China

Thermal considerations on highly integrated module for small power drives

Wolfgang Frank, Infineon Technologies, Germany, Daewoong Chung, Lsps, Korea (South), Junbae Lee, Lsps, Korea (South), Junho Song, Lsps, Korea (South)

Modern HVDC PLUS application of VSC in Modular Multilevel Converter Topology

Kurt Friedrich, Siemens AG, Energy Sector, Power Transmission Solutions, Germany,

Scalable Multi Phase Interleaved Boundary Mode PFC Concept enabling Energy- and Cost Efficient PSUs in the kW-Range

Frank Schafmeister, Delta Energy Systems, Germany, Xudong Wang, Delta Energy Systems, Germany, Tobias Grote, University of Paderborn, Power Electronics and Electric Drives, Germany, Peter Ide, Delta Energy Systems, Germany

Power Electronics Enhanced Generator Breaker

Luca Dalessandro, ALSTOM Ltd, Switzerland, Martin Wiederkehr, University of Applied Sciences Northwestern Switzerland (FHNW), Switzerland

Open Source Initiatives as basis for the Establishment of new Technologies in Industrial Automation: 4DIAC a Case Study

Antonio Valentini, O3neida Europe, Belgium, Alois Zoitl, Vienna University of Technology, Austria, Thomas Strasser, Profactor GmbH, Austria

Comparison between different methods of islanding detection for photovoltaic symmetric systems

Giovanna Santamaría, Jesus Maria Aguirre S.A. (JEMA), Spain, Ramon Alonso, Jesus Maria Aguirre S.A. (JEMA), Spain, Eneko Sansinenea, Jesus Maria Aguirre S.A. (JEMA), Spain, Leire Arrizubieta, Jesus Maria Aguirre S.A. (JEMA), Spain, Pedro Garcia de Madinabeitia, Jesus Maria Aguirre S.A. (JEMA), Spain

## **PE - 14: Power Systems**

### **Meeting Room 03**

#### **Abbrescia**

#### **Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Rui Chibante (Instituto Superior de Engenharia do Porto -- ISEP/IPP), Marta Molinas (NTNU, Trondheim, Norway)

Operator Training Simulator for Power Systems: training evaluation methodologies based on fuzzy logic

Massimo La Scala, Politecnico di Bari, Italy, Marco Bronzini, Politecnico di Bari, Italy, Sergio Bruno, Politecnico di Bari, Italy, Michele De Benedictis, Politecnico di Bari, Italy, Silvia Lamonaca, Politecnico di Bari, Italy, Giuseppe Rotondo, Politecnico di Bari, Italy, Ugo Stecchi, Politecnico di Bari, Italy

Information Engineering for the Protection of Power Systems with Hybrid Distributed Resources

Khalil El-Arroudi, General Electric Company of Libya, GECOL, Libya, Geza Joos, McGill University, Canada, Michael Ross, McGill University, Canada

Optimization of the Power Generation scheduling in Oil-Rig Platforms using Genetic Algorithm

Parikshit Yadav, National University of Singapore, Singapore, Rajesh Kumar, National University of Singapore, Singapore, Sanjib. K. Panda, National University of Singapore, Singapore, C. S. Chang, National University of Singapore, Singapore

Short-Term Wave Forecasting with AR models in Real-Time Optimal Control of Wave Energy Converters

Francesco Fusco, National University of Ireland Maynooth, Ireland, John Ringwood, National University of Ireland Maynooth, Ireland

Saturation-Phase Prediction of Building-Integrated Photovoltaics by Using Agent-Based Simulations

Tomoyuki Murakami, Tokyo Institute Of Technology, Japan

Influence of technical-economic energy context for the management of wind farms and storage systems in a constrained network

Pascal Monjean, Laboratory of Electrical Engineering and Power Electronics of Lille, France, Jonathan Sprooten, Laboratory of Electrical Engineering and Power Electronics of Lille, France, Benoît Robyns, Laboratory of Electrical Engineering and Power Electronics of Lille, France

## **PE - 13: Energy Storage Systems**

### **Meeting Room 03**

#### **Abrescia**

#### **Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Rui Chibante (Instituto Superior de Engenharia do Porto (ISEP/IPP), Portugal), Massimo La Scala (Politecnico di Bari, Italy)

ILP-Based Algorithm for Lithium-Ion Battery Charging Profile

Lan-Rong Dung, National Chiao-Tung University, Taiwan, Jieh-Hwang Yen, National Chiao-Tung University, Taiwan

An Experimentally Optimized PEM Fuel Cell Model using PSO Algorithm

Rui Chibante, Polytechnic Institute of Porto, Portugal, Daniel Campos, Polytechnic Institute of Porto, Portugal

Experimental Analysis of Lithium Iron Phosphate Battery Performances

Andrea Marongiu, Universita di Cagliari, Italy, Maik Heuer, Otto-von-Guericke University Magdeburg, Germany, Alfonso Damiano, Universita di Cagliari, Italy

Sliding Mode Control and Simulation of a Hybrid Fuel-Cell Ultracapacitor Power System

Toufik Azib, Lgep, France, Reine Talj, Lgep, France, Olivier Bethoux, Lgep, France, Claude Marchand, Lgep, France

Energy Storage of PV Using Batteries of Battery-switch Stations

Masaaki Takagi, The University of Tokyo, Japan, Yumiko Iwafune, The University of Tokyo, Japan, Hiromi Yamamoto, Central Research Institute of Electric Power Industry, Japan, Kenji Yamaji, Research Institute of Innovative Technology for the Earth (RITE), Japan, Kunihiro Okano, Central Research Institute of Electric Power Industry, Japan, Ryouji Hiwatari, Central Research Institute of Electric Power Industry, Japan, Tomohiko Ikeya, Central Research Institute of Electric Power Industry, Japan

## **ss8 - Integration of Renewable Energy Sources in the Power Network 2**

### **Meeting Room 08**

#### **Daunia**

#### **Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Emilio Bueno (University of Alcala, Spain), Giuseppe Guidi (Yokohama National University, Japan)

Impact of Operation Principle on the Losses of a Reduced Matrix Converter for Offshore Wind Parks

Alejandro Garces, Norwegian University of Science and Technology, Norway, Marta Molinas, Norwegian University of Science and Technology, Norway

Double Input AC/AC Nine-Switch Converter for Multiple-Generator Drivetrain Configuration in Wind Turbines

Kristian Prestrud Astad, Norwegian University of Technology and Science, Norway, Marta Molinas, Norwegian University of Technology and Science, Norway

Reactive Power Compensation using an indirectly Space Vector-modulated Matrix Converter

Nathalie M-A Holtmark, Norwegian University of Science and Technology, Norway, Marta Molinas, Norwegian University of Science and Technology, Norway

Operation Features of a Reduced Matrix Converter for Offshore Wind Power

Mari Roed Hanssen, Norwegian University of Science and Technology, Norway, Alejandro Garces Ruiz, Norwegian University of Science and Technology, Norway, Marta Molinas, Norwegian University of Science and Technology, Norway

AC-DC-AC Converter with Induction Machine-modeling and Implementation on Floating Point DSP as a Cost Effective Interface for Renewable Energy Applications

Marian Kazmierkowski, Warsaw University of Technology, Poland, Marek Jasinski, Warsaw University of Technology, Poland, Grzegorz Wrona, Warsaw University of Technology, Poland

Grid Impedance Identification considering the Influence of Coupling Impedances

Hauke Langkowski, Helmut-Schmidt-University, Germany, Trung Do Thanh, Helmut-Schmidt-University, Germany, Michael Jordan, Helmut-Schmidt-University, Germany, Detlef Schulz, Helmut-Schmidt-University, Germany

## **ss8 - Integration of Renewable Energy Sources in the Power Network 3**

### **Meeting Room 08**

**Daunia**

**Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Noriko Kawakami (Toshiba Mitsubishi Corp, Japan), Marius Malinowski (Warsaw University of Technology, Poland)

Modeling and Simulation of a Wind Turbine System with Ultracapacitors for Short-Term Power Smoothing

Goran Mandic, University of Wisconsin-Milwaukee, USA, Adel Nasiri, University of Wisconsin-Milwaukee, USA

Wind Farm's Spatial Distribution Effect on Power System Reserves Requirements

Poul Soerensen, Risoe DTU, Technical University of Denmark, Denmark, Nicolaos Antonio Cutululis, Risoe DTU, Technical University of Denmark, Denmark

Multi-terminal DC Wind Farm Collection and Transmission System Internal Fault Analysis

Jin Yang, University of Glasgow, United Kingdom, John E. Fletcher, University of Strathclyde, United Kingdom, John O'Reilly, University of Glasgow, United Kingdom

A Series Injection Strategy for Reactive Power Compensation of Line Commutated HVDC for Offshore Wind Power

Muhammad Jafar, Norwegian University of Science & Technology, Norway, Marta Molinas, Norwegian University of Science & Technology, Norway

Development and Field Experiences of Stabilization System using 34 MW NAS Batteries for a 51 MW Wind Farm

Noriko Kawakami, Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan, Yukihiro Iijima, Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan, Yoshinori Sakanaka, Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan, Koji Ogawa, NGK Insulators, LTD., Japan, Motohiro Fukuhara, NGK Insulators, LTD., Japan, Matsuo Bando, Japan Wind Development Co.,LTD., Japan, Takeshi Matsuda, Japan Wind Development Co.,LTD., Japan

Superconducting magnetic energy storage (SMES) in power systems with renewable energy sources

Knut Erik Nielsen, NTNU, Norway, Marta Molinas, NTNU, Norway

## **ss8 - Integration of Renewable Energy Sources in the Power Network 4**

### **Meeting Room 08**

**Daunia**

## **Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Josep Guerrero (Technical University of Catalonia, Spain), Emilio Bueno (University of Alcala, Spain)

Behavioral Modeling and Simulation of Single-Phase Grid-Connected Photovoltaic Inverters

Javier Guerrero-Pérez, Technical University of Cartagena, Spain, Angel Molina-Garcia, Technical University of Cartagena, Spain, Jose Antonio Villarejo, Technical University of Cartagena, Spain, Juan Alvaro Fuentes, Technical University of Cartagena, Spain, Francisco Ruz, Technical University of Cartagena, Spain

Grid Connected Photovoltaic Topologies with Current Harmonic Compensation

Gustavo Azevedo, Universidade Federal de Pernambuco, Brazil, Marcelo Cavalcanti, Universidade Federal de Pernambuco, Brazil, Francisco Neves, Universidade Federal de Pernambuco, Brazil, Leonardo Limongi, Universidade Federal de Pernambuco, Brazil, Kleber Oliveira, Universidade Federal de Pernambuco, Brazil

Droop-based Active Power Curtailment for Overvoltage Prevention in Grid Connected PV Inverters

Reinaldo Tonkoski, Concordia University, Canada, Luiz Lopes, Concordia University, Canada, Tarek EL-Fouly, Canmet ENERGY - Natural Resources Canada, Canada

Behavior of Doubly-Fed Induction Generator During Symmetrical Voltage Dips - Experimental Results

Victor Flores Mendes, Federal University of Minas Gerais, Brazil, Clodualdo Venicio de Souza, Federal University of Minas Gerais, Brazil, Selênio Rocha Silva, Federal University of Minas Gerais, Brazil, Balduino Rabelo, TU Dresden, Germany, Sebastian Krauss, TU Dresden, Germany, Wilfried Hofmann, TU Dresden, Germany

Voltage and Frequency Control of SG Based Wind Farms with Uncontrolled HVDC Rectifier

Ramon Blasco-Gimenez, Univ. Politecnica de Valencia, Spain, Salvador Ano-Villalba, Univ. Politecnica de Valencia, Spain, Johel Rodriguez, Univ. Politecnica de Valencia, Spain, Francisco Morant, Univ. Politecnica de Valencia, Spain, Soledad Bernal, Univ. Politecnica de Valencia, Spain

Control strategy for regulating reactive power exchange in offshore wind farm

Maria Dicorato, Politecnico di Bari, Italy, Giuseppe Forte, Politecnico di Bari, Italy, Michele Trovato, Politecnico di Bari, Italy, Enrico De Tuglie, Politecnico di Bari, Italy

## **ss33 - New Challenges in Power Quality**

**Meeting Room 08**

**Daunia**

**Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Josep Balcells (Technical University of Catalonia, Spain), Jan Bialasiewicz (University of Colorado-Denver, USA)

Multi-Objective Optimization Based Optimal Compensation Strategies Study for Power Quality Enhancement under Distorted Voltages

Mohammad-Reza Rafiei, Politecnico di Torino, Italy, Mohammad-Hassan Kordi, Shahrood University of Technology, Iran, Giovanni Griva, Politecnico di Torino, Italy, Hossein Yassami, Shahrood University of Technology, Iran

Transformerless power line voltage conditioner and regulator based on CA PWM Chopper

Jose-Maria Flores-Arias, Universidad de Cordoba, Spain, Antonio Moreno-Munoz, Universidad de Cordoba, Spain, Rafael Real-Calvo, Universidad de Cordoba, Spain, Jose-Rafael Sanchez, Universidad de Cordoba, Spain

Analysis of Recovery Current and Core Structure of DC Power Supply in Electronic Current Transformer

Haiming Wang, University of Pittsburgh, USA, Gregory Reed, University of Pittsburgh, USA, Alex K. Jones, University of Pittsburgh, USA

A Software-based Tool for Optimal Design of Passive Tuned Filters

Jose Maza-Ortega, University of Sevilla, Spain, Julio Churio-Barboza, University of Sevilla, Spain, Manuel Burgos-Payan, University of Sevilla, Spain

Performance Study of Current-Controlled Versus Voltage-Controlled Radio Frequency Power Generator at Low Sampling Frequency

Jan Bialasiewicz, University of Colorado Denver, USA, William Bowers, Cintron Medical Corporation, USA

Multilevel Current Source Inverter to Improve Power Quality in a Distribution Network

Miguel Aguirre, Instituto Tecnológico Buenos Aires, Argentina, Laura Calviño, Instituto Tecnológico Buenos Aires, Argentina, Victor Fabian Corasaniti, Universidad Nacional de La Plata, Argentina, Maria Ines Valla, Universidad Nacional de La Plata, Argentina

## **EMD - 7: Interior Permanent Magnet Machines**

### **Meeting Room 05**

**lapigia**

**Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Rosario Miceli (University of Palermo, Italy), Alberto Tassarolo, (University of Trieste, Italy)

High Performance Low Speed Sensorless Control of Interior Permanent Magnet Synchronous Motor

Carlos E Nino, MSU, United States, Abdul Rehman Tariq, MSU, United States, Sinisa Jurkovic, MSU, United States, Elias G. Strangas, MSU, United States

Performance of a Direct Torque Controlled IPM Drive System in the Low Speed Region

Saeid Haghbin, Chalmers University of Technology, Sweden, Sonja Lundmark, Chalmers University of Technology, Sweden, Ola Carlson, Chalmers University of Technology, Sweden

Design of Double Salient Interior Permanent Magnet Machine Based on Mutually Coupled Reluctance Machine for Increasing the Torque Density and Flux-Weakening Capability

Li Guangjin, SATIE,ENS Cachan, France, Ojeda Xavier, SATIE,ENS Cachan, France, Hoang Emmanuel, SATIE,ENS Cachan, France, Gabsi Mohamed, SATIE,ENS Cachan, France, Balpe Cedric, Hispano-Suiza, Safran Power, France

A novel Efficiency Optimization Scalar Control Technique for Industrial IPMSM Drives

Mario Cacciato, University of Catania, Italy, Alfio Consoli, University of Catania, Italy, Giuseppe Scarcella, University of Catania, Italy, Giacomo Scelba, University of Catania, Italy

Direct-flux field-oriented control of IPM motor drives with robust exploitation of the Maximum Torque per Voltage speed range.

Gianmario Pellegrino, Politecnico di Torino, Italy, Eric Armando, Politecnico di Torino, Italy, Paolo Guglielmi, Politecnico di Torino, Italy

Improvement of IPMSM Performance through a Mixed Radial-tangential Rotor Structure

Rosario Miceli, University of Palermo, Italy, Antonino Oscar Di Tommaso, University of Palermo, Italy, Giuseppe Ricco Galluzzo, University of Palermo, Italy

## **EMD - 8: Permanent Magnet Machines**

### **Meeting Room 05**

### **Iapigia**

### **Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Fiorenzo Filippetti (University of Bologna, Italy), Rosario Miceli (University of Palermo, Italy)

Analytical method for the design of a machine with aligned and skewed permanent magnets

José Leandro Almeida Casa Nova, Universidade Estadual Paulista, Brazil, Teofilo Souza, Universidade Estadual Paulista, Brazil, Márcio Fortes, Universidade Federal Fluminense, Brazil

Direct Tuning Strategy for Speed Controlled PMSM Drives

Alessandro Lidozzi, University ROMA TRE, Italy, Luca Solero, University ROMA TRE, Italy, Fabio Crescimbeni, University ROMA TRE, Italy, Augusto Di Napoli, University ROMA TRE, Italy

EMA Bearing Fault Diagnosis by means of Stator Current Data Fusion Analysis

Miguel Delgado, Upc-Mcia, Spain, Antoni Garcia, Upc-Mcia, Spain, Juan Antonio Ortega, Upc-Mcia, Spain, Jordi Cusidó, Upc-Mcia, Spain, Jose Luis Romeral, Upc-Mcia, Spain

Topology Structure Selection of Permanent Magnet Linear Synchronous Motor for Ropeless Elevator System

Yu-Wu Zhu, Dong-A University, Korea (South), Sang-Geon Lee, Dong-A University, Korea (South), Yun-Hyun Cho, Dong-A University, Korea (South)

Influence of Magnetic Wedges on the No-Load Performance of Axial Flux Permanent Magnet Machines

Giulio De Donato, Sapienza - University of Rome, Italy, Fabio Giulii Capponi, Sapienza - Univeristy of Rome, Italy, Federico Caricchi, Sapienza - University of Rome, Italy

High Performance Control Technique For Unbalanced Operations Of Single-Vsi Dual-Pm Brushless Motor Drives

Diego Iannuzzi, University Federico II, Italy, Andrea Del Pizzo, University Federico II, Italy, Ivan Spina, University Federico II, Italy

Optimum Current Reference Generation Algorithm for Four Quadrant Operation of PMSMS Drive System without Regenerative Unit

Nicola Olarescu, Diehl AKO Stiftung & Co. KG, Germany, Martin Weinmann, Diehl AKO Stiftung & Co. KG, Germany, Stefan Zeh, Diehl AKO Stiftung & Co. KG, Germany, Sorin Musuroi, University "Politehnica" of Timisoara, Romania, Ciprian Sorandaru, University "Politehnica" of Timisoara, Romania

## **ss22 - Control Techniques for Grid-Connected Power Converters 1**

### **Meeting Room 05**

### **lapigia**

### **Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Salvador Alepuz (Technical University of Catalonia, Spain), Sergio Busquets-Monge (Technical University of Catalonia, Spain)

Design of a Robust Digital Controller for a Grid Connected Interleaved Inverter

Mohammad Abusara, University of Southampton, United Kingdom, Suleiman Sharkh, University of Southampton, United Kingdom

A DC Voltage Control Method of Cascaded H-bridge Inverter for Power Quality Conditioner

Yanhui Qiu, Xi'an Jiaotong University, China, Yingjie He, Xi'an Jiaotong University, China, Jinjun Liu, Xi'an Jiaotong University, China, Fang Zhuo, Xi'an Jiaotong University, China

A Vector Controlled Single-Phase Voltage Source Inverter with Enhanced Dynamic Response

Nayeem Ninad, Concordia University, Canada, Luiz Lopes, Concordia University, Canada, Alfred Rufer, Epfl, Switzerland

Digital Synchronous Current Control of Power Electronic Building Block in Modular Converters

Maria Stefania Carmeli, Politecnico di Milano, Italy, Francesco Castelli Dezza, Politecnico di Milano, Italy, Luigi Piegari, Politecnico di Milano, Italy, Gabrio Superti Furga, Politecnico di Milano, Italy

A Voltage Measurement Based Control of a SSSC

Manuel Rafael Reyes, University of Seville, Spain, Sergio Vazquez, University of Seville, Spain, Juan Manuel Carrasco, University of Seville, Spain, Maria Bella Ferrera, University of Seville, Spain

Time Domain Evaluation of Filterless Grid-Connected Multilevel PWM Converter Voltage Quality

Alex Ruderman, Elmo Motion Control Ltd, Israel, Boris Reznikov, General Satellite Corp, Russian Federation

## **ss22 - Synchronization and Topologies for Grid-Connected Power Converters 2**

### **Meeting Room 05**

#### **lapigia**

**Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Salvador Alepuz (Technical University of Catalonia, Spain), Patricio Cortes (Universidad Tecnica Federico Santa Maria, Chile)

A Photovoltaic Three-Phase Topology to Reduce Common Mode Voltage

Gerardo Vazquez, Technical University of Catalonia, Spain, Tamás Kerekes, Institute of Energy Technology, Denmark, Joan Rocabert, Technical University of Catalonia, Spain, Pedro Rodríguez, Technical University of Catalonia, Spain, Remus Teodorescu, Institute of Energy Technology, Denmark, Daniel Aguilar, Technical University of Catalonia, Spain

WLSE for Fast, Accurate and Robust Generation of References in Power Converter Applications

Francisco D. Freijedo, University of Vigo, Spain, Ana Vidal, University of Vigo, Spain, Alejandro Gomez-Yepes, University of Vigo, Spain, Pablo Fernandez-Comesaña, University of Vigo, Spain, Jano Malvar, University of Vigo, Spain, Oscar Lopez, University of Vigo, Spain, Andres Nogueiras, University of Vigo, Spain, Jesus Doval-Gandoy, University of Vigo, Spain

Reference Generator for Grid Connected Converters Without Direct Supply Synchronization

Herbert Ginn, Mississippi State University, USA, Guangda Chen, Wuhan University, China

Low Effort Digital Filters for Fast Sequence Components Separation of Unbalanced and Distorted Three-Phase Signals

Francisco Neves, Federal University of Pernambuco, Brazil, Helber de Souza, Federal University of Pernambuco, Brazil, Marcelo Cavalcanti, Federal University of Pernambuco, Brazil, Emilio Bueno, University of Alcalá, Spain

Grid Synchronization for Advanced Power Processing and FACTS in Wind Power Systems

Alvaro Luna, Technical University of Catalonia, Spain, Joan Rocabert, Technical University of Catalonia, Spain, Gerardo Vazquez, Technical University of Catalonia, Spain, Pedro Rodriguez, Technical University of Catalonia, Spain, Remus Teodorescu, Aalborg University, Denmark, Felipe Corcoles, Technical University of Catalonia, Spain

Improvements in Harmonic Mitigation for Multilevel AC-Drives for High Power Applications

Gonzalo Guinez, Concepcion University, Chile, Johan Guzman, Concepcion University, Chile, Jose Espinoza, Concepcion University, Chile, Carlos Baier, Concepcion University, Chile, Pedro Melin, Concepcion University, Chile

## **CSA - 7: Modeling and Identification**

### **Meeting Room 06**

**Ionía**

**Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Pericle Zanchetta (University of Nottingham, UK), Stefano Bifaretti (University of Rome "Tor Vergata", Italy)

Sensor Selection in Neuro-fuzzy Modelling for Fault Diagnosis

Yimin Zhou, Loughborough University, United Kingdom, Argyrios Zolotas, Loughborough University, United Kingdom

Action-Reaction Based Parameters Identification and States Estimation of Flexible systems

Islam Shoukry, Sabanci University, Turkey

Modelling and Predictive Control of an Electro-Hydraulic Actuated Wet Clutch for Automatic Transmission

Corneliu Lazar, Technical University "Gh. Asachi" of Iasi, Romania, Constantin-Florin Caruntu, Technical University "Gh. Asachi" of Iasi, Romania, Andreea-Elena Balau, Technical University "Gh. Asachi" of Iasi, Romania

Multi-Zone hybrid model for failure detection of the stable ventilation systems

Mehdi Gholami, Aalborg University, Denmark, Henrik Schiøler, Aalborg University, Denmark, Mohsen Soltani, Aalborg University, Denmark, Thomas Bak, Aalborg University, Denmark

Conditions for Stable and Causal Conjugate-Order Systems

Jay L. Adams, University of Akron, USA, Robert J. Veillette, University of Akron, USA, Tom T. Hartley, University of Akron, USA

## **CSA - 8: Emerging Control Issues**

## **Meeting Room 06**

**Ionia**

**Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Orazio Mirabella (University of Catania, Italy), Guido Maione (Politecnico di Bari, Italy)

A novel approach to detect chaotic and periodic behaviours in fractional-order systems

Donato Cafagna, University of Salento, Italy, Giuseppe Grassi, University of Salento, Italy

Tuning PI<sup>λ</sup> Fractional Order Controllers for Position Control of DC-Servomotors

Paolo Lino, Politecnico di Bari, Italy, Guido Maione, Politecnico di Bari, Italy

Robust Control Design of Multiple Resonant Controllers for Sinusoidal Tracking and Harmonic Rejection in Uninterruptible Power Supplies

Guilherme Bonan, CP Eletronica, Brazil, Otávio Mano, Ppgee - Pucrs, Brazil, Luis Fernando Alves Pereira, Delet - Ufrgs, Brazil, Daniel Ferreira Coutinho, Gacs - Pucrs, Brazil

Predictive Kalman Filter-Based Fault Estimator and Control for Sampled-Data Linear Time-Varying Systems

Jason Sheng-Hong Tsai, National Cheng Kung University, Taiwan, Chao-Lung Wei, National Cheng Kung University, Taiwan, Shu-Mei Guo, National Cheng Kung University, Taiwan, Leang-San Shieh, University of Houston, USA

A flexible architecture for the rapid prototyping of control systems in fusion experiments

Gianmaria De Tommasi, Università degli Studi di Napoli Federico II, Italy, Giuseppe Ambrosino, Università degli Studi di Napoli Federico II, Italy, Giuseppe Carannante, Università degli Studi di Napoli Federico II, Italy, Alfredo Pironti, Università degli Studi di Napoli Federico II, Italy, Massimiliano Banfi, National Instruments Italy, Italy, Augusto Mandelli, National Instruments Italy, Italy

Optimal Control Strategy of Onboard Supercapacitor Storage System for Light Railway Vehicles

Diego Iannuzzi, University Federico II, Italy, Pietro Tricoli, University Federico II, Italy

## **ss24 - Advanced Control in Power Electronics**

## **Meeting Room 06**

**Ionia**

**Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Roberto Grino (Technical University of Catalonia, Spain), Josep M. Olm (Technical University of Catalonia, Spain)

Robust Adaptive PI Stabilization of a Quadratic Converter: Experimental Results

Michael Hernandez, Supelec, France, Olivier Bethoux, Lgpe, France, Ortega Romeo, Supelec, France, Françoise Lamnabhi-Lagarrigue, Supelec, France, Gerardo Escobar, Abb, Switzerland

Robust Control of Bilinear DC-DC Converters

Carlos Olalla Martínez, Laas - Cnrs, France, Isabelle Queindec, Laas - Cnrs, France, Ramon Leyva, Deeea - Urv, Spain, Abdelali El Aroudi, Deeea - Urv, Spain

Voltages Balance Control in Three Phase Three-Level NPC Rectifiers

Francisco Umbria, Universidad de Sevilla, Spain, Francisco Gordillo, Universidad de Sevilla, Spain, Francisco Salas, Universidad de Sevilla, Spain, Sergio Vazquez, Universidad de Sevilla, Spain

On Linear Power Factor Compensation, Power Equalization and Cyclo-dissipativity of Nonlinear Loads

Dunstano del Puerto-Flores, Rijksuniversiteit Groningen, Netherlands, Romeo Ortega, Supelec, France, Jacquelin M. A. Scherpen, Rijksuniversiteit Groningen, Netherlands

A charge control for interleaved operation of a PFC boost converter

Francisco Canales, ABB Switzerland Ltd, Switzerland, Gerardo Escobar, ABB Switzerland Ltd, Switzerland, Armando Olmos, Cenidet, Mexico, Gerardo Guerrero, Cenidet, Mexico, Michael Hernandez-Gomez, Supelec, France

Robust Loop-shaping Hinf control of LCL-connected grid converters

Santiago Cobrecas, University of Alcalá, Spain, Emilio J. Bueno, University of Alcalá, Spain, Francisco J. Rodriguez, University of Alcalá, Spain, Daniel Pizarro, University of Alcalá, Spain, Francisco Huerta, University of Alcalá, Spain

## **ss25 - Industrial Applications of FPGAs and Embedded Systems**

### **Meeting Room 06**

**Ionia**

**Wednesday 7th of July**

**Hour: 16:30 – 18:30**

**Chair/s:** Luis Gomes (Universidade Nova de Lisboa, Portugal), Juan J. Rodriguez-Andina (Universidad de Vigo, Spain)

A CPLD-based Safety Concept for Industrial Applications

Gerhard Grießnig, AVL List GmbH, Austria, Roland Mader, AVL List GmbH, Austria, Christian Steger, Graz University of Technology, Austria, Reinhold Weiß, Graz University of Technology, Austria

On Using LALP to Map a Audio Encoder/Decoder on FPGAs

Ricardo Menotti, Universidade Tecnológica Federal do Paraná, Brazil, João M. P. Cardoso, Universidade do Porto, Portugal, Marcio M. Fernandes, Universidade Federal de São Carlos, Brazil, Eduardo Marques, Universidade de São Paulo, Brazil

A novel architecture for a massively parallel low level vision processing engine on chip

Matteo Tomasi, University of Granada, Spain, Mauricio Vanegas, University of Granada, Spain, Francisco Barranco, University of Granada, Spain, Javier Díaz, University of Granada, Spain, Eduardo Ros, University of Granada, Spain

Automated FPGA Implementation Methodology of PLC Programs with Floating Point Operations

Christoforos Economakos, Halkis Institute of Technology, Greece, George Economakos, National Technical University of Athens, Greece, Ioannis Koutras, National Technical University of Athens, Greece

From Petri net models to C implementation of digital controllers

Luís Gomes, Universidade Nova de Lisboa, Portugal, Rogério Rebelo, Universidade Nova de Lisboa, Portugal, João Paulo Barros, Instituto Politécnico de Beja, Portugal, Anikó Costa, Universidade Nova de Lisboa, Portugal, Rui Pais, Instituto Politécnico de Beja, Portugal

Analysis of Two FPGA Design Methodologies Applied to an Image Processing System

Lucia Costas, University of Vigo, Spain, Pablo Colodron, University of Vigo, Spain, Juan J. Rodriguez-Andina, University of Vigo, Spain, Jose Farina, University of Vigo, Spain, Mo-Yuen Chow, North Carolina State University, USA

## **ss34 - Reliability and Performance Indices of Renewable Energy Systems**

### **Meeting Room 09**

#### **Appula**

**Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Francesco Vacca (Politecnico di Bari, Italy), Silvano Vergura (Politecnico di Bari, Italy)

Impact of Large Scale Integration of Photovoltaic Energy Source and Optimisation in Smart Grid with Minimal Energy Storage

Yonghua Cheng, VITO - Flemish Institute for Technological Research, Belgium

Comparison of Speed Estimators Applied to Wind Generation Systems with Noisy Measurement Signals

Oscar Carranza Castillo, Instituto Politecnico Nacional, Mexico, Gabriel Garcera Sanfeliu, Universidad Politécnica de Valencia, Spain, Emilio Figueres Amoros, Universidad Politécnica de Valencia, Spain, Cesar Leonardo Trujillo Rodriguez, Universidad Distrital Francisco José de Caldas, Colombia, David Velasco De la Fuente, Universidad Politécnica de Valencia, Spain

Safety and Monitoring System for a Solar Plant based on Photovoltaic and Thermal Concentrators

Leonardo Serri, Università degli Studi di Firenze, Italy, Alberto Reatti, Università degli Studi di Firenze, Italy

Linear Solar PV/T Concentrator Performance Index derivation and its Utilization in Monitoring System

Leonardo Serri, Università degli studi di Firenze, Italy, Alberto Reatti, Università degli studi di Firenze, Italy

I-V and P-V Curves Measuring System for PV Modules based on DC-DC Converters and Portable Graphical Environment

Eladio Duran Aranda, University of Huelva, Spain, Maria Bella Ferrera Prieto, University of Huelva, Spain, Jose Manuel Andujar Marquez, University of Huelva, Spain, Moises Saul Mesa Alcocer, University of Huelva, Spain

Bootstrap technique for Analyzing the Efficiency of PV Plants belonging to a Constellation

Francesco Vacca, Politecnico di Bari, Italy, Silvano Vergura, Politecnico di Bari, Italy

## **ss13 - Evolvable Production Systems**

### **Meeting Room 09**

#### **Appula**

#### **Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Marcus Bjelkemyr (KTH, Sweden), Niko Siltala (Tampere Univ. of Technology, Finland)

Evolvable Production Systems: Current Developments And Future Prospects

Mauro Onori, KTH, Sweden, Jose Barata, Uninova, Portugal

A Web Tool Supporting the Management and Use of Electronic Module Descriptions for Evolvable Production Systems

Niko Siltala, Tampere University of Technology, Finland, Reijo Tuokko, Tampere University of Technology, Finland

From Flexibility to true Evolvability: an introduction to the basic requirements

Antonio Maffei, Royal College of Technology, Sweden, Andreas Hofmann, Institute for Applied Computer Science (IAI), Karlsruhe Institute of Technology, Germany

Handling Complexity in Evolvable Production Systems

Marcus Bjelkemyr, Royal Institute of Technology, Sweden, Antonio Maffei, Royal Institute of Technology, Sweden

Emergent Diagnosis for Evolvable Production Systems

Luis Ribeiro, Uninova, Portugal, Jose Barata, Uninova, Portugal, Joao Ferreira, Uninova, Portugal

Service-Oriented Architecture at Device Level to support Evolvable Production Systems

Gonçalo Cândido, Universidade Nova de Lisboa, Portugal, José Barata, Universidade Nova de Lisboa, Portugal, Armando Colombo, Schneider Electric Automation, Germany, François Jammes, Schneider Electric - Corporate R&D, France

## **ss36 - Advanced Sensor Systems for Industrial Applications**

### **Meeting Room 09**

### **Appula**

### **Wednesday 7th of July**

### **Hour: 14:00 – 16:00**

**Chair/s:** Gerard C.M. Meijer (EEMCS Delft University of Technology, Nederland), Stoyan N. Nihtianov (EEMCS Delft University of Technology, Nederland)

Micro-Digital Sun Sensor: an Imaging Sensor for Space Applications

Ning Xie, Delft University of Technology, Netherlands, Albert Theuwissen, Delft University of Technology, Netherlands, Bernard Buettgen, Delft University of Technology, Netherlands, Henk Hakkesteegt, Tno, Netherlands, Henk Janson, Tno, Netherlands, Johan Leijters, Tno, Netherlands

Conception of a wireless cell for the energy consumption diagnosis of AC rotating machines

Farid Zidat, LSEE Université d'Artois, France, Jean-Philippe Lecointe, LSEE Université d'Artois, France, Fabrice Morganti, LSEE Université d'Artois, France, Jean-François Brudny, LSEE Université d'Artois, France, Thierry Jacq, Edf, France, Frédéric Streiff, Ademe, France

Correcting nonlinearity and temperature influence of sensors through B-Spline modeling

Christian Blümm, University of Erlangen-Nuremberg, Germany, Roland Weiss, Siemens AG Germany, Robert Weigel, University of Erlangen-Nuremberg, Germany, Daniel Brenk, University of Erlangen-Nuremberg, Germany

Precise duty-cycle measurement for time of transit ultrasound flowmeters

Jose G. Rocha, University of Minho, Portugal, Silvia Reis, University of Minho, Portugal, Vitor Correia, University of Minho, Portugal, Marcos Martins, University of Minho, Portugal, Gabriel Barbosa, University of Minho, Portugal, Ricardo Sousa, University of Minho, Portugal, Graca Minas, University of Minho, Portugal, Senentxu Lanceros-Mendez, University of Minho, Portugal

A Flexible High-Resolution Integrated Interface for Capacitive Sensors

Ali Heidary, TUDelft, Netherlands, Saleh Heidary, TUDelft, Netherlands, Gerard Meijer, TUDelft, Netherlands

FPGA-based Embedded System for Ultrasonic Positioning

Alberto Sanchez, Universidad Autonoma de Madrid, Spain, Angel de Castro, Universidad Autonoma de Madrid, Spain, Guillermo Glez-de-Rivera, Universidad Autonoma de Madrid, Spain, Javier Garrido, Universidad Autonoma de Madrid, Spain

## **ss28 - Predictive Control of Power Converters 2**

### **Meeting Room 09**

#### **Appula**

**Wednesday 7th of July**

**Hour: 16:30 -18:30**

**Chair/s:** Patricio Cortes (Universidad Tecnica Federico Santa María, Chile), Sergio Vazquez (Universidad of Seville, Spain)

A Simple and Effective Solution for Superior Performance in Two-Level Four-Leg Voltage Source Inverters: Predictive Voltage Control

Marco Rivera, Universidad Federico Santa Maria, Chile, Venkata Yaramasu, Ryerson University, Canada, Jose Rodriguez, Universidad Federico Santa Maria, Chile, Bin Wu, Ryerson University, Canada, Alan Wilson, Universidad Federico Santa Maria, Chile, Christian Rojas, Universidad Federico Santa Maria, Chile

Comparison Between FS-MPC Control Strategy for an UPS inverter application in alpha-beta and abc frames

Sergio Vazquez, University of Seville, Spain, Patricio Cortes, Technical University Federico Santa Maria, Chile, Jose Igancio Leon, University of Seville, Spain, Leopoldo Franquelo, University of Seville, Spain, Jose Rodriguez, Technical University Federico Santa Maria, Chile, Juan Manuel Carrasco, University of Seville, Spain, Eugenio Dominguez, University of Seville, Spain

Predictive Control of an Asymmetric Multicell Converter with Floating Cells

Pablo Lezana, Uffsm-Eli, Chile, Ricardo Aguilera, The University of Newcastle, Australia, Daniel Quevedo, The University of Newcastle, Australia

Multivariable predictive control of voltage source converter HVDC transmission systems

Giovanni Beccuti, ABB Corporate Research, Switzerland, Georgios Papafotiou, ABB Corporate Research, Switzerland, Lennart Harnefors, ABB Power Systems, Sweden

Predictive Current Control of Dual Three-phase Drives using Restrained Search Techniques and Multi Level Voltage Source Inverters

Mario Duran, University of Málaga, Spain, Federico Barrero, University of Seville, Spain, Joel Prieto, University of Seville, Spain, Sergio Toral, University of Seville, Spain

## **ss38 - Advances in Industrial Automation Networks**

### **Meeting Room 10**

#### **Sveva-Egnazia**

## **Wednesday 7th of July**

**Hour: 08:30 – 10:30**

**Chair/s:** Ivan Cibrario Bertolotti (Politecnico di Torino, Italy), Luca De Cicco (Politecnico di Bari, Italy)

Performance Evaluation of the EtherCAT Distributed Clock Algorithm

Stefano Scanzio, Ieiit-Cnr, Italy, Gianluca Cena, Ieiit-Cnr, Italy, Adriano Valenzano, Ieiit-Cnr, Italy, Claudio Zunino, Ieiit-Cnr, Italy

Communication Services for Secure Building Automation Networks

Wolfgang Granzer, Vienna University of Technology, Austria, Wolfgang Kastner, Vienna University of Technology, Austria

Congestion Control based on Data-Aggregation for Wireless Sensor Networks

Tommaso Mastrocristino, Politecnico di Bari, Italy, Girolamo Tesoriere, Politecnico di Bari, Italy, Luigi Alfredo Grieco, Politecnico di Bari, Italy, Gennaro Boggia, Politecnico di Bari, Italy, Maria Rita Palattella, Politecnico di Bari, Italy, Pietro Camarda, Politecnico di Bari, Italy

Design of Position Controller for PMSM Drive in PAIS Project for Early Wildfire Detection by Means of Differential Evolution with Scale Factor Local Search

Andrea Caponio, Technical University of Bari, Italy, Ferrante Neri, University of Jyvaskyla, Finland, Giuseppe Giliperti, S.M.A. s.p.a., Italy, Giuseppe Lorusso, S.M.A. s.p.a., Italy, Giuseppe Leonardo Cascella, Technical University of Bari, Italy, Davide Cascella, Technical University of Bari, Italy

Mixed-Signal Feedforward/Feedback AGC circuit for VHF Applications in CMOS Technology

Juan Pablo Alegre, University of Zaragoza, Spain, Belén Calvo, University of Zaragoza, Spain, Santiago Celma, University of Zaragoza, Spain

## **ss2 - Fault Diagnosis in Robotic and Industrial Systems 2**

### **Meeting Room 10**

### **Sveva-Egnazia**

## **Wednesday 7th of July**

**Hour: 11:00 – 13:00**

**Chair/s:** Gerasimos Rigatos (Industrial Systems Institute, Greece), Sauro Longhi (University Polytechnica delle Marche, Italy)

Online Motor Bearing Fault Diagnosis Using Wavelet Packet Transform and Immune Neural Network

Xin Wen, University of Portsmouth, United Kingdom

A derivative-free Kalman Filtering approach for sensorless control of nonlinear systems

Gerasimos Rigatos, Unit of Industrial Automation / Industrial Systems Institute, Greece

Diagnosis and Parametric Estimation of Induction Motors Based on Graphical Signature Tool

Bilal Youssef, Institut Français du Pétrole, France

Fault Tolerant Control for Takagi-Sugeno systems with unmeasurable premise variables by trajectory tracking

Dalil Ichahal, Centre de Recherche en Automatique (CRAN), France, Benoit Marx, Centre de Recherche en Automatique (CRAN), France, Jose Ragot, Centre de Recherche en Automatique (CRAN), France, Didier Maquin, Centre de Recherche en Automatique (CRAN), France

Design of a soft sensor for the oscillatory failure detection in the flight control system of a civil aircraft

Do Hieu Trinh, Cnrs, France, Benoît Marx, Cnrs, France, Philippe Goupil, Airbus, France, José Ragot, Cnrs, France

Detecting External Measurement Disturbances Based on Statistical Analysis for Smart Sensors

André Dietrich, Otto-von-Guericke Universität Magdeburg, Germany, Sebastian Zug, Otto-von-Guericke Universität Magdeburg, Germany, Jörg Kaiser, Otto-von-Guericke Universität Magdeburg, Germany

## **ss40 - Granular Control of Renewable Energy Systems**

### **Meeting Room 10**

### **Sveva-Egnazia**

### **Wednesday 7th of July**

**Hour: 14:00 – 16:00**

**Chair/s:** Giovanni Spagnuolo (Univ. of Salerno, Italy), Massimo Vitelli (Seconda Università degli Studi di Napoli, Italy)

AC Module Design Employing Low Capacitance Values

Giovanni Spagnuolo, University of Salerno, Italy, Giovanni Frattini, National Semiconductor Srl, Italy, Giovanni Petrone, University of Salerno, Italy, Massimo Vitelli, Second University of Naples, Italy

Individual MPPT of Photovoltaic Arrays with Use of Single-Phase Three-Level Diode-Clamped Inverter

Robert Stala, AGH-University of Science and Technology, Poland

A Multivariable MPPT algorithm for Granular Control of Photovoltaic Systems

Giovanni Petrone, University of Salerno, Italy, Giovanni Spagnuolo, University of Salerno, Italy, Massimo Vitelli, University of Salerno, Italy, Carlos Andres Ramos-Paja, Universidad Nacional de Colombia, Colombia, Juan David Bastidas, Universidad del Valle, Colombia

TEODI: PV MPPT based on the Equalization of the Output operating points in correspondence of the forced Displacement of the Input operating points

Massimo Vitelli, Second University of Naples, Italy, Giovanni Petrone, University of Salerno, Italy, Giovanni Spagnuolo, University of Salerno, Italy

A Novel Gain Scheduling Method for Distributed Power Generation Systems with a LCL-Filter By Estimating Grid impedance

Dae-Keun Choi, Ajou University, Korea (South), Duk-Hong Kang, Ajou University, Korea (South), Kyo-Beum Lee, Ajou University, Korea (South)

Analysis of Performance of New Distributed MPPT Architectures

Ricardo Alonso, TECNALIA-Energy Unit, Spain, Víctor Martínez, Ehu/Upv, Spain, Pedro Ibáñez, TECNALIA-Energy Unit, Spain, Eduardo Román, TECNALIA-Energy Unit, Spain, Asier Sanz, TECNALIA-Energy Unit, Spain

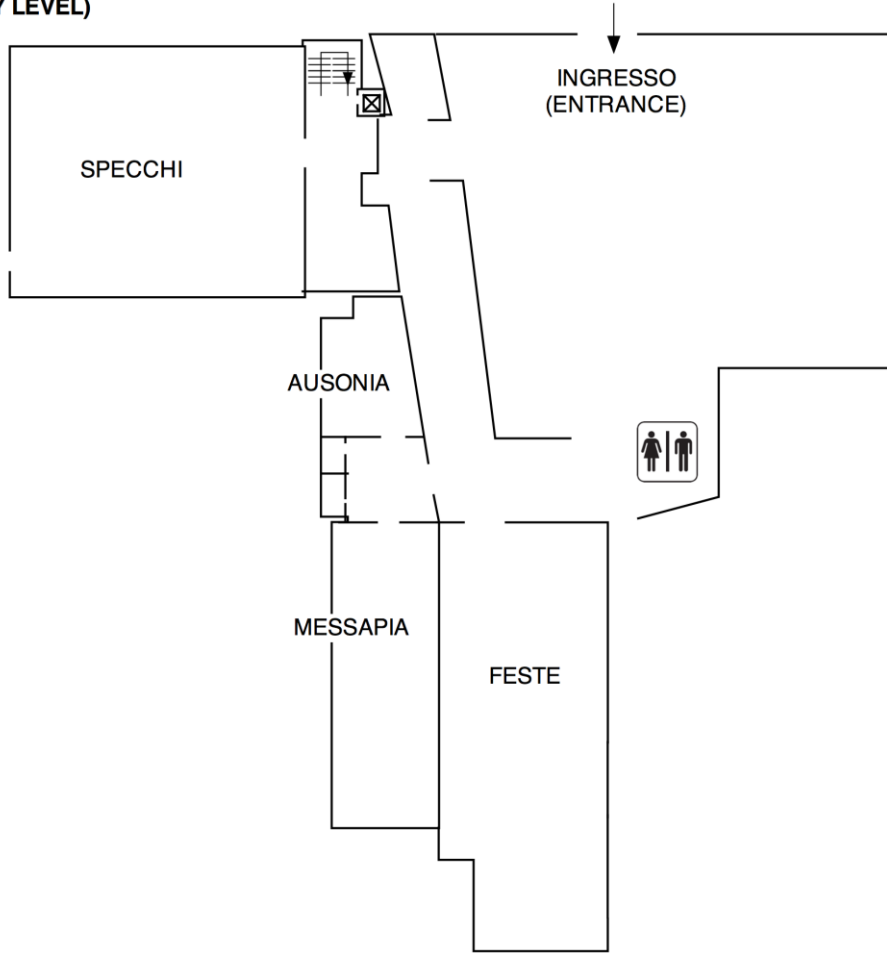
| MONDAY 5    |                  |          |         |          |                          |        |         |         |             |               |                 |
|-------------|------------------|----------|---------|----------|--------------------------|--------|---------|---------|-------------|---------------|-----------------|
| Floor       | Ground floor     |          |         |          | Basement                 |        |         |         | First floor |               |                 |
| Room name   | Specchi          | Feste    | Ausonia | Messapia | AbbreScia                | Daunia | Illiria | Iapigia | Ionia       | Appula        | Sveva - Egnazia |
| 08:00-08:30 | REGISTRATION     |          |         |          |                          |        |         |         |             |               |                 |
| 08:30-09:00 | opening          | VOID     | VOID    | VOID     | opening (VIDEO)          | VOID   | VOID    | VOID    | VOID        | VOID          | VOID            |
| 09:00-09:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 09:30-10:00 | keynote speeches | VOID     | VOID    | VOID     | keynote speeches (VIDEO) | VOID   | VOID    | VOID    | VOID        | VOID          | VOID            |
| 10:00-10:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 10:30-11:00 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 11:00-11:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 11:30-12:00 | keynote speeches | VOID     | VOID    | VOID     | keynote speeches (VIDEO) | VOID   | VOID    | VOID    | VOID        | VOID          | VOID            |
| 12:00-12:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 12:30-13:00 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 13:00-13:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 13:30-14:00 | lunch            |          |         |          |                          |        |         |         |             |               |                 |
| 14:00-14:30 | PE 7             | VOID     | SASI 1  | CSA 3    | EMD 3                    | SS 18  | VOID    | RM 1    | SPCI 1      | Student Forum | FAIL 1          |
| 14:30-15:00 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 15:00-15:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 15:30-16:00 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 16:00-16:30 | coffee break     |          |         |          |                          |        |         |         |             |               |                 |
| 16:30-17:00 | PE 10            | Dialog 1 | SASI 2  | CSA 2    | EMD 2                    | SS 31  | VOID    | RM 2    | SPCI 2      | Student Forum | FAIL 2          |
| 17:00-17:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 17:30-18:00 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 18:00-18:30 |                  |          |         |          |                          |        |         |         |             |               |                 |
| 18:30-19:00 | REGISTRATION     |          |         |          |                          |        |         |         |             |               |                 |
| 19:00-19:30 | REGISTRATION     |          |         |          |                          |        |         |         |             |               |                 |
| 20:00-24:00 | student party    |          |         |          |                          |        |         |         |             |               |                 |

| TUESDAY 6   |               |          |         |          |           |        |             |             |        |        |                 |
|-------------|---------------|----------|---------|----------|-----------|--------|-------------|-------------|--------|--------|-----------------|
| Floor       | Ground floor  |          |         |          | Basement  |        |             | First floor |        |        |                 |
| Room name   | Specchi       | Feste    | Ausonia | Messapia | Abbreccia | Daunia | Illiria     | Iapigia     | Ionia  | Appula | Sveva - Egnazia |
| 08:00-08:30 | REGISTRATION  |          |         |          |           |        |             |             |        |        |                 |
| 08:30-09:00 | PANEL HEV     | Dialog 2 | SASI 3  | CSA 1    | PE 3      | ET     | WIC meeting | EMD 1       | SPCI 3 | SS 23  | SS 43           |
| 09:00-09:30 |               |          |         |          |           |        |             |             |        |        |                 |
| 09:30-10:00 |               |          |         |          |           |        |             |             |        |        |                 |
| 10:00-10:30 | coffee break  |          |         |          |           |        |             |             |        |        |                 |
| 10:30-11:00 | PANEL HEV     | VOID     | SS 19   | CSA 4    | PE 4      | SS 8-1 | VOID        | EMD 4       | RM 3   | SS 11  | SS 2-1          |
| 11:00-11:30 |               |          |         |          |           |        |             |             |        |        |                 |
| 11:30-12:00 |               |          |         |          |           |        |             |             |        |        |                 |
| 12:00-12:30 | lunch         |          |         |          |           |        |             |             |        |        |                 |
| 12:30-13:00 | lunch         |          |         |          |           |        |             |             |        |        |                 |
| 13:00-13:30 | lunch         |          |         |          |           |        |             |             |        |        |                 |
| 13:30-14:00 | PANEL PEBB    | VOID     | SS 4-1  | CSA 5    | PE 5      | SS 9   | VOID        | EMD 5       | SS 3-1 | SS 47  | SS 16           |
| 14:00-14:30 |               |          |         |          |           |        |             |             |        |        |                 |
| 14:30-15:00 |               |          |         |          |           |        |             |             |        |        |                 |
| 15:00-15:30 | coffee break  |          |         |          |           |        |             |             |        |        |                 |
| 15:30-16:00 | PANEL PEBB    | Dialog 3 | SS 21   | CSA 6    | PE 6      | SS 10  | VOID        | EMD 6       | SS 4-2 | SS 45  | SS 3-2          |
| 16:00-16:30 |               |          |         |          |           |        |             |             |        |        |                 |
| 16:30-17:00 |               |          |         |          |           |        |             |             |        |        |                 |
| 17:00-17:30 | REGISTRATION  |          |         |          |           |        |             |             |        |        |                 |
| 17:30-18:00 | VOID          |          |         |          |           |        |             |             |        |        |                 |
| 18:00-18:30 | REGISTRATION  |          |         |          |           |        |             |             |        |        |                 |
| 18:30-19:00 | VOID          |          |         |          |           |        |             |             |        |        |                 |
| 19:00-19:30 | VOID          |          |         |          |           |        |             |             |        |        |                 |
| 20:00-24:00 | social dinner |          |         |          |           |        |             |             |        |        |                 |

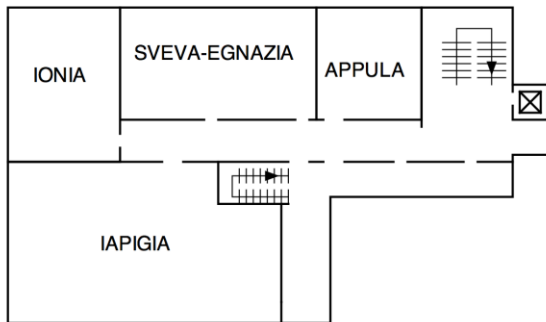
| WEDNESDAY 7 |              |          |         |          |                |        |         |             |       |         |                          |
|-------------|--------------|----------|---------|----------|----------------|--------|---------|-------------|-------|---------|--------------------------|
| Floor       | Ground floor |          |         |          | Basement       |        |         | First floor |       |         |                          |
| Room name   | Specchi      | Feste    | Ausonia | Messapia | Abbreccia      | Daunia | Illiria | Iapigia     | Ionia | Appula  | Sveva - Egnazia          |
| 08:00-08:30 | REGISTRATION |          |         |          |                |        |         |             |       |         |                          |
| 08:30-09:00 | PE 1         | Dialog 4 | SS 42   | PE 11    | INDUSTRY TRACK | SS 8-2 | VOID    | EMD 7       | CSA 7 | SS 34   | SS 38                    |
| 09:00-09:30 |              |          |         |          |                |        |         |             |       |         |                          |
| 09:30-10:00 |              |          |         |          |                |        |         |             |       |         |                          |
| 10:00-10:30 | coffee break |          |         |          |                |        |         |             |       |         |                          |
| 10:30-11:00 | PE 8         | VOID     | SS 27   | PE 12    | INDUSTRY TRACK | SS 8-3 | VOID    | EMD 8       | CSA 8 | SS 13   | SS 2-2                   |
| 11:00-11:30 |              |          |         |          |                |        |         |             |       |         |                          |
| 11:30-12:00 |              |          |         |          |                |        |         |             |       |         |                          |
| 12:00-12:30 | lunch        |          |         |          |                |        |         |             |       |         |                          |
| 12:30-13:00 | lunch        |          |         |          |                |        |         |             |       |         |                          |
| 13:00-13:30 | lunch        |          |         |          |                |        |         |             |       |         |                          |
| 13:30-14:00 | PE 9         | VOID     | SS 28-1 | SS 20    | PE 14          | SS 8-4 | VOID    | SS 22-1     | SS 24 | SS 36   | SS 40                    |
| 14:00-14:30 |              |          |         |          |                |        |         |             |       |         |                          |
| 14:30-15:00 |              |          |         |          |                |        |         |             |       |         |                          |
| 15:00-15:30 | coffee break |          |         |          |                |        |         |             |       |         |                          |
| 15:30-16:00 | PE 2         | Dialog 5 | SS 29   | SS 7     | PE 13          | SS 33  | VOID    | SS 22-2     | SS 25 | SS 28-2 | T.C. on Renewable Energy |
| 16:00-16:30 |              |          |         |          |                |        |         |             |       |         |                          |
| 16:30-17:00 |              |          |         |          |                |        |         |             |       |         |                          |
| 17:00-17:30 | VOID         |          |         |          |                |        |         |             |       |         |                          |
| 17:30-18:00 | VOID         |          |         |          |                |        |         |             |       |         |                          |
| 18:00-18:30 | VOID         |          |         |          |                |        |         |             |       |         |                          |
| 18:30-19:00 | VOID         |          |         |          |                |        |         |             |       |         |                          |
| 19:00-19:30 | VOID         |          |         |          |                |        |         |             |       |         |                          |

**PALACE HOTEL - BARI  
MEETING ROOMS**

**PIANO TERRA  
(LOBBY LEVEL)**



**PRIMO PIANO  
(UPPER LEVEL)**



**SEMINTERRATO  
(BASEMENT LEVEL)**

