IEEE COMPEL 2017 at Stanford University

Oral Sessions & Keynote Speeches

Monday, July 10, 2017

8:30 am – 8:40 am	OPENING AND WELCOME

Keynote Speech 1

8:40 am – 9:15 am	POWER DEVICES: SILICON VS. NEW MATERIALS James Plummer; Stanford University

Keynote Speech 2

9:15 am – 9:50 am	POWER & ELECTRONICS: THE IMPACT OF ADVANCED SEMICONDUCTOR TECHNOLOGY ON FUTURE GRID Ahmad Bahai; Texas Instruments

Coffee Break: 9:50 am – 10:20 am

Oral Session 1: Applications/Education
Chair: Charles Sullivan (Dartmouth College)

O1-1 (ID: 158) 10:20 am – 10:40 am	MODELING, DESIGN AND IMPLEMENTATION OF A LIGHTWEIGHT HIGH-VOLTAGE POWER CONVERTER FOR ELECTRO-AERODYNAMIC PROPULSION Yiou He, David Perreault, Mark Woolston; Massachusetts Institute of Technology
O1-2 (ID: 16) 10:40 am – 11:00 am	A PORTABLE ELECTROSTATIC PRECIPITATOR TO REDUCE RESPIRATORY DEATH IN RURAL ENVIRONMENTS Sabera Talukder, Sanghyeon Park, Juan Rivas-Davila; Stanford University
O1-3 (ID: 200) 11:00 am – 11:20 am	POWER ARCHITECTURE OF A HIGH-VOLTAGE DIELECTROPHORESIS BASED CONTACTLESS CLEANING SYSTEM FOR SOLAR PANELS Sharif Nami, Nameer Khan, James Aziz, Youssef Elgendi, Miad Nasr, Olivier Trescases; University of Toronto
O1-4 (ID: 243) 11:20 am – 11:40 am	SMART-USB-CABLE BUCK CONVERTER WITH INDIRECT REGULATION Rachit Goel, Gab-Su Seo, Hanh-Phuc Le; University of Colorado Boulder
O1-5 (ID: 150) 11:40 am – 12:00 pm	PERSPECTIVE ON DEVELOPING EDUCATIONAL LECTURE VIDEOS FOR POWER ELECTRONICS AND CONTROL COURSES Katherine Kim[1], Hoejeong Jeong[1], Yu-Chen Liu[2]; [1]Ulsan National Institute of Science and Technology (UNIST), [2]National Ilan University

Lunch: 12:00 pm – 1:00 pm

Oral Session 2: Control and Modeling of Modular Converters
Chairs: Katherine Kim (UNIST) and Jason Stauth (Dartmouth College)

O2-1 (ID: 71) 1:00 pm – 1:20 pm	A TRANSFORMERLESS DC-DC MMC BASED ON SYMMETRICALLY INTERLINKED SUBCONVERTERS Mohammadhadi Rouhani, Gregory Kish; University of Alberta
O2-2 (ID: 170) 1:20 pm – 1:40 pm	MULTI-PORT MULTI-CELL DC/DC CONVERTER TOPOLOGY FOR ELECTRIC VEHICLE'S POWER DISTRIBUTION NETWORKS

	Jannik Schäfer, Dominik Bortis, Johann Walter Kolar; ETH Zurich
O2-3 (ID: 180) 1:40 pm – 2:00 pm	DECENTRALIZED INTERLEAVING OF PARALLELED DC-DC BUCK CONVERTERS Mohit Sinha[1], Brian Johnson[2], Miguel Rodriguez[2], Jason Poon[3], Sairaj Dhople[1]; [1]University of Minnesota, [2]National Renewable Energy Laboratory, [3]University of California at Berkeley
O2-4 (ID: 199) 2:00 pm – 2:00 pm	MODULAR DIFFERENTIAL POWER PROCESSING (MDPP) Chang Liu, Deyu Li, Yue Zheng, Brad Lehman; Northeastern University
O2-5 (ID: 231) 2:30 pm – 2:40 pm	A BIDIRECTIONAL WIDE LOAD RANGE MULTIPHASE BUCK/BOOST CONVERTER FOR DIFFERENTIAL POWER PROCESSING Dipanjan Das, Philip Krein; University of Illinois at Urbana-Champaign

Technical Visit to SLAC & Stanford Campus Tour 3:00 pm - 7:00 pm

Mixer at Computer History Museum: 7:00 pm – 10:00 pm

Tuesday, July 11, 2017

Oral Session 3: HVDC/STATCOM
Chairs: XXX

O3-1 (ID: 37) 8:10 am – 8:30 am	FREQUENCY- DEPENDENT NETWORK EQUIVALENT FOR HYBRID SIMULATIONS OF MMC BASED MTDC SYSTEMS Dewu Shu[1], Venkata Dinavahi[2], Qirong Jiang[1]; [1]Tsinghua University, [2]University of Alberta
O3-2 (ID: 93) 8:30 am – 8:50 am	IMPEDANCE MODELING AND ANALYSIS OF MMC IN SINGLE-STAR CONFIGURATION Yang Zhang[1], Xin Chen[1], Jian Sun[2]; [1]Nanjing University of Aeronautics and Astronautics, [2]Rensselaer Polytechnic Institute
O3-3 (ID: 156) 8:50 am – 9:10 am	IMPEDANCE COMPUTATION FOR POWER ELECTRONICS CONVERTERS WITH HILBERT TRANSFORM Santiago Sanchez[1], Salvatore D'Arco[2], Gilbert Bergna[1], Marina Sanz[3], Elisabetta Tedeschi[1]; [1]Norwegian University of Science and Technology, [2]SINTEF, [3]Universidad Carlos III de Madrid
O3-4 (ID: 258) 9:10 am – 9:30 am	ON SYSTEM MODELING AND ANALYSIS USING DQFRAME IMPEDANCE MODELS Ignacio Vieto, Jian Sun; Rensselaer Polytechnic Institute
O3-5 (ID: 262) 9:30 am – 9:50 am	COCKCROFT-WALTON BASED HVDC SYSTEM João Cunha, Sonia Pinto, J. F. Silva; Instituto Superior Tècnico, Universidade de Lisboa

Coffee Break: 9:50 am – 10:20 am

Oral Session 4: Modeling and Control of Grid-Level Converters
Chair: XXX

O4-1 (ID: 24) 10:20 am – 10:40 am	NONLINEAR CONTROL FOR SINGLE-STAGE SINGLE-PHASE GRID-CONNECTED PHOTOVOLTAIC SYSTEMS Pablo Rivera, Michael McIntyre, Mohammad Mohebbi, Joseph Latham; University of Louisville
O4-2 (ID: 67) 10:40 am – 11:00 am	STABILITY ANALYSIS USING POINCARE MAP IN THE TIME-DOMAIN FOR GRID-CONNECTED INVERTER Toshiji Kato, Kaoru Inoue, Yuki Takami; Doshisha University
O4-3 (ID: 85)	A NEW INTERCONNECTED MODULAR MULTILEVEL CONVERTER (IMMC) WITH

11:00 am – 11:20 pm	SINUSOIDAL VOLTAGE OUTPUT SUITABLE FOR HIGH PERFORMANCE AC DRIVES Ahmed Allehyani, Ahmed Morsy, Prasad Enjeti; Texas A&M University
O4-4 (ID: 88) 11:20 pm – 11:40 am	LARGE-SIGNAL IMPEDANCE FOR THE ANALYSIS OF SUSTAINED RESONANCE IN GRID-CONNECTED CONVERTERS Shahil Shah, Leila Parsa; Rensselaer Polytechnic Institute
O4-5 (ID: 194) 11:40 am – 12:00 pm	STABILITY IDENTIFICATION AND ROBUST DESIGN OF LCL FILTERS FOR GRID-CONNECTED INVERTERS CONSIDERING GRID-VOLTAGE FEEDFORWARD REGULATOR Minghui Lu, Frede Blaabjerg; Aalborg University

Lunch Break/Technical Committee 1 Meeting (Oksenberg Room): 12:00 pm – 12:50 pm

Poster Session I: 12:50 pm – 2:40 pm

Coffee Break: 2:20 pm – 2:50 pm

Oral Session 5: DC/DC Converters
Chair: Khurram Afridi (University of Colorado Boulder)

O5-1 (ID: 165) 2:50 pm – 3:10 pm	OPTIMIZATION AND COMPARISON OF HYBRID-RESONANT SWITCHED-CAPACITOR DC-DC CONVERTER TOPOLOGIES Hassan Kiani, Jason Stauth; Dartmouth College
O5-2 (ID: 203) 3:10 pm – 3:30 pm	VARIABLE-INVERTER- RECTIFIER-TRANSFORMER: A HYBRID ELECTRONIC AND MAGNETIC STRUCTURE ENABLING ADJUSTABLE HIGH STEP-DOWN CONVERSION RATIOS Mike K. Ranjram, Intae Moon, David J. Perreault; Massachusetts Institute of Technology
O5-3 (ID: 222) 3:30 pm – 3:50 pm	DISCONTINUOUS CONDUCTION MODE OF MULTI-LEVEL FLYING CAPACITOR DC-DC CONVERTERS AND LIGHT-LOAD DIGITAL CONTROLLER Nenad Vukadinovic[1], Aleksandar Prodic[1], Brett Miwa[2], Cory Arnold[2], Michael Baker[2]; [1]University of Toronto, [2]Maxim Integrated
O5-4 (ID: 241) 3:50 pm – 4:10 pm	INVESTIGATION OF CAPACITOR VOLTAGE BALANCING IN PRACTICAL IMPLEMENTATIONS OF FLYING CAPACITOR MULTILEVEL CONVERTERS Zichao Ye, Yutian Lei, Zitao Liao, Robert Pilawa-Podgurski; University of Illinois at Urbana-Champaign
O5-5 (ID: 252) 4:10 pm – 4:30 pm	DIGITAL SELF-TUNING CONTROLLER FOR ZCS RESONANT CONVERTERS OPERATING IN THE 10SMHZ-RANGE Alon Cervera, Mor Mordechai Peretz; Ben Gurion University at the Negev

Break: 4:30 pm – 4:50 pm

Oral Session 6: Resonant Converters
Chair: Michael Seeman (Eta One Power, Inc.)

O6-1 (ID: 137) 4:50 pm – 5:10 pm	POWER DENSITY OPTIMIZATION OF RESONANT TANKS USING STANDARD CAPACITORS Phyo Aung Kyaw, Aaron L. F. Stein, Charles R. Sullivan; Dartmouth College
O6-2 (ID: 144) 5:10 pm – 5:30 pm	MODELING THE EFFECT OF DEAD-TIME ON SOFT-SWITCHING OF VARIABLE-FREQUENCY MODULATED SERIES-RESONANT DAB CONVERTER Muhammad Yaqoob, Ka-Hong Loo, Yuk-Ming Lai; The Hong Kong Polytechnic University
O6-3 (ID: 198) 5:30 pm – 5:50 pm	TRANSFER-POWER MEASUREMENT: A NON-CONTACT METHOD FOR FAIR AND ACCURATE METERING OF WIRELESS POWER TRANSFER IN ELECTRIC VEHICLES Sung Yul Chu, Al-Thaddeus Avestruz; University of Michigan

O6-4 (ID: 213) 5:50 pm – 6:10 pm	ZERO VOLTAGE SWITCHING ASSISTANCE DESIGN FOR DC-DC SERIES RESONANT CONVERTER WITH CONSTANT INPUT CURRENT FOR WIDE LOAD RANGE Tarak Saha, Hongjie Wang, Regan Zane; Utah State University
O6-5 (ID: 232) 6:10 pm – 6:30 pm	MULTI-OBJECTIVE OPTIMIZATION OF CAPACITIVE WIRELESS POWER TRANSFER SYSTEMS FOR ELECTRIC VEHICLE CHARGING Kate Doubleday, Ashish Kumar, Brandon Regensburger, Saad Pervaiz, Sreyam Sinha, Zoya Popovic, Khurram Afridi; University of Colorado Boulder

Wednesday, July 12, 2017

Oral Session 7: Power Systems and Smart Grid
Chair: Jian Sun (Rensselaer Polytechnic Institute)

O7-1 (ID: 33) 8:10 am – 8:30 am	REAL-TIME IMPEDANCE-BASED STABILITY ASSESSMENT OF GRID CONVERTER INTERACTIONS Tuomas Messo[1], Roni Luhtala[1], Dongsheng Yang[2], Tomi Roinila[1], Xiongfei Wang[2] , Frede Blaabjerg[2]; [1]Tampere University of Technology, [2]Aalborg University
O7-2 (ID: 77) 8:30 am – 8:50 am	A LOAD IMPEDANCE SPECIFICATION OF DC POWER SYSTEMS FOR DESIRED DC LINK DYNAMICS AND REDUCED CONSERVATIVENESS Yeonjung Kim, Syam Kuman Pidaparthy, Byungcho Choi; Kyungpook National University
O7-3 (ID: 133) 8:50 am – 9:10 am	COMPARISON OF VIRTUAL OSCILLATOR AND DROOP CONTROL IN ISLANDED MICROGRIDS Miguel Rodriguez[1], Brian Johnson[1], Mohit Sinha[2], Sairaj Dhople[2]; [1]National Renewable Energy Laboratory, [2]University of Minnesota
O7-4 (ID: 148) 9:10 am – 9:30 am	A FAULT TOLERANT CONTROL APPROACH FOR A THREE STAGE CASCADED MULTILEVEL SOLID STATE TRANSFORMER Naga Brahmendra Yadav Gorla, Sandeep Kolluri, Sanjib Kumar Panda, Priyesh Jagdishchandra Chauhan; National University of Singapore
O7-5 (ID: 173) 9:30 am – 9:50 am	MODELING AND STABILITY ANALYSIS OF CURRENT CONTROLLERS FOR MULTI-PARALLELED GRID-CONNECTED CONVERTERS WITH LCL-FILTERS Jorge Rodrigo Massing[1], Gustavo Guilherme Koch[1], Alexandre Trevisan Pereira[1], Humberto Pinheiro[1], Vinícius Foletto Montagner [1], Ricardo Coração De Leão Fontoura Oliveira[2]; [1]Federal University of Santa Maria, [2]University of Campinas

Coffee Break: 9:50 am – 10:20 am

Oral Session 8: AC/DC Converters
Chair: Mohamed Badawy

O8-1 (ID: 105) 10:20 am – 10:40 am	TWO-SAMPLE PLL WITH IMPROVED FREQUENCY RESPONSE APPLIED TO SINGLE-PHASE CURRENT SENSORLESS BRIDGELESS PFCS Paula Lamo, Felipe López, Alberto Pigazo, F. J. Azcondo; University of Cantabria
O8-2 (ID: 185) 10:40 am – 11:00 am	DESIGN AND EVALUATION OF A 6.6 KW GAN CONVERTER FOR ONBOARD CHARGER APPLICATIONS CONVERTER Gui-Jia Su, Cliff White, Zhenxian Liang; Oak Ridge National Laboratory
O8-3 (ID: 201) 11:00 am – 11:20 am	ACTIVE VARIABLE REACTANCE RECTIFIER - A NEW APPROACH TO COMPENSATING FOR COUPLING VARIATIONS IN WIRELESS POWER TRANSFER SYSTEMS Sreyam Sinha, Ashish Kumar, Khurram Afridi; University of Colorado Boulder
O8-4 (ID: 236) 11:20 am – 11:40 am	CONTROL DESIGN OF AN ACTIVE POWER PULSATION BUFFER USING AN EQUIVALENT SERIES-RESONANT IMPEDANCE MODEL

	Nathan Brooks, Shibin Qin, Robert Pilawa-Podgurski; University of Illinois at Urbana-Champaign
O8-5 (ID: 256) 11:40 am – 12:00 pm	MULTI-OBJECTIVE DESIGN AND OPTIMIZATION OF A VIENNA RECTIFIER WITH UNCERTAINTY QUANTIFICATION Niloofar Rashidi Mehrabadi, Qiong Wang, Rolando Burgos, Dushan Boroyevich; CPES - Virginia Tech

Lunch/SystemX Private Lunch (Oksenberg Room): 12:00 pm – 12:50 pm

Poster Session II: 12:50 pm – 2:40 pm

Coffee Break: 2:20 pm – 2:50 pm

Oral Session 9: Modeling of Passive Components
Chairs: Minjie Chen (Princeton University) and David J. Perreault (Massachusetts Institute of Technology)

O9-1 (ID: 49) 2:50 pm – 3:10 pm	LITZ WIRE IN THE MHZ RANGE: MODELING AND IMPROVED DESIGNS Bradley Reese, Charles Sullivan; Dartmouth College
O9-2 (ID: 130) 3:10 pm – 3:30 pm	ANALYTICAL WINDING LOSS CALCULATION FOR HIGH-FREQUENCY LOW-PERMEABILITY INDUCTORS Ernesto L. Barrios, Alfredo Ursua, Luis Marroyo, Pablo Sanchis; Public University of Navarre
O9-3 (ID: 72) 3:30 pm – 3:50 pm	A UNIFIED MODEL FOR HIGH-POWER, AIR-CORE TOROIDAL PCB INDUCTORS Grayson Zulauf, Wei Liang, Juan Rivas-Davila; Stanford University
O9-4 (ID: 171) 3:50 pm – 4:10 pm	LITZ WIRE LOSSES: EFFECTS OF TWISTING IMPERFECTIONS Thomas Guillod, Jonas Huber, Florian Krismer, Johann W. Kolar; ETH Zurich/PES
O9-5 (ID: 202) 4:10 pm – 4:30 pm	AXISYMMETRIC FINITE ELEMENT MODELLING OF COMPOUND MAGNETIC MATERIALS BASED ON MAGNETIC MICRO-WIRES BY MEANS OF EQUIVALENT HOMOGENEOUS MATERIAL Alberto Delgado[1], Jesús Oliver[1], Jose Cobos[1], Jorge Rodriguez[2]; [1]Universidad Politecnica de Madrid, [2]PREMO

Coffee Break: 4:30 pm – 4:50 pm

Oral Session 10: Modeling of Power Electronics Devices
Chair: XXX

O10-1 (ID: 30) 4:50 pm – 5:10 pm	SUBSTRATE POTENTIAL OF HIGH-VOLTAGE GAN-ON-SI HEMTS AND HALF-BRIDGES: STATIC AND DYNAMIC FOUR-TERMINAL CHARACTERIZATION AND MODELING Stefan Moench, Cristino Salcines, Yajing Li, Ingmar Kallfass; Institute of Robust Power Semiconductor Sustems, University of Stuttgart
O10-2 (ID: 62) 5:10 pm – 5:30 pm	DESIGN OF RCD SNUBBER CONSIDERING WIRING INDUCTANCE FOR MHZ-SWITCHING OF SIC MOSFET Yuki Yamashita, Jun Furata, Sho Inamori, Kazutoshi Kobayashi; Kyoto Institute of Technology
O10-3 (ID: 82) 5:30 pm – 5:50 pm	INVESTIGATION OF IGBT SWITCHING ENERGY LOSS AND PEAK OVERVOLTAGE USING DIGITAL ACTIVE DRIVES Gwilym Jones, Daniel Rogers; Department of Engineering Science, University of Oxford
O10-4 (ID: 101) 5:50 pm – 6:10 pm	USING MULTI TIME-SCALE ELECTRO-THERMAL SIMULATION APPROACH TO EVALUATE SIC MOSFET POWER CONVERTER IN VIRTUAL PROTOTYPING DESIGN

	TOOL Ke Li, Paul Evan, Mark Johnson; University of Nottingham
O10-5 (ID: 179) 6:10 pm – 6:30 pm	EVALUATION OF GAN TRANSISTOR LOSSES AT MHZ FREQUENCIES IN SOFT SWITCHING CONVERTERS Kawin Surakitbovorn, Juan Rivas-Davila; Stanford University

Award Committee Meeting: 6:30 pm – 7:00 pm

Award Dinner & Closing Event (Stanford Faculty Club): 7:00 pm – 10:00 pm

Poster Session I

Tuesday, July 11, 2017 12:50 pm – 2:40 pm

Chairs: Daniel Costinett *(University of Tennessee)*, Brandon Grainger *(University of Pittsburgh)*, Brad Lehman *(Northeastern University)*

P01: AC-DC Rectifier

P01-1 (ID: 196)	A SIMPLE CONTROL ARCHITECTURE FOR FOUR-SWITCH BUCK-BOOST CONVERTER BASED POWER FACTOR CORRECTION RECTIFIER Usama Anwar, Dragan Maksimovic, Khurram Afridi; University of Colorado Boulder
P01-2 (ID: 154)	A NOVEL AC/DC CONVERTER TOPOLOGY USING A BIDIRECTIONAL GAN SWITCH. APPLICATION: LED DRIVER Othman Ladhari, Léo Sterna, Dominique Bergogne, Pierre Perichon; CEA Leti
P01-3 (ID: 141)	ACTIVE POWER DECOUPLING METHODS FOR THREE-PHASE GRID-CONNECTED CONVERTERS UNDER UNBALANCED GRID CONDITION Jiayu Zhou, Fen Tang, Songwei Huang, Poh Chiang Loh, Zhen Xin; National Active Distribution Network Technology Research Center in Beijing Jiaotong University
P01-4 (ID: 100)	IMPEDANCE CHARACTERISTICS MODELING AND VOLTAGE FEED-FORWARD COMPENSATION OF A TWO-TERMINAL ACTIVE CAPACITOR Haoran Wang, Huai Wang; Department of Energy Technology, Aalborg University

P02: Applications

P02-1 (ID: 191)	A COMPACT RF POWER INVERTER WITH REDUCED EMI FOR A CUBESAT ELECTROTHERMAL MICRO-THRUSTER Wei Liang[1], Xiaofan Cui[2], Luke Raymond[1], Lei Gu[1] Christine Charles[3], Rod Boswell[3], Juan Rivas-Davila[1]; [1]Stanford University, [2]University of Michigan, [3]The Australian National University
P02-2 (ID: 125)	OPERATION PERFORMANCE OF DC CORE BIAS POWER SUPPLY OF KLYSTRON IN LINAC COHERENT LIGHT SOURCE Xupeng Chen, Paul Stiles, Jeffrey de Lamare; SLAC National Accelerator Lab
P02-3 (ID: 120)	APPLYING A MACHINE LEARNING TECHNIQUE TO RECOGNIZE ARC IN VEHICLE 48 ELECTRICAL SYSTEMS Amin Emrani[1], Mohammad Pourhomayoun[2]; [1]Ford Motor Company, [2]California State University, Los Angeles

P03: DC-AC Inverter

P03-1 (ID: 254)	MINIMUM SWITCHING SPACE VECTOR MODULATION FOR Z-SOURCE INVERTER Wencong Zhang, Seth Sanders; EECS UC Berkeley
P03-2 (ID: 142)	HIGH-EFFICIENCY SINGLE-PHASE THREE-LEVEL BIDIRECTIONAL INVERTER Woo-Young Choi; Chonbuk National University
P03-3 (ID: 139)	HIGH PERFORMANCE CURRENT CONTROL STRATEGY FOR GRID-CONNECTED BOOST DC-AC INVERTER Songwei Huang, Fen Tang, Qi Xiao, Poh Chiang Loh, Zhen Xin; National Active Distribution Network Technology Research Center, Beijing Jiaotong University

P03-4 (ID: 134)	INTERNAL PARALLELED ACTIVE NEUTRAL POINT CLAMPED CONVERTER WITH LOGIC-BASED FLYING CAPACITOR VOLTAGE BALANCING Zhongyi Quan, Yunwei Li, Yuzhuo Li; University of Alberta
P03-5 (ID: 117)	CURRENT THD ANALYSIS IN DIRECT MODEL PREDICTIVE CONTROL Baljit Riar[1], Tobias Geyer[2], Regan Zane[1]; [1]Utah State University, [2]ABB
P03-6 (ID: 65)	DC RIPPLE MITIGATION OF SINGLE-PHASE CONVERTERS FOR REDUCED HARMONIC IMPACT Caniggia Viana, Hannah Mundel, Theodore Soong, Peter Lehn; University of Toronto
P03-7 (ID: 46)	CONTROL OF ZVS SINGLE-PHASE GRID INVERTER WITH HIGHER POWER QUALITY Yenan Chen, Dehong Xu; Zhejiang University
P03-8 (ID: 44)	REDUCED-ORDER STRUCTURE-PRESERVING MODEL FOR PARALLEL-CONNECTED THREE-PHASE GRID-TIED INVERTERS Victor Purba[1], Saber Jafarpour[2], Brian Johnson[3], Francesco Bullo[2], Sairaj Dhople[1]; [1]University of Minnesota, [2]University of California, Santa Barbara, [3]National Renewable Energy Laboratory
P03-9 (ID: 7)	SPACE VECTOR MODULATION FOR THREE-LEVEL SIMPLIFIED NEUTRAL POINT CLAMPED (3L-SNPC) INVERTER Alexander Lange, Bernhard Piepenbreier; Friedrich-Alexander-University Erlangen-Nuremberg

P04: PMIC

P04-1 (ID: 181)	MODELING HIGH CURRENT INTEGRATED POWER CONVERTERS Gabriel Gabian, Jordan Gamble, Benjamin Blalock, Daniel Costinett; University of Tennessee
P04-2 (ID: 145)	NOVEL ACTIVE NEUTRAL POINT CLAMPED HALF-BRIDGE CONVERTER IMPLEMENTED WITH 14 NM BULK CMOS TECHNOLOGY Pedro Andre Martins Bezerra[1], Riduan Khaddam-Aljameh[1], Florian Krismer[1], Johann Kolar[1], Arvind Sridhar[2], Thomas Brunschwiler[2], Thomas Toifl[2]; [1]ETH Zurich, [2]IBM Research Zurich

P05: DC-DC Converter

P05-1 (ID: 242)	HARDWARE EFFICIENT DIGITAL AUTO-TUNING AVERAGE CURRENT-MODE CONTROLLER Timur Vekslender, Eli Abramov, Or Kirshenboi, Mor Peretz; Ben-Gurion University of the Negev, Beer-Sheba
P05-2 (ID: 240)	STATE SPACE AVERAGING MODEL OF A DUAL STAGE CONVERTER IN DISCONTINUOUS CONDUCTION MODE Akarsh Murthy, Mohamed Badawy; San Jose State University
P05-3 (ID: 234)	A HIGH-POWER-DENSITY LOW-PROFILE DC-DC CONVERTER FOR CELLPHONE BATTERY CHARGING APPLICATIONS Yushi Liu, Ashish Kumar, Saad Pervaiz, Dragan Maksimovic, Khurran Afridi; University of Colorado Boulder
P05-4 (ID: 189)	SMALL-SIGNAL ANALYSIS OF S-HYBRID STEP-DOWN DC-DC CONVERTER Gab-Su Seo, Hanh-Phuc Le; University of Colorado Boulder
P05-5 (ID: 166)	CURRENT CONTROL AND PWM DIMMING IN AN AUTOMOTIVE LED DRIVER BASED ON A CUK CONVERTER

	Alihossein Sepahvand[1], Ashish Kumar[1], Montu Doshi[2], Vahid Yousefzadeh[2], James Patterson[2], Khurram Afridi[1], Dragan Maksimovic[1]; [1]University of Colorado Boulder, [2]Texas Instruments
P05-6 (ID: 138)	MODELING AND CONTROL OF AN INTERLEAVED DC-DC MULTILEVEL BOOST CONVERTER Carlos Villarreal-Hernandez[1], Jonathan Mayo-Maldonado[1], Jesus Valdez-Resendiz[1], Julio Rosas-Caro[2]; [1]Tecnologico de Monterrey, [2]Universidad Panamericana
P05-7 (ID: 98)	A NOVEL TWO SWITCH BUCK-BOOST CONVERTER WITH REDUCED SWITCHING AND CONDUCTING COMPONENTS Byung Hee Moon, Hai Young Jung, Sung Hwan Kim, Seok-Hyun Lee; Inha University
P05-8 (ID: 92)	DIRECT DRIVE OF A BUCK CONVERTER BY DELTA-SIGMA MODULATION AT 13.56-MHZ SAMPLING Yuhei Sadanda, Takafumi Okuda, Takashi Hikihara; Kyoto University
P05-9 (ID: 28)	SLIDING MODE CONTROL WITH INDUCTOR CURRENT OBSERVER FOR INTERLEAVED DC-DC CONVERTERS Marc Kanzian[1], Matteo Agostinelli[1], Mario Huemer[2]; [1]Infineon Technologies, Austria AG, [2]Jogannes Kepler University
P05-10 (ID: 20)	A FILTER-BASED CONTROLLER FOR A BUCK CONVERTER Mohammad Mohebbi, Michael McIntyre, Joseph Latham, Pablo Rivera; University of Louisville
P05-11 (ID: 9)	SYSTEMATIC APPROACH TO OPTIMAL SC CONVERTER SYNTHESIS FOR MULTI VOLTAGE-GAIN-RATIO APPLICATIONS Yaqub Mahnashi, Fang Peng; Michigan State University
P05-12 (ID: 169)	BYPASS CAPACITANCE ALLOCATION AND VOLTAGE RIPPLE CONSIDERATIONS IN RESONANT SWITCHED CAPACITOR CONVERTERS Jan Rentmeister, Jason Stauth; Dartmouth College

P06: Design, Modeling and Control of Power Electronic System

P06-1 (ID: 259)	FREQUENCY-DOMAIN COUPLING IN TWO-LEVEL VSC SMALL-SIGNAL DYNAMICS Ignacio Vieto[1], Xiong Du[2], Heng Nian[3], Jian Sun[1]; [1]Rensselaer Polytechnic Institute, [2]Chongqing University, [3]Zhejiang University
P06-2 (ID: 249)	QUANTIZATION EFFECTS IN THE IDENTIFICATION OF THE POWER CONVERTERS FREQUENCY RESPONSE Marlon Alberto Granda, Cristina Fernandez, Pablo Zumel, Andres Barrado; Carlos III University of Madrid
P06-3 (ID: 192)	ON DISCRETE-TIME MODELS FOR GRID-CONNECTED CONVERTERS WITH L- AND LCL-FILTER IN SYNCHRONOUS REFERENCE FRAME Jorge Rodrigo Massing, Fernanda De Morais Carnielutti, Humberto Pinheiro; Federal University of Santa Maria
P06-4 (ID: 187)	ACCURATE SECOND-ORDER INTERPOLATION FOR POWER ELECTRONIC CIRCUIT SIMULATION Jeroen Tant, Johan Driesen; KU Leuven
P06-5 (ID: 161)	USING ASYMMETRIC CURRENT CONTROLLER TO IMPROVE THE STABILITY OF GRID-INVERTER SYSTEM DUE TO PLL EFFECT Xiong Du[1], Guoning Wang[1], Ying Shi[1], Yougeng Yang[1], Xiaomeng Zou[1], Heng-Ming Tai[2], Yongliang Ji[3]; [1]Chongqing University, [2]Tulsa University, [3]State Grid, China
P06-6 (ID: 143)	SIMPLE AND ROBUST PLL ALGORITHM FOR ACCURATE PHASE TRACKING UNDER GRID DISTURBANCES David Arricibita, Ernesto Barrios, Luis Marroyo; Public University of Navarre

P06-7 (ID: 115)	SQUARE WAVE BASED SMALL SIGNAL MODELING OF FREQUENCY CONTROLLED CONVERTERS Julian Dobusch[1], Christian Oeder[2], Daniel Kuebrich[2], Thomas Duerbaum[1]; [1]Friedrich-Alexander University of Erlangen-Nuremberg, [2]University of Erlangen-Nuremberg
P06-8 (ID: 114)	COMPARISON OF FPGA- AND MICROCONTROLLER-BASED CONTROL OF A HIGH-DYNAMIC POWER ELECTRONIC CONVERTER Tino Kahl, Sibylle Dieckerhoff; Technical University of Berlin
P06-9 (ID: 102)	ANALYTICAL PERFORMANCE VERIFICATION OF FCS-MPC APPLIED TO POWER ELECTRONIC CONVERTERS: A MODEL CHECKING APPROACH Mateja Novak, Ulrik Mathias Nyman, Tomislav Dragicevic, Frede Blaabjerg; Department of Energy Technology, Aalborg University
P06-10 (ID: 99)	TMS320F28335 DSP PROGRAMMING USING MATLAB SIMULINK EMBEDDED CODER: TECHNIQUES AND ADVANCEMENTS Akrem Elrajoubi, Simon Ang, Ali Abushaiba; University of Kansas
P06-11 (ID: 56)	MULTI-MEGAWATT-SCALE POWER-HARDWARE-IN-THE-LOOP INTERFACE FOR TESTING ANCILLARY GRID SERVICES BY CONVERTER-COUPLED GENERATION Przemyslaw Koralewicz, Vahan Gevorgian, Robb Wallen; NREL
P06-12 (ID: 42)	AN LCPSL FILTER WITH MULTI-TUNED TRAPS FOR GRID-CONNECTED CONVERTERS Fang Wu, Fang Shen, Zhixiong Zhang, Jie Ye, Anwen Shen, Jinbang Xu; Huazhong University of Science and Technology
P06-13 (ID: 39)	A SIMPLE AND EFFECTIVE TIME DELAY COMPENSATION METHOD FOR GRID-CONNECTED INVERTER WITH AN LCL FILTER Masaki Semasa, Toshiji Kato, Kaoru Inoue; Doshisha University
P06-14 (ID: 11)	SERVO CONTROL OF SOLENOID ACTUATORS USING AUGMENTED FEEDBACK LINEARIZATION Ramesh K Govindarajan[1], Giri Venkataramanan[2]; [1]John Deere Electronic Solutions, [2]University of Wisconsin-Madison

P07: Reliability

P07-1 (ID: 103)	ANALYSIS AND DESIGN OF AN ADAPTIVE PARAMETER ESTIMATOR FOR POWER ELECTRONICS CIRCUITS Jason Poon, Seth Sanders; UC Berkeley
P07-2 (ID: 43)	MODELLING AND EVALUATION OF THERMAL PERFORMANCE OF ROTOR-SIDE CONVERTERS OF DFIG WIND TURBINES Jun Li[1], Yi Deng[2]; [1]ABB US Corporate Research Center, [2]Georgia Institute of Technology

Poster Session II

Wednesday, July 12, 2017 12:50 pm – 2:40 pm

Chairs: Jose Cobos *(Universidad Politecnica de Madrid)*, Kazutoshi Kobayashi *(Kyoto Institute of Technology)*, Hanh-Phuc Le *(University of Colorado Boulder)*, Dragan Maksimovic *(University of Colorado Boulder)*

P08: Power Devices

P08-1 (ID: 215)	A SIMPLIFIED IGBT BEHAVIORAL MODEL WITH A TAIL CURRENT MODULE FOR SWITCHING LOSSES ESTIMATION Gengyao Li[1], Hao Wen[1], Chengcheng Yao[1], Xi Lu[2], Zhuxian Xu[2], Ke Zou[2], Jun Kikuchi[2], Chingchi Chen[2], Jin Wang[1]; [1]The Ohio State University, [2]Ford
P08-2 (ID: 127)	ACCURATE, ROBUST DIODE RECTIFIER MODELS IN SIMULINK Heath Hofmann; The University of Michigan
P08-3 (ID: 107)	SILICON AND SIC MOSFET ELECTRO-THERMAL PERFORMANCE ASSESSMENT WITHIN SMART DISTRIBUTED GENERATION INVERTERS WITH DYNAMIC REACTIVE COMPENSATION GRID SUPPORT FOR RESILIENT MICROGRIDS Patrick Lewis[1], Shimeng Huang[2], Brandon Grainger[1]; [1]University of Pittsburgh, [2]ANSYS
P08-4 (ID: 87)	MODELLING AND QUANTIFICATION OF POWER LOSSES DUE TO DYNAMIC ON-STATE RESISTANCE OF GAN E-MODE HEMT Ole Christian Spro, Dimosthenis Peftitsis, Ole-Morten Midtgård, Tore Undeland; Norwegian University of Science and Technology
P08-5 (ID: 21)	AN ACCURATE COMPACT MODEL OF GALLIUM NITRIDE GATE INJECTION TRANSISTOR FOR NEXT-GENERATION OF POWER ELECTRONICS DESIGN Ramchandra Kotecha, Yuzhi Zhang, Nan Zhu, Arman Rashid, Tom Vrotsos, Alan Mantooth, Andrea Wallace; University of Arkansas
P08-6 (ID: 76)	REDEFINITION OF SAFETY OPERATING AREA (SOA) CONSIDERING TRANSIENT THERMAL DYNAMICS OF IGBT MODULE Yuexia Liu, Meng Huang, Yi Liu, Xiaoming Zha; Wuhan University

P09: HVDC

P09-1 (ID: 175)	DECENTRALIZED PI PASSIVITY-BASED CONTROL OF MULTITERMINAL MMC-BASED HVDC TRANSMISSION SYSTEMS Gilbert Bergna Diaz[1], Daniele Zonetti[2], Santiago Sanchez[1], Elisabetta Tedeschi[1], Romeo Ortega[3]; [1]NTNU, [2]IMDEA Energy, [3]LSS/CNRS/Supéle
P09-2 (ID: 84)	HVDC MESHED MULTITERMINAL NETWORKS FOR OSHORE WIND FARMS: DYNAMIC MODEL, LOAD FLOW AND EQUILIBRIUM Alejandro Garces[1], Santiago Sanchez[2], Gilbert Bergna Diaz[2], Elisabetta Tedeschi[2]; [1]UTP, [2]NTNU
P09-3 (ID: 41)	A CONCURRENT COMMUTATION FAILURE DETECTION METHOD FOR MULTI-INFEED HVDC SYSTEMS Xiyang Liu, Zengping Wang, Yujin Yang, Linze Li; North China Electric Power University

P10: Modular Multilevel Converters

P10-1 (ID: 184)	ISOLATED RESONANT MODULAR MULTILEVEL CONVERTERS WITH LARGE STEP-RATIO FOR MVDC APPLICATIONS Xin Xiang, Xiaotian Zhang, Geraint Chaffey, Yunjie Gu, Tim Green; Imperial College
P10-2 (ID: 147)	INTEGRATING BATTERY INTO MMC SUBMODULE USING PASSIVE TECHNIQUE Sigurd Byrkjedal Wersland, Anirudh Budnar Acharya, Lars Einar Norum; Norwegian University of Science and Technology
P10-3 (ID: 132)	A UNIFIED MODULAR MULTILEVEL DC/DC CONVERTER STRUCTURE WITH FLEXIBLE AC POWER TRANSFER CONTROLS Sunny Kung, Gregory Kish; University Alberta
P10-4 (ID: 110)	HARMONIC ANALYSIS OF INTERLEAVED VOLTAGE SOURCE CONVERTERS Zhongyi Quan, Yunwei Li; University of Alberta
P10-5 (ID: 94)	A CONTROL SCHEME FOR UTILIZING ENERGY STORAGE OF THE MODULAR MULTILEVEL CONVERTER IN PROVIDING POWER OSCILLATION DAMPING SERVICE Abel Taffese[1], Elisabetta Tedeschi[1], Erik C. W. de Jong[2]; [1]NTNU, [2]Eindhoven University of Technology
P10-6 (ID: 55)	MODULATED MODEL BASED PREDICTIVE CONTROL WITH SWITCHER OF REDUNDANT STATES FOR A THREE-PHASE CASCADE H-BRIDGE MULTILEVEL STATCOM Leonardo Comparatore[1], Jorge Esteban Rodas Benítez[1], Raul Gregor[1], Marco Rivera[2]; [1]Facultad de ingeniería - Universidad Nacional de Asunción, [2]University of Talca
P10-7 (ID: 54)	MODEL PREDICTIVE CIRCULATING CURRENT REGULATOR FOR SINGLE-PHASE MMC Joan Marc Rodriguez Bernuz, Adrià Junyent Ferré; Imperial College
P10-8 (ID: 52)	SOFT-SWITCHING OF THE DIRECTOR SWITCH IN THE ALTERNATE ARM CONVERTER USING BLOCKED SUB-MODULES Michael Merlin[1], Paul Judge[2], Geraint Chaffey[2], James Wylie[2], Tim C. Green[2]; [1]MMC, [2]Imperial College
P10-9 (ID: 19)	A NOVEL IMPLEMENTATION OF DIGITAL CONTROL STRATEGY FOR MULTILEVEL INVERTERS USING FPGA WAVECT CONTROLLER Chinmayi[1], B G Shivaleelavathi[2]; [1]East West Institute of Technology, [2]JSS Academy for Technical Education
P10-10 (ID: 8)	NOVEL INSIGHT INTO THE OUTPUT CURRENT RIPPLE FOR MULTILEVEL AND MULTIPHASE CONVERTER TOPOLOGIES Alexandre Christe, Drazen Dujic; POWER ELECTRONICS LABORATORY, Switzerland

P11: Passives

P11-1 (ID: 162)	CAN HIGHER FREQUENCIES REDUCE MAGNETICS SIZE? AN EXPLORATION OF THE IMPACT OF FREQUENCY ON OPTIMIZED FLYBACK TRANSFORMERS Benedict Foo, Aaron Stein, Charles Sullivan; Dartmouth College
P11-2 (ID: 75)	RELIABILITY-ORIENTED DESIGN OF HYBRID DC BANK IN SINGLE PHASE INVERTER Yi Liu, Meng Huang, Yuexia Liu, Xiaoming Zha; Wuhan University
P11-3 (ID: 50)	THE EFFECT OF PERMEABILITY ON MAGNETIC CORE PERFORMANCE FACTORS Bradley Reese, Charles Sullivan; Dartmouth College

P12: Photovoltaic Applications

P12-1 (ID: 255)	AN ACCURATE MPPT SCHEME FOR PHOTOVOLTAIC MODULAR-BASED CONVERSION UNITS: A ROBUST SENSORLESS PREDICTIVE APPROACH

	Hamed Nademi[1], Lars Norum[2], Sigurd Byrkjedal Wersland[2]; [1]ABB, [2]NTNU University
P12-2 (ID: 245)	MAXIMUM POWER POINT TRACKING FOR SOLAR PANEL COMPANION INVERTERS Prasanth Kumar Sahu, Madhav Manjrekar, Ronak Bhatt; University of North Carolina at Charlotte
P12-3 (ID: 193)	STABILITY ASSESSMENT OF UTILITY PV INTEGRATION TO THE DISTRIBUTED SYSTEMS BASED ON D-Q FRAME IMPEDANCES AND GNC Ye Tang, Rolando Burgos, Chi Li, Dushan Boroyevich; CPES, Virginia Tech
P12-4 (ID: 164)	INCIDENCE SOLAR POWER ANALYSIS OF PV PANELS WITH CURVED REFLECTORS Jin S. Choi[1], Ji H. Kim[1], Chun T. Rim[2]; [1]KAIST, [2]GIST

P13: Resonant Converters

P13-1 (ID: 260)	MAGNETICS DESIGN AND OPTIMIZATION FOR TAPPED-SERIES-CAPACITOR (TSC) POWER CONVERTERS Minjie Chen; Princeton University
P13-2 (ID: 228)	A MULTI-RESONANT GATE DRIVER FOR VHF RESONANT CONVERTERS Lei Gu, Wei Liang, Juan Rivas-Davila; Stanford University
P13-3 (ID: 220)	IMPEDANCE-BASED STABILITY ANALYSIS AND DESIGN CONSIDERATIONS FOR DC CURRENT DISTRIBUTION WITH LONG TRANSMISSION CABLE Hongjie Wang, Tarak Saha, Regan Zane; Utah State University
P13-4 (ID: 163)	SINGLE-STAGE ISOLATED 48V-TO-1.8V POINT-OF-LOAD CONVERTER UTILIZING AN IMPEDANCE CONTROL NETWORK AND INTEGRATED MAGNETIC STRUCTURES Ashish Kumar, Saad Pervaiz, Khurram Afridi; University of Colorado Boulder
P13-5 (ID: 155)	ANALYSIS OF HIGH EFFICIENCY MULTISTAGE MATCHING NETWORKS WITH VOLUME CONSTRAINT Phyo Aung Kyaw, Aaron L. F. Stein, Charles R. Sullivan; Thayer School of Engineering at Dartmouth
P13-6 (ID: 146)	ACCURATE ZVS BOUNDARY ANALYSIS FOR BIDIRECTIONAL DUAL-BRIDGE SERIES RESONANT DC-DC CONVERTERS Weijian Han[1], Luca Corradini[2]; [1]Northwestern Polytechnical University, [2]University of Padova
P13-7 (ID: 126)	DIGITAL CONTROLLER FOR OPTIMIZED EFFICIENCY AND EXTENDED OPERATING RANGE IN HIGH-FREQUENCY QUASIRESONANT DC-DC BUCK CONVERTERS Eslam Abdelhamid[1], Luca Corradini[1], Paolo Mattavelli[1], Matteo Agostinelli[2]; [1]University of Padova, [2]Infineon Technologies Austria AG
P13-8 (ID: 124)	ISOLATED RESONANT DC-DC CONVERTERS WITH A LOOSELY COUPLED TRANSFORMER Sanghyeon Park, Juan Rivas-Davila; Stanford University
P13-9 (ID: 122)	COMBINED MULTI-LEVEL TWO-PHASE LLC CONVERTER USING A FLYING CAPACITOR FOR HIGH OUTPUT CURRENT APPLICATIONS Or Kirshenboim, Mor Mordechai Peretz; Ben Gurion University of the Negev
P13-10 (ID: 111)	INNER SUPPLY DATA TRANSMISSION OF RESONANT FLYBACK CONVERTERS USING MULTIPLEXING MODE IN BATTERY CHARGERS APPLICATION Geon-Hong Min, Jung-Ik Ha; Seoul National University
P13-11 (ID: 109)	A THREE-PORT SERIES RESONANT CONVERTER FOR THREE-PHASE UNFOLDING INVERTERS W. Warren Chen, Baljit Riar, Regan Zane; Utah State University
P13-12 (ID: 112)	HARDWARE IMPLEMENTATION OF A QUASI-RESONANT BIDIRECTIONAL FLYBACK CONVERTER FOR CAPACITIVE LOADS

	Subhransu Satpathy, Siva Prasad Kunchalay and Lakshminarasamma N; Indian Institute of Technology, Madras

P14: Smart Grid, Power Systems

P14-1 (ID: 248)	SEAMLESS TRANSITIONS OF DGS IN STANDALONE MICROGRID FOR UNINTERRUPTED SUPPLY Priyesh Chauhan, Dastagiri Reddy Bonthapalle, Sanjib Kumar Panda; National University of Singapore
P14-2 (ID: 237)	THE "SMART DIM FUSE": A NEW APPROACH TO LOAD CONTROL AS A DISTRIBUTED ENERGY RESOURCE Aaron Goldin[1], Claudio Rivetta[2]; [1]Stanford University, [2]GISMo - SLAC National Accelerator Laboratory
P14-3 (ID: 223)	COMPUTATION OF STABILITY METRICS IN DC POWER SYSTEMS USING SUM OF SQUARES PROGRAMMING Luis Herrera[1], Xiu Yao[2]; [1]Rochester Institute of Technology, [2]University at Buffalo
P14-4 (ID: 97)	ACCURATE AND FAST POWER SHARING AMONG INVERTERS IN AC MICROGRIDS WITH CONSTANT POWER LOADS Saeed Rezaee, Seyyedmilad Ebrahimi, Navid Amiri, Yingwei Huang, Juri Jatskevich; The University of British Columbia
P14-5 (ID: 79)	HARMONIC COMPENSATION IN AC DISTRIBUTION SYSTEMS USING SMART ELECTRONIC LOADS WITH PFC CONVERTERS Hua Chang, Yingwei Huang, Seyyed Milad Ebrahimi, Juri Jatskevich; University of British Columbia
P14-6 (ID: 78)	EXPONENTIAL PI-CONTROL FOR FUEL-CELL BASED POWER SYSTEMS Diego Langarica-Córdoba, Yuz A. Zúñiga-Ventura, Jesús Leyva-Ramos, Luis H. Díaz-Saldierna; IPICYT, Mexico

P15: Wireless Power Transfer

P15-1 (ID: 239)	WIRELESS POWER TRANSFER FOR ARTIFICIAL HEART PUMPS WITH PIECEWISE RESONANCE TO ACHIEVE HIGH PEAK-TO-AVERAGE POWER RATIO Xin Zan, Al-Thaddeus Avestruz; University of Michigan
P15-2 (ID: 230)	COMPARISON OF SWITCHED RECEIVERS FOR DIRECT-SEQUENCE SPREAD SPECTRUM WIRELESS POWER TRANSFER Akshay Sarin, Al-Thaddeus Avestruz; University of Michigan
P15-3 (ID: 209)	MODELING A 6.78 MHZ SYNCHRONOUS WPT RECTIFIER WITH REDUCED THD Spencer Cochran, Daniel Costinett; University of Tennessee
P15-4 (ID: 182)	IMPLEMENTATION OF AN IMPEDANCE COMPRESSION NETWORK TO CORRECT DEVIATIONS IN A WIRELESS POWER TRANSFER SYSTEM Jungwon Choi, Juan Rivas-Davila; Stanford University
P15-5 (ID: 168)	ANALYSIS OF BIFURCATION IN TWO-COIL INDUCTIVE POWER TRANSFER Michal Kosik, Radek Fajtl, Jiri Lettl; CTU in Prague, Czech Republic
P15-6 (ID: 167)	FIGURE OF MERIT FOR RESONANT WIRELESS POWER TRANSFER Aaron L.F. Stein, Phyo Aung Kyaw, Charles R. Sullivan; Dartmouth College