OFFICIAL PROGRAM

COBEP

Brazilian Power Electronics Conference 2017

XIV BRAZILIAN POWER ELECTRONICS CONFERENCE COBEP 2017

From

19th to 22nd November 2017

Gran Victory Hotel
Juiz de Fora - Minas Gerais

Organization

SOBRAEP

PPEE
Programa de Pós-Graduação em Engenharia Elétrica UFJF

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WELCOME

TO COBEP 2017

The Brazilian Power Electronics Conference is a national conference sponsored by the Brazilian Association of Power Electronics (SOBRAEP).

The first COBEP occurred in 1991. Since then, it has been organized every other year. Throughout the years it has been consolidated as an important forum of scientific research and technological development while promoting an exchange of experiences involving many academia research groups, as well as between academia and industry.

In 2017, COBEP is reaching its 14th edition and is taking place in Juiz de Fora, Minas Gerais state in Brazil, a city which has been known in the past as the "Manchester Mineira" due to its industrial identity and because it was the site of the first Hydroelectric Plant in South America, the Marmelos Zero, now a museum managed by the Federal University of Juiz de Fora (UFJF) and CEMIG (the state energy and electricity company). Juiz de Fora also holds a centennial Engineering School, which nowadays is part of UFJF.

The final program includes 222 papers, which are organized in 44 sessions, with four parallel presentations. Three keynote plenaries and two short talks will complete the technical agenda. Moreover, we would like to highlight the presence of Prof. Dr. Mario Neto Borges, President of the most important researching funding agency in Brasil, CNPq, who will open the event talking about the development of our country with the help of specific funding opportunities.

We would like to thank our sponsors KEYSIGHT, PHB SOLAR, OHMINI, FAPEMIG, CAPES, CNPq, SEMIKRON, SUPPLIER and HBM for the indispensable financial support.
We also express our gratitude to the colleagues of Federal University of Juiz de Fora, specially the Graduate Program in Electrical Engineering (PPEE).

The organizers also wish to mention the significant involvement of The Institute of Electrical and Electronics Engineers, Inc., IEEE, by means of its Power Electronics Society, Industry Applications Society and Minas Gerais Section, through technical co-sponsorship to this event.

We hope you will enjoy your stay in Juiz de Fora and that the COBEP 2017 may be a fruitful opportunity for technical discussions and network enhancement.
We warmly welcome you to COBEP 2017 and to Juiz de Fora!

Cobep2017 Organizing Committee

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REGISTRATION

CONFERENCE LOCATION

Convention Center: Gran Victory Hotel
Av. Presidente Itamar Franco - 3.800 - Bairro Cascatinha - Juiz de Fora - MG

REGISTRATION DESK

It is located in the entrance of the convention center. This is the place for accreditation; material delivery for the pre-registered participants and new enrollments. The support for the lectures, speakers and exhibitors will also done at this station.

OPENING HOURS

19/11/2017 (Sunday) – from 12:00 pm to 06:00 pm
20/11/2017 (Monday) – from 08:00 am to 06:40 pm
21/11/2017 (Tuesday) – from 08:00 am to 06:40 pm
22/11/2017 (Wednesday) – from 08:00 am to 06:40 pm

CERTIFICATES

All certificates, starting November 22nd 2017, will be sent to participants by e-mail according to category of participation and information given at registration.

BADGES

The badge use is mandatory during the conference activities. The badges will be checked in the entrance of each room.

GENERAL INFORMATION

PARTNER HOTELS

Gran Victory Hotel (This is the hotel of the conference)
Address: Av. Presidente Itamar Franco, 3.800, Bairro Cascatinha
Phone: 55 32 3025-7500

Victory Business
Address: Av. Presidente Itamar Franco, 1850 - São Mateus
Phone: 55 32 3249-1850

Victory Suites
Address: Rua Chanceler Osvaldo Aranha, nº 20 - São Mateus
Phone: 55 32 3257-6904

VIP ROOM

This is a venue reserved to the session chairs and lectures. This space will be available from 7:30 am to 7:00 pm. This venue can be used for possible alterations in the lectures presentations or to remove any doubts concerning to their participations.

SUPPORT ROOM

The authors must test their files on the computers in this room and hand over their flash drive for the technician in charge available. This person will send the material for the corresponding room. It is asked that the presenters arrive at the Support Room at least one hour before their session. The audiovisual equipments available for the presentation are: data show, notebooks and microphones.

OPENING CEREMONY

The event opening ceremony will be held on November 19th at 8:00pm at The Gran Victory Hotel auditorium in the convention center. The event will be headed by the Chairperson of the XIV BRAZILIAN POWER ELECTRONICS CONFERENCE - COBEP 2017, in the presence of some other authorities.

PARKING

The Gran Victory Hotel Convention Center provides parking spaces for R$ 15,00 (fifteen reais) a day. Independência Mall is next to the convention center. It has parking spaces at the disposal of participants.

OFFICIAL LANGUAGE

XIV BRAZILIAN POWER ELECTRONICS CONFERENCE - COBEP 2017 official language is English

EXHIBITORS

There will be an area reserved to trade exhibition at the convention center hall to present the following partners.

MEALS AND REFRESHMENTS

LUNCH

The Gran Victory Hotel Restaurant
It is located in the event place. It will be open to the participants during the event.

Salsa Parrila and Vó Sinhá Restaurant
It is located at Independência Mall food court (beside the Convention Center).

COFFEE BREAK

Refreshments and snacks will be served in the middle of the morning as well in the middle of the afternoon at the convention Center hall.

OPENING COCKTAIL

It will be served soon after the opening ceremony at the convention center hall for all participants enrolled in COBEP 2017.

CONFERENCE BANQUET

It will happen on November, 21th, Tuesday at 08:00pm, at the Convention Center. A special dinner invitation is included in the professional enrollment for this event. Extra invitations can be bought at the Event Bureau, according the availability.

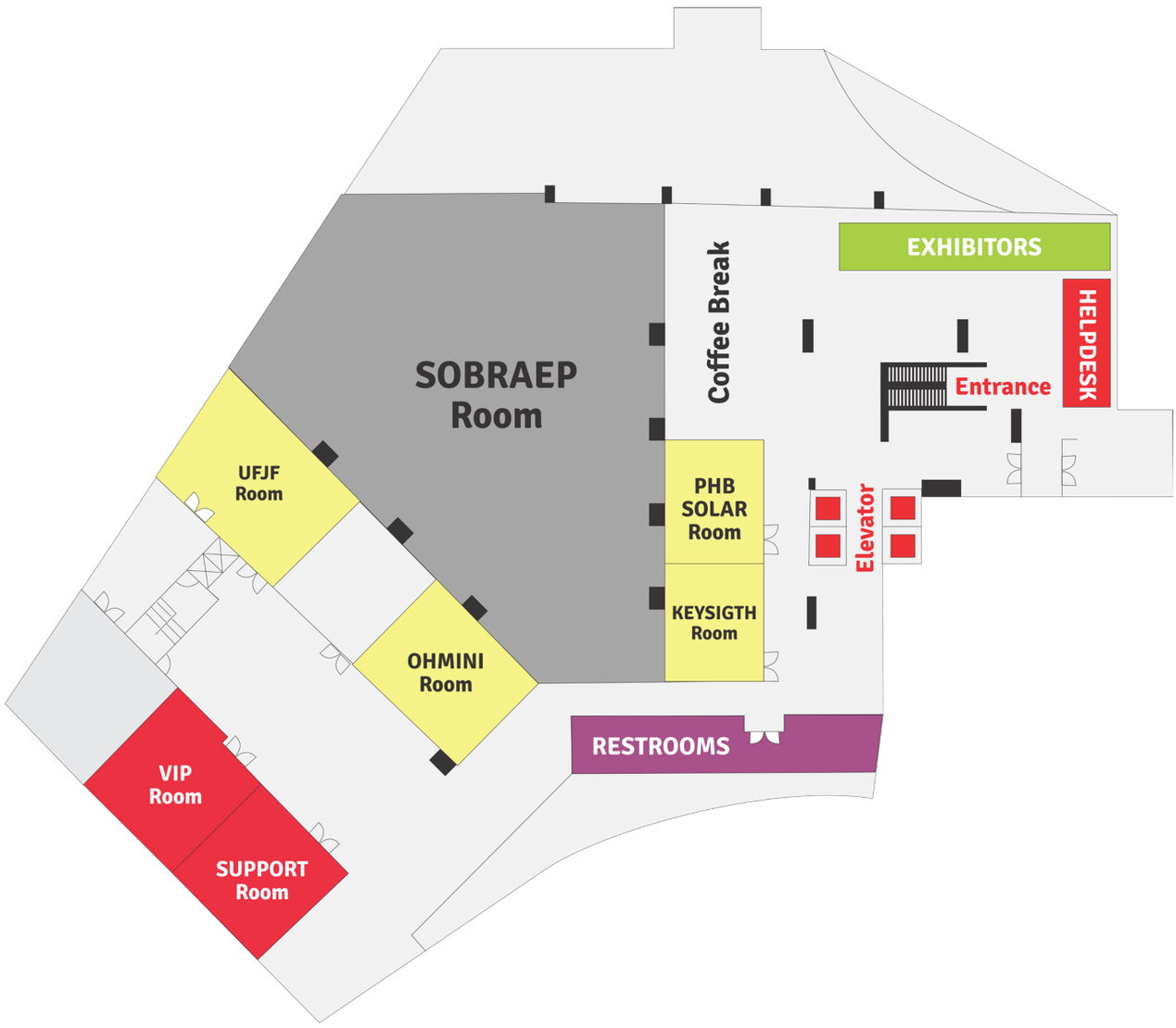
SMOKERS

It is forbidden to smoke at Gran Victory Hotel, Convention Center. Smoking is allowed at the balcony of the space.

CELL PHONE USE

It's asked that during the technical presentation, conferences and minicourses, the cell phone must be turned off or used in the silent mode.

MAP



GENERAL PROGRAM

	Sunday	Monday	Tuesday	Wednesday
	nov/19	nov/20	nov/21	nov/22
08:00	Tutorials 1 and 2	Registration	Registration	Registration
08:30-09:50	Tutorials 1 and 2	Plenary Session 1 Prof. Amir Yazdani: *"Modern Power-Electronic Converters for HVDC Transmission Systems"*	Plenary Session 2 Prof. Josep M. Gerrero: *"State of the Art in Microgrid Technology"*	Plenary Session 3 Prof. Humberto Pinheiro: *"Modulation for Static Converters"*
	Tutorials 1 and 2			
9:50-10:20	Tutorials 1 and 2	Short Break		
10:20-12:20	Tutorials 1 and 2	PE 1 | MD 1 | MS 1 | PQ 1 | RE 1	PE 3 | RE 2 | SG 1 | ED 2 | PQ 2	PE 4 | RE 4 | MD 4 | MS 4 | SG 3
	Tutorials 1 and 2			
12:20-14:00		Lunch Break		
14:00-15:00	Tutorials 3, 4, 5 and 6	Short Talk: Prof. E. H. Watanabe	PE 2 | MD 2 | MS 2 | MD 3 | LIGH 1 | SG 2	MS 5 | MD 5
	Tutorials 3, 4, 5 and 6			Short Talk: Prof. J. M. Alonso
15:10-16:10	Tutorials 3, 4, 5 and 6	ED 1 | AUTO 1 | DPM 1		PQ 3 | SG 4 | DPM 2
	Tutorials 3, 4, 5 and 6			
16:10-16:40	Tutorials 3, 4, 5 and 6	Coffee Break		
16:40-18:40	Tutorials 3, 4, 5 and 6	RAP SESSION Prof. Cassiano Rech	MS 3 | AUTO 2 | RE 3 | IA	LIGH 2 | MS 6 | RE 5 | PE 5 | ED 3
	Tutorials 3, 4, 5 and 6			
	Registration	SOBRAEP Meeting		
20:00-21:00	Opening Cerimony		Dinner	
21:00-22:30	Social Event (Cocktail)			

LEGENDA

PE – POWER ELECTRONICS
MD – ELECTRICAL MACHINE AND DRIVES
MS – MODELING AND SIMULATION
PQ – POWER QUALITY
RE – RENEWABLE ENERGY
SG – SMART GRIDS
ED – EDUCATION AND SPECIAL TOPICS
AT – AUTOMOTIVE APPLICATIONS
PD – POWER DEVICES
LI – LIGHT APPLICATIONS
IA – INDUSTRY APPLICATIONS

TECHNICAL PROGRAM SCHEDULE

TUTORIALS

TUTORIAL 1
November 19th, Sunday, 08:00 am to 12:20 pm – OHMINI ROOM

Basic Concepts of Modular Multilevel Converters and Applications in Medium and High Voltage Fields

Abstract: Due to the limitations in the voltage ratings of power semiconductors, the use of multilevel convertersis a topological solution for medium and high voltage applications. Electric drives, Static Synchronous Compensators, HVDC systems and Energy Storage systems are examples of possible applications. In view of the disadvantages related to other multilevel solutions, the modular multilevel converter (MMC) has become in the last years the most attractive converter topology for medium and high voltage applications. The MMC topology is featured by many advantages as low switching frequency, high efficiency, higher number of levels, design flexibility, high reliability, redundant structure and fault-tolerant operation. This tutorial aims to introduce to the researches the main characteristics, operation principles, control tasks and modeling of modular multilevel converters. Aspects related to converter design, control architectures and simulation of modular multilevel converters are approached in a didactic way. Analytical, experimental results and simulation models are employed to show the important characteristics of this interesting converter topology.

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TUTORIAL 2
November 19th, Sunday, 08:00 am to 12:20 pm – PHB SOLAR ROOM

Microgeração Solar Fotovoltaica

Abstract: A geração solar fotovoltaica é uma tecnologia em franca ascensão para atender a crescente demanda de energia elétrica. Ainda hoje, a carência nacional de qualificação técnica em energias renováveis, por parte de agentes e de consumidores, dificulta um crescimento mais acelerado de sistemas instalados. A título de exemplo, são escassas as linhas de crédito para financiar a instalação de sistemas solares fotovoltaicos. Este fato, associado ao elevado custo inicial, limita o perfil de clientes a classe social A1, a despeito do interesse de outras classes. A preocupação mundial com relação à preservação do meio ambiente tem impulsionado o uso de fontes de geração mais limpas de energia. O Brasil apresenta uma grande diversidade de recursos naturais propícios para geração renovável como, por exemplo, solar, eólica e biomassa. A despeito da predominância da produção de eletricidade renovável, em usinas hidroelétricas, os períodos prolongados de estiagem revelaram a necessidade de diversificar a matriz energética. A necessidade da redução da dependência dos combustíveis fósseis e da minimização dos impactos ambientais, associado aos avanços tecnológicos e incentivos na alteração da legislação tributária, tem sido determinísticos para a rápida ampliação das fontes renováveis.

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TUTORIAL 3
November 19th, Sunday, 02:00 pm to 18:20 pm – OHMINI ROOM

Modeling of Long Feeders in Power Electronics Based Systems

Abstract: This tutorial presents some modeling guidelines regarding more accurate representation of long feeders in power electronics simulations considering renewables, variable speed drives and HVDC systems. The focus is in the cases where feeders are based on insulated cables that can be used underground, underwater or laid out in aerial configurations. Given the distributed nature and skin effect in the conductors, the cable introduces new resonances that demands more complex models when compared with those associated with overhead lines. This tutorial details how to derive such models in the frequency domain and presents some guidelines regarding the minimally accurate models when electromagnetic transients programs are used to assess the voltage/current profile.

Authors:

Antonio C. S. Lima (UFRJ)

Robson F. S. Dias (UFRJ)

João P. L. Salvador (CEFET-RJ)

Antônio P. C. Magalhães (UFRJ)

Maria Teresa Correia de Barros (IST-ULisboa, Portugal)

TUTORIAL 4

November 19th, Sunday, 02:00 pm to 18:20 pm – PHB SOLAR ROOM

Modular Multilevel Converters: Topologies, Operation and Control

Abstract: Current high voltage and high power applications that employ Power Electronics converters see a clear trend towards modularity. The main drivers being: lower solution costs, configuration flexibility, reliability concerns with the series connection of power semiconductor devices, improved loss distribution among converter components, reduced harmonic and EMC filter requirements. The first modular multi-level converter solutions have seen the use of isolated dc sources to feed each converter unit (module or submodule depending on the specific type of converter). These dc sources were typically implemented by phase-shifting transformers with multi-pulse rectifiers. However, the invention of the converter named "Modular Multilevel Converter" by the group of Prof. Marquardt, in 2003, eliminated the need for isolated voltage sources and created a very interesting concept for several applications. The most prominent been HVDC rectifiers. Afterwards, MMC converters were proposed as a solution for various applications, including renewable generation, energy storage systems, static compensation, active filters, FACTS devices, solid state transformers, high voltage dc-dc converters and medium voltage adjustable speed drives. This tutorial will review important stages of the history of the MMC converters, focusing in relevant progress milestones in the areas covered in the tutorial. Topologies, control and operation of ac-dc, dc-ac and dc-dc converters will be reviewed.

Authors:

Marcelo Lobo Heldwein (UFSC)

Gean Jacques Maia de Sousa (UFSC)

Marcelo Dias Pedroso (UFSC)

TUTORIAL 5
November 19th, Sunday, 02:00 pm to 18:20 pm – KEYSIGTH ROOM

Metodologia de Avaliação de Controladores (Drivers) de LEDs para Iluminação Viária à Luz de Normativas Brasileiras

Abstract: O surgimento de novas tecnologias em iluminação representa um vasto campo de estudo, envolvendo desde o desenvolvimento e aspectos construtivos dessas tecnologias, ao seu desempenho no que tange a eficiência energética, qualidade de energia, conforto visual, reprodução de cores, vida útil, dentre outros. O uso dos diodos emissores de luz (LEDs) na iluminação tem representado um grande avanço tecnológico nos últimos anos. Os LEDs, que inicialmente eram usados apenas para sinalização, tiveram um rápido desenvolvimento com os LEDs de potência de luz branca, possibilitando sua utilização para iluminar ambientes internos e externos. Diversos estudos recentes apontam para a utilização dos LEDs na iluminação pública (IP). A elevada eficácia luminosa, longa vida útil, maior resistência mecânica, fácil controle sobre a intensidade luminosa (dimerização) e capacidade de emissão de luz branca, além do ótimo índice de reprodução de cores, são fatores que contribuem para a aplicação desta tecnologia em iluminação pública.

Authors:

Fernando J. Nogueira (UFJF)

Cristiano G. Casagrande (UFJF)

Lucas H. G. Resende (UFJF)

Ruan M. Ferraz (UFJF)

Felipe B. Marinho (UFJF)

Henrique A. C. Braga (UFJF)

TUTORIAL 6
November 19th, Sunday, 02:00 pm to 18:20 pm – UFJF ROOM

Hardware-in-the-Loop techniques for smart inverter control design, testing, and certification

Abstract: In this practically oriented, hands-on tutorial, attendees will learn how to design, test, and pre-certify a 3-phase battery inverter digital controller. They will learn both underlying theoretical concepts as well as hands on; apply acquired knowledge to design, implement, and test an inverter controller during the course. They will first learn the theoretical foundation for digital control of 3-phase solar inverters in DQ reference frame including space-vector modulation basics, PLL design, and filter design. Then, they will implement their inverter controller on a real-time ultra-high fidelity HIL platform and run the complete inverter and controller model in real-time. After the inverter is up and running they will learn how to tune the current loop PI controllers, in runtime, using real-time simulation and virtual impedance analyzer in HIL. Finally, we will introduce a HIL based methodology how to test and validate the performance and robustness of the inverter controller in realistic grid tie settings (i.e. weak and strong grid conditions) and we will introduce all the key grid support requirements for the UL1741 SA and Rule 21, the emerging smart inverter grid code, and explain all the grid support functionality. Attendees will also learn how to pre-certify their smart inverter controller and prepare their designs for full inverter certification.

Author:

Murilo Machado de Almeida (Typhoon HIL, Inc.)

PLENARY SESSIONS

Plenary Session 1

November, 20th, Monday at 08:30 am – SOBRAEP ROOM

Prof. Amirnaser Yazdani (Ryerson University, Canada)

"Modern Power Electronic Converters for High-Voltage Direct-Current (HVDC) Transmission Systems"

Prof. Amirnaser Yazdani
Ryerson University, Canada

Abstract: For technical and economical reasons, the legacy electric power system has evolved into a predominantly alternating-current (AC) network of generators, transformers, and transmission lines. Despite this dominance, high-voltage direct-current (HVDC) transmission systems have supplemented the legacy power system for long-distance transmission of bulk power, electrification of islands through submarine cables, and enablement of energy trade between asynchronous power systems or, even, power systems that operate at different frequencies. In recent years, however, the efforts towards more sustainable energy systems, large-scale integration of renewable energy resources, and more reliable supply of electric energy indicate an even larger role for HVDC transmission systems and direct-current (DC) grids in the electric power system of future. Such a larger role must be enabled by highly efficient, controllable, power-electronic converters, as the building blocks of modern HVDC systems. This talk first provides an overview of both traditional and emerging applications of HVDC systems, with a brief discussion about the line-commutated converter (LCC) as the power processor for the traditional HVDC systems. Then the motivations behind and the theoretical basis of the voltage-sourced converter (VSC), as the successor of the LCC, are presented, followed by brief introduction of a few commercial VSC-based HVDC systems. The talk next
introduces the most recent member of the VSC family, that is, the modular multilevel converter (MMC) based on the half-bridge and full-bridge building blocks. Finally, a new building block, the lattice sub-module (LSM), is presented to offer the same dc-side fault handling capability as that featured by the full-bridge technology, and the same efficiency as that offered by the half-bridge technology.

Plenary Session 2

November, 21th, Tuesday at 08:30 am – SOBRAEP ROOM

Prof. Josep M. Gerrero (Aalborg University, Denmark)

"State of the Art in Microgrid Technology"

Prof. Josep M. Gerrero
Aalborg University, Denmark

Abstract: A microgrid can be defined as a part of the grid with elements like distributed energy sources, power electronics converters, energy storage devices and controllable local loads that can operate autonomously in islanded mode but also interacting with the main power network in a controlled, coordinated way. Following the introduction of distributed control of these elements, cooperative control and hierarchical control schemes for coordination of power electronics converters in order to control the power flow and to enhance the power quality will be elaborated. Different technologies are combined together, such us power converters, control, communications, optimization, and so on. This way,energy can be generated and stored near to the consumption points, improving stability and reducing losses produced by large power lines.In distributed energy systems like microgrids, multi-agent systems technologies will be presented, including distributed control. The focus of this presentation will be on the analysis, modelling, and control design of power electronics-based microgrids, as well as power electronics control and communications. Further, the interconnection of microgrid clusters will be emphasized as an important step towards utilization of the smart grid concept. Examples of real microgrid sites including conventional islanded systems installed in islands and rural remote areas will be shown. Further, low-voltage distribution systems and DC microgrids for residential applications and homes will be introduced. New worldwide projects to develop technologies for low voltage DC distribution systems and maritime ship-board microgrids will be shown. Finally the integration of microgrids by using smart meters and Internet of Things (IoT) concepts will be presented.

Plenary Session 3

November, 22th, Wednesday at 08:30 am – SOBRAEP ROOM

Prof. Humberto Pinheiro (UFSM, Brazil)

"Modulation for Static Converters"

Prof. Humberto Pinheiro
UFSM, Brazil

Abstract: Power converter design is a complex task that often thermal issues to ensure the target reliability, filters selection to satisfy input/output harmonics requirements as well as minimization of volume/weight and cost to meet marketing constrains. To make the converter design manageable it is often separated into parts where the Modulation is one of them. The Modulation can give to the power electronic engineer, degrees of freedom, that can be use to positively impact not only the quality of the output voltages and currents but also key converter internal variables such as semiconductors temperature and dc bus capacitors voltages. This lecture addresses modulation for static converters. It starts by reviewing classical Carrier Base Modulation, their spectra and applications for simple single phase and three phase two level conveters as well as to multilevel converters. Then, the degrees of freedom of multilevel converters are explored in a systematic way by using a "Geometric Approach" providing a simple tool for power electronics engineers to explore the converter capabilities in the well-known carrier based framework. Finally, the Space Vector Modulation for different converters from single phase to three phase cascade converters is presented and its main advantages and challenges discussed.

SHORT TALKS

Talk 1

November, 20th, Monday at 02:00 pm – SOBRAEP ROOM

Prof. Edson Hirokazu Watanabe (COPPE-UFRJ, Brazil)

"Ética na Pesquisa – A Não linearidade Entre a Reação de Quem Copia e de Quem é Copiado" (in Portuguese)

Prof. Edson Hirokazu Watanabe
COPPE-UFRJ, Brazil

Abstract: This talk offers an account of experiences related to the problem of third-party copyright infringement, as well as some measures adopted by COPPE (the Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering, at Rio de Janeiro Federal University) to curb potential problems in this area, including formal and educational measures. The title suggests that the issue is still poorly understood among undergraduate and graduate students (and professors), and that a wholly nonlinear reaction is common between those who copy or those who are copied. The discussion ends with some suggestions on measures that could be adopted to eliminate (minimize) problems of plagiarism and raise awareness on matters of integrity in research.

Talk 2

November, 22th, Wednesday at 02:00 pm – SOBRAEP ROOM

Prof. José Marcos Alonso (Univ. de Oviedo, Spain)

"Introduction to Variable Inductor Operation and Applications in Power Electronics"

Prof. José Marcos Alonso
Univ. de Oviedo, Spain

Abstract: Variable inductors (VIs) are magnetic elements whose inductance can be controlled by an analog signal, usually a DC current injected into an auxiliary winding. The DC current generates a DC magnetic flux density that can modulate the magnetic permeability of the core. This modulation ultimately generates a change on the effective inductance of the main winding of the VI. Thus, VIs are particularly interesting because they can provide and additional degree of freedom in the design of power electronics converters. Example of applications are DC-DC converters, resonant inverters, electronic ballasts, LED drivers, power factor correctors, MPPT converters for solar panels, wireless power transfer, and so on. In this lecture, an introduction to VI will be presented, showing the most important VI structures and their operation. The VI design and modelling will also be dealt with. Next, VI modeling based on SPICE simulators will be presented. Finally, some applications of VIs will be expounded.

RAP SESSION

November, 20th, Monday at 04:40 pm – SOBRAEP ROOM

“Future trends and challenges of Power Electronics”.

Moderator:
Prof. Cassiano Rech (Federal University of Santa Maria, UFSM)

Invited speakers:
Prof. Marcelo Lobo Heldwein (Federal University of Santa Catarina, UFSC)
Prof. Marcello Mezaroba (Santa Catarina State University, UDESC)

This interesting and informal panel will aim to discuss possible future trends and challenges of Power Electronics, from point of view of both academia and industry. The discussion will highlight some technical expectations (semiconductor technologies, power density, packaging, cost, thermal issues, etc.), applications and challenges for power electronics converters in a near future. In addition, the knowledge transfer process from universities to industry, mainly in Brazil, will be discussed as well.

ORAL SESSIONS BY DAY

Monday, November 20th, 2017

10:20AM - 12:20PM

KEYSIGHT ROOM - PQ 1 - POWER QUALITY. Chair: Márcio do Carmo Barbosa Poncilio Rodrigues

170671 Fuzzy-Granulation Based Controller for Low Distortion in PWM Inverter with Reduced Load Power
Dante Inga Narvaez, Marcelo Gradella Villalva, University of Campinas, Brazil
Evelyn Lopez Vasquez, Tecnologico de Monterrey, Mexico.

171176 Development of a Small-Signal Model for a Two-Phase Three-Wire Active Power Filter
Marcio Barbosa Poncilio Rodrigues, IF Sudeste MG, Brazil
Pablo Furtado, Federal University of Juiz de Fora, Brazil
Cláudio Rodrigues, Instituto Federal de Educação Ciência e Tecnologia do Sudeste de Minas Gerais, Brazil
André Augusto Ferreira, Pedro Barbosa, Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil
Rodrigo Ferreira, Instituto Federal Sudeste de Minas Gerais, Brazil.

171240 Reactive Power Injection Strategies for Three-Phase Four-Wire Inverters Under Symmetrical Voltage Sags
Frederico Mendes, Universidade Federal de Minas Gerais, Brazil
Danilo Brandão, Sidelmo Magalhães Silva, Federal University of Minas Gerais, Brazil
Igor Amariz Pires, Universidade Federal de Minas Gerais, Brazil.

171618 A Novel Optimized Pulse Pattern for Modular Multilevel Converter in High Power Applications
Marcelo de Castro Fernandes, Federal University of Juiz de Fora, Brazil
Gabriel Fogli, UFJF, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil.

171628 Performance Comparison of Different Power Module applied in Photovoltaic Inverters during Harmonic Compensation
Renata de Sousa, Dhiogo Franco, Universidade Federal de Viçosa, Brazil
Rodrigo de Barros, Uiversidade Federal de Viçosa, Brazil
Allan Cupertino, CEFET-MG, Brazil
Erick Brito, UFV, Brazil
Heverton Pereira, Universidade Federal de Viçosa, Brazil.

171669 Modified Series Interleaved Boost For Reduction of the Input Current Harmonics Distortion
Gustavo Cardoso Orsi, Federal University of Technology, Brazil
Alceu Andre Badin, UTFPR, Brazil
Roger Gules, Universidade Tecnológica Federal do Paraná, Brazil.

Monday, November 20th, 2017

10:20AM - 12:20PM

UFJF ROOM - RE 1 - RENEWABLE ENERGY. Chair: Robson Bauwelz Gonzatti

168581 Design and Commissioning of Wind Generation System Studies Workbench Using Permanent Magnet Synchronous Machine
Rafael da Silva, Federal University of Minas Gerais, Brazil
Camilo L. M. Paula, Frederico F. V. Matos, Federal University of Itajubá, Brazil
Clodualdo Sousa, Universidade federal de Itajubá, Brazil
Guilherme M. Rezende, Federal University of Itajubá, Brazil
Victor F. Mendes, Federal University of Minas Gerais, Brazil.

170614 Stator Harmonic Current Compensation of a DFIG Connected to a Grid With Voltage Distortion
Gustavo Gontijo, Thiago Tricarico, Daniel Krejci, Sersan Guedes, Federal University of Rio de Janeiro, Brazil
Bruno França, Fluminense Federal University, Brazil
Mauricio Aredes, Federal University of Rio de Janeiro, Brazil.

170646 Implementation of a single-stage single-phase grid connected PV converter
Robson Bauwelz Gonzatti, Universidade Federal de Itajubá, Brazil
Bruno Guimarães, Itajuba Federal University, Brazil
Rondineli Pereira, Luiz Eduardo Borges da Silva, Universidade Federal de Itajubá, Brazil
Germano Lambert-Torres, Gnarus Institute, Brazil.

170663 Control and Operation of Open-End Winding Permanent Magnet Synchronous Wind Generator
Valmor Ricardi Junior, Federal University of Minas Gerais, Brazil
Frederico Matos, Victor Magno Rodrigues de Jesus, Universidade Federal de Minas Gerais, Brazil
Clodualdo Sousa, Universidade federal de Itajubá, Brazil
Laís Eduarda Zica, Federal University of Itajubá, Brazil
Victor F. Mendes, Federal University of Minas Gerais, Brazil.

170824 Parameter Estimation Technique for Double-diode Model of Photovoltaic Modules
Aguinaldo Nascimento Junior, Marcelo Cavalcanti, Federal University of Pernambuco, Brazil
Fabricio Bradaschia, Universidade Federal de Pernambuco, Brazil
Emerson Silva, Federal University of Pernambuco, Brazil
Leandro Michels, Universidade Federal de Santa Maria, Brazil
Luiz Pietta Junior, Federal University of Santa Maria, Brazil.

170826 Power Voltage Characteristics and Global MPPT Algorithms for any Severe Partial Shading Condition
Artur Furtado, Federal University of Pernambuco, Brazil
Fabricio Bradaschia, Universidade Federal de Pernambuco, Brazil
Marcelo Cavalcanti, Leonardo Limongi, Federal University of Pernambuco, Brazil
Gustavo Medeiros de Souza Azevedo, Universidade Federal de Pernambuco, Brazil.

10:20AM - 12:20PM

SOBRAEP ROOM - MS 1 - MODELING AND SIMULATION. Chair: Alessandro Batschauer

170628 Model Predictive Control of a Modular Multilevel Converter with a reduced number of states

Monday, November 20th, 2017

Laís Crispino, University of Rio de Janeiro, Brazil
Luis Guilherme Rolim, Universidade Federal do Rio de Janeiro, Brazil.

170648 HIL simulation of non linear control methods applied for buck-boost and flyback converters
Arthur Rosa, UFMG, Brazil
Matheus Bezerra Eiras da Silva, Universidade Federal de Minas Gerais - UFMG, Brazil
Marcos Campos, Universidade Federal de Minas Gerais, Brazil
Renato Santana, UFMG, Brazil
Marcos Mendes, Lenin Morais, Seleme Seleme Jr, Porfírio Cortizo, Universidade Federal de Minas Gerais, Brazil.

170653 Experimental evaluation of robust and nonrobust H-infinity controllers for three-phase grid-connected converters
Gustavo Koch, Federal University of Santa Maria, Brazil
Humberto Pinheiro, Universidade Federal de Santa Maria, Brazil
Ricardo Oliveira, FEEC-UNICAMP, Brazil
Vinícius Montagner, Universidade Federal de Santa Maria, Brazil.

170661 Capacitor Voltage Balancing in a 5-L Full-Bridge Flying Capacitor Inverter
Rodrigo Mauro Moritz, UDESC- Universidade do Estado de Santa Catarina, Brazil
Alessandro Batschauer, UDESC, Brazil.

171077 High-Frequency Switch Modeling Technique Applied to DC-DC Converters Simulation
Raoni Pegado, Federal University of Paraíba, Brazil
Ruan Gomes, Luciano Alves, Federal University of Campina Grande, Brazil
Montiê Vitorino, Universidade Federal de Campina Grande, Brazil
Yuri Percy Molina Rodriguez, UFPB, Brazil
Antonio Filho, Federal University of Campina Grande, Brazil.

171324 Circulating Currents Suppression Strategies for Modular Multilevel Converter
Andrei Almeida, Universidade Federal de Juiz de Fora, Brazil
Frederico Ghetti, IF Sudeste MG, Brazil
Adeilson Ribeiro, Universidade Federal de Juiz de Fora, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil.

10:20AM - 12:20PM

OHMINI ROOM - PE 1 - POWER ELECTRONICS. Chair: Fernando Luiz Marcelo Antunes

170596 Detailed Design Procedure of a DC-DC Buck-Boost Converter Employing a Passive Snubber
Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Alexandre Rodrigues Vaz, Federal Center of Technological Education of Minas gerais, Brazil.

170632 Analysis of a multi-phase interleaved bidirectional dc/dc power converter with coupled inductor
Robson Mayer, Menaouar Berrehil El Kattel, Maicon Possamai, Claudio Bruning, Santa Catarina State University - UDESC, Brazil

Monday, November 20th, 2017

Sérgio Vidal Garcia Oliveira, Universidade Regional de Blumenau - FURB, Brazil.

170669 Modular 11kW bidirectional onboard charger with SiC-MOSFET Technology for mobile applications
Andreas Greifelt, FEAAM GmbH, Germany
Georg Heiland, FinePower GmbH, Germany
Dieter Gerling, UniBW Muenchen, Germany.

170679 Practical Design of A DC-DC Buck Converter Using An RCD Snubber
Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Alexandre Rodrigues Vaz, Federal Center of Technological Education of Minas gerais, Brazil.

170717 Conception of High Step-Up DC-DC Boost-Based Converters
Lenon Schmitz, Federal University of Santa Catarina, Brazil
Denizar Martins, Universidade Federal de Santa Catarina, Brazil
Roberto Coelho, Federal University of Santa Catarina, Brazil.

171619 On The Study of the Interleaving Technique Using an Interphase Transformer Considering the Use of SiC
José Araújo, Universidade Federal do Ceará, Brazil
Demercil Oliveira Jr, UFC, Brazil
Paulo Praça, Luiz Henrique Barreto, Universidade Federal do Ceará, Brazil.

10:20AM - 12:20PM

PHB SOLAR ROOM - MD 1 - ELECTRICAL MACHINE AND DRIVES. Chair: Domingos Sávio Lyrio Simonetti

169664 FPGA Design Approach of Digital Control of Three -Phase Induction Motor
Cesar Costa, Christian Santin, IFSP - Institute Federal of Sao Paulo, Brazil.

170477 Experimental results for predictive direct torque control for a squirrel cage induction motor
Angelo Lunardi, Universidade Federal do ABC, Brazil
Alfeu Squarezi, UFABC, Brazil.

170594 Implementation details of an adaptive control by a b-spline neural network applied to an asymmetric six-phase induction motor
Paulo Dainez, Federal Institute of Education, Science and Technology of São Paulo, Brazil
Edson Bim, State University of Campinas, Brazil.

170625 Sensorless Torque Control of an Induction Motor Through Quadrature Voltage Injection
Renan Barroso, Universidade Federal do Ceará, Brazil
Tobias Neto, Federal University of Ceará, Brazil.

170668 Transients analysis of synchronous and induction generators in parallel operation mode in an isolated electric system
Vinicius Silva, Federal University of Itajuba, Brazil
Angelo Rezek, UNIFEI, Brazil
Rafael Correa, Federal University of Itajuba, Brazil.

170907 Inverter-Based Motor Drive Systems: An Overview from the Electromagnetic Compatibility Perspective
Helder Paula, Caio Fuccio, Philipe Pereira, Universidade Federal de Minas Gerais, Brazil
Augusto Silveira, Luciano Gomes, Universidade Federal de Uberlândia, Brazil.

Monday, November 20th, 2017

2:00PM - 4:10PM

PHB SOLAR ROOM - MD 2 - ELECTRICAL MACHINE AND DRIVES. Chair: Janaína Gonçalves de Oliveira

170930 Lifetime Estimation of a Novel High Current Low Resistance Single Phase Plug-in Connector for the ISCAD Application
Benjamin Rubey, Adrian Patzak, Florian Bachheibl, volabo GmbH, Germany
Andreas Greifelt, FEAAM GmbH, Germany
Dieter Gerling, UniBW Muenchen, Germany.

171334 Performance Optimization of Switched Reluctance Generator in Wind Systems: An approach based on Design of Computer Experiment
Pedro Jose dos Santos Neto, University of Campinas, Brazil
Tárcio Barros, Universidade Estadual de Campinas, Brazil
Marcelo Vinicius de Paula, Ernesto Ruppert Filho, University of Campinas, Brazil.

171376 Construction and Measurements of an Electrical Excited Synchronous Machine with Inductive Contactless Energy Transfer to the Rotor
Marcel Maier, Nejila Parspour, Patrick Kleemann, Michael Hagl, University of Stuttgart, Germany.

171465 Methodology for calculating the value of static capacitance between conductors of circular cross-section
Natalia Chagas, Tiago Bandeira Marchesan, Universidade Federal de Santa Maria, Brazil.

171493 Ride-Through Capability Improvement of 30kW DFIG-based Wind Turbine Under Unsymmetrical Voltage Dip
Renato Amorim Torres, Universidade Federal de Minas Gerais, Brazil
Victor F. Mendes, Federal University of Minas Gerais, Brazil
Edmar Cota, Centro Federal de Educação Tecnológica de Minas Gerais, Brazil.

171129 Modeling and Measurement of Capacitive and Inductive Bearing Current in Electrical Machines
Andreas Bubert, Jiakun Zhang, Rik De Doncker, RWTH Aachen University, Germany.

2:00PM - 4:10PM

PHB SOLAR ROOM - PE 2 - POWER ELECTRONICS. Chair: Marcelo Lobo Heldwein

171417 Overvoltage Protection Procedures for High Frequency High Voltage Transformers
Diego Teruo Mendes de Souza, Bruno Valverde, University of Campinas, Brazil
José Pomilio, Unicamp, Brazil.

170947 A High static-gain DC-DC-Quadrupler Converter with Coupled-Inductors
Matias Schwambach, Federal University of Technology, Brazil
Gustavo Cardoso Orsi, Federal University of Technology, Brazil.
Roger Gules, UTFPR, Brazil

171246 A Soft Switching Current Fed Bidirectional Isolated Three-Phase DC-DC Converter
Herminio Oliveira Filho, University for the International Integration of the Afro-Brazilian Lusophony (UNILAB), Brazil
Gilmar Costa, University for the International Integration of the Afro-Brazilian Lusophony(UNILAB), Brazil
Antonio dos Santos, University for the International Integration of the Afro-Brazilian Lusophony UNILAB,

Monday, November 20th, 2017

Brazil

Demercil Oliveira Jr, UFC, Brazil.

171371 Analytical Procedure for Dimensioning Transcutaneous Inductive Energy Transfer Systems

Alexander Enssle, Joerg Heinrich, Nejila Parspour, University of Stuttgart, Germany.

171372 A Three-Port Three-Phase Isolated DC-DC Converter Feasible to PV Connection on a DC Distribution System

Raimundo Nonato de Oliveira, Institute Federal of Ceara - IFCE, Brazil

Luan Carlos Mazza, Federal Institute of Ceara - IFCE, Brazil

Demercil Oliveira Jr, UFC, Brazil

Herminio Oliveira Filho, University for the International Integration of the Afro-Brazilian Lusophony (UNILAB), Brazil.

171386 High Voltage-Gain Interleaved Boost DC-DC Converter with Reduced Capacitance Requirement

Breno Chaves, Mateus Pacheco Vieira, Francisco Barbosa de Brito Júnior, Federal University of Ceara, Brazil

Rene Bascopé, Universidade Federal do Ceará, Brazil

Bruno de Almeida, Federal University of Ceará, Brazil.

172957 Multi-Winding Bidirectional Flyback Converter

Arceu Campos, Federal University of Uberlandia, Brazil

Adjeferson Gomes, Universidade Federal de Uberlândia, Brazil

Aniel Morais, Federal University of Uberlandia - UFU, Brazil.

3:10PM - 4:10PM

KEYSIGHT ROOM - AT 1 - AUTOMOTIVE APPLICATIONS. Chair: Sérgio Vidal Garcia Oliveira & José Antenor Pomilio

171378 Analysis of 12-pulse diode rectifier operating in aircraft systems with constant frequency

Laís Vitoi, Universidade Federal de Juiz de Fora, Brazil

José Antenor Pomilio, UNICAMP, Brazil

Danilo Brandão, Federal University of Minas Gerais, Brazil.

171466 Dynamic Charging of Electric Vehicles - Demonstrator for Contactless Energy Transfer

Philipp Präg, Nejila Parspour, University of Stuttgart, Germany.

172896 Analysis and simulation of a novel coupled inductor bidirectional dc-dc converter

Sérgio Vidal Garcia Oliveira, Universidade Regional de Blumenau - FURB, Brazil

Murilo Rosa, UDESC, Brazil

Menaouar Berrehil El Kattel, Robson Mayer, Maicon Possamai, Santa Catarina State University - UDESC, Brazil.

172945 Bidirectional Z-Source Inverter Modeling and Smith Predictor Strategy for Minimizing Right Half Zero Plan in the Voltage Loop

Angelo Lanzoni, Universidade do Estado de Santa Catarina, Brazil

Cassiano Rech, Federal University of Santa Maria, Brazil

Joselito A Heerdt, Universidade de Santa Catarina, Brazil.

Monday, November 20th, 2017

3:10PM - 4:10PM

UFJF ROOM - PD 1 - POWER DEVICES. Chair: João Onofre Pinto

168645 A comparative efficiency study on bidirectional grid interface converters applied to low power DC nanogrids
Hans Sathler, Universidade Federal de Minas Gerais, Brazil
Lara Sathler, Federal University of Minas Gerais, Brazil
Frederico Marcelino, UFMG, Brazil
Thiago Oliveira, Pedro Donoso-Garcia, Seleme Seleme Jr, Universidade Federal de Minas Gerais, Brazil.

171540 Comparison of Iron Loss Calculation Methods for Soft Magnetic Composite
Samuel Mueller, Marina Keller, Marcel Maier, Nejila Parspour, University of Stuttgart, Germany.

177939 Power semiconductor failures due to cosmic rays
Ricardo Prado, SEMIKRON, Brazil
Clovis Gajo, Semikron, Brazil.

177940 Design of medium and high voltage rectifiers with avalanche diodes
Clovis Gajo, Semikron, Brazil
Ricardo Prado, SEMIKRON, Brazil.

3:10PM - 4:10PM

SOBRAEP ROOM - ED 1 - EDUCATION AND SPECIAL TOPICS. Chair: Robson Bauwelz Gonzatti

170633 Implementation of a Wind Turbine Emulator Test Bench Using a Squirrel Cage Induction Machine
Gustavo Gontijo, Daniel Krejci, Sersan Guedes, Thiago Tricarico, Federal University of Rio de Janeiro, Brazil
Bruno França, Fluminense Federal University, Brazil
Mauricio Aredes, Federal University of Rio de Janeiro, Brazil.

170650 Low-Cost Didactic Module For Single-Phase Inverter Teaching
Luiz Pedro Duque da Silva, Itajuba Federal University, Brazil
Rondineli Pereira, Robson Bauwelz Gonzatti, Luiz Eduardo Borges da Silva, Universidade Federal de Itajubá, Brazil
Germano Lambert-Torres, Gnarus Institute, Brazil.
Denis Mollica, Joselino Santana Filho, EDP Sao Paulo Distribuicao de Energia, Brazil.

170906 Practical Application of the Physics-of-Failure Approach: Software and New Resources for Reliability Prediction of Power Electronics Systems
Helder Paula, Universidade Federal de Minas Gerais, Brazil
Nayara Grazielle do Nascimento Irias, Federal University of Minas Gerais, Brazil.

171201 Interactive Android Application For Education In AC-DC Converters
Flávio Gonçalves, São Paulo State University (Unesp), Institute of Science and Technology, Brazil
Fernando Marafão, Unesp - Univ. Estadual Paulista, Brazil
Gustavo Landi, São Paulo State University (Unesp), Institute of Science and Technology, Brazil
Helmo Paredes, Unesp Campus de Sorocaba, Brazil.

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10:20AM - 12:20PM

KEYSIGTH ROOM - ED 2 - EDUCATION AND SPECIAL TOPICS. Chair: Fernando Marafão

171204 Low Cost Digital Module for Demonstration of Modulation Strategies in DC-to-AC Converters
Flávio Gonçalves, São Paulo State University (Unesp), Institute of Science and Technology, Brazil
Fernando Marafão, Unesp - Univ. Estadual Paulista, Brazil
Matheus Dias, São Paulo State University (Unesp), Institute of Science and Technology, Brazil
Helmo Paredes, Unesp Campus de Sorocaba, Brazil.

171452 A Guideline for Employing PSIM on Power Converter Applications: prototyping and educational tool
Augusto Alonso, Sao Paulo State University (UNESP), Brazil
Fernando Marafão, Unesp - Univ. Estadual Paulista, Brazil
Danilo Brandão, Federal University of Minas Gerais, Brazil
Elisabetta Tedeschi, Norwegian University of Science and Technology, Norway
Joel Filipe Guerreiro, UNICAMP, Brazil.

171467 FPGA APPLIED TO THE CONTROL OF DC-AC CONVERTERS USING REPETITIVE AND FEEDFORWARD CONTROL LAWS
Nei Souza, Universidade Federal de Uberlândia, Brazil.

171475 A Compact FPGA-Based Single-Phase Cascaded H-Bridge Multilevel Inverter for Teaching and Research Activities
Leonardo Göbel Fernandes, Carolina Antunes Coelho, Universidade Tecnológica Federal do Paraná, Brazil
Amauri Assef, Federal University of Technology, Brazil.

171489 Development of a Bench to Simulate a PMSG Wind Turbine Using a Frequency Inverter
Rachel Carminati, Domingos Simonetti, José Luiz Vieira, Geisa Costa, Tiara Freitas, UFES, Brazil.

171580 Estimation of losses in semiconductors of power through simulation
Samuel Figueiredo, Federal University of Piauí, Brazil
Ranoyca Silva, University for International Integration of the Afro-Brazilian Lusophony, Brazil
Amanda Monteiro, Federal University of Campina Grande, Brazil
Herminio Oliveira Filho, University for the International Integration of the Afro-Brazilian Lusophony (UNILAB), Brazil.

10:20AM - 12:20PM

OHMINI ROOM - PE 3 - POWER ELECTRONICS. Chair: Wilson Komatsu

170676 A DC-DC Buck-Boost Converter Based on The Three-State Switching Cell
Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Paulo Henrique Feretti, pauloferetti@gmail.com, Brazil.

171442 A Five-Level Stacked Neutral Point Clamped Converter Based On Multi-State Switching Cell
João Neto, Federal University of Pará, Brazil
Rene Bascopé, Universidade Federal do Ceará, Brazil.

171460 Analysis of Operation Regions of an Isolated Bidirectional Dual Active Bridge DC-DC Converter with LC

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Coupling
Bruno Enomoto, University of Sao Paulo - Polytechnic School, Brazil
Kelly Carvalho, Universidade de São Paulo, Brazil
Lourenço Matakas Junior, Universidade de São Paulo, Brazil, Brazil.
Wilson Komatsu, Universidade de São Paulo, Brazil, Brazil.

171462 Extension of the Operating Region of a Nine-Level Asymmetrical Flying Capacitor Inverter
Gabriel Saccol, Universidade Federal de Santa Maria, Brazil
Cassiano Rech, Federal University of Santa Maria, Brazil
Julian Giacomini, Farroupilha Federal Institute, Brazil
Alessandro Batschauer, UDESC, Brazil.

171479 Design of an Efficient Hybrid AC-DC-AC Converter Using Silicon Carbide for UPS Applications: A Comparison
Wendell Alves, Graduate Program in Electrical Engineering - Universidade Federal de Minas Gerais, Brazil
Lenin Morais, Porfírio Cortizo, Universidade Federal de Minas Gerais, Brazil.

171488 Single-Stage AC/DC Converter Based on SEPIC Topology Operating in Continuous Conduction Mode
Marcos Ewerling, Federal University of Technology - Paraná (UTFPR), Brazil
Carlos Illa Font, Federal University of Technology - Paraná, Brazil.

10:20AM - 12:20PM

UFJF ROOM - PQ 2 - POWER QUALITY. Chair: Marcello Mezaroba

171821 A Control Strategy for a Series APF with Load-Bus Side Feedback that Avoids Transformer Saturation
Guilherme da Silva Fischer, UDESC, Brazil
Alisson Mengatto, Santa Catarina State University, Brazil
Marcello Mezaroba, UDESC, Brazil.

172034 Islanding Detection Using Impedance Measurements Techniques Based On Wavelet Injection
Ramon Oliveira, Federal University of Juiz de Fora, Brazil
Henrique Monteiro, UFJF, Brazil
Renato Ribeiro, Leandro Silva, Universidade Federal de Juiz de Fora, Brazil
Carlos Duque, Federal University of Juiz de Fora, Brazil.

172523 FPGA-based Power Meter Implementation for Three-Phase Three-Wire and Four-Wire Power Systems, according to IEEE 1459-2010 Standard
Luis De Oro Arenas, Sao Paulo State University, Brazil
Guilherme Melo, UNESP - Campus de Ilha Solteira, Brazil
Carlos Canesin, Sao Paulo State University - UNESP, Brazil.

172901 Five Level Anpc Converter Applied as a Single-Phase Shunt Active Power Filter with Features to Limit and Optimize the Converter Power Rating
Edson Acordi, Instituto Federal do Parana - IFPR, Brazil
Rodrigo Barriviera, Federal Institute of Parana - IFPR, Brazil
Ricardo Machado, Universidade de São Paulo, Brazil.

172903 Active Anti-islanding Protection Method Based on Active Power Flow Applied to VSI-based Distributed

Tuesday, November 21th, 2017

Generation
Marina Carvalho, Universidade de São Paulo, Brazil
Rafael Magossi, University of São Paulo, Brazil
Mateus Quinalia, Universidade de São Paulo, Brazil
Klebber Ottoboni, University of Sao Paulo, Brazil
Ricardo Machado, Universidade de São Paulo, Brazil.

172908 Compensation of Disturbances from the Electrical Network using the Dynamic Voltage Restorer (DVR)
Dalmo Cardoso da Silva Júnior, Universidade Federal de Juiz de Fora, Brazil
Josué Lima da Silva, Centro Federal de Educação Tecnológica, Brazil
Janaina Goncalves de Oliveira, Universidade Federal de Juiz de Fora, Brazil
Marlon José do Carmo, Centro Federal de Educação Tecnológica de Minas Gerais, Brazil
Matusalém Lanes, Universidade Federal do Rio de Janeiro, Brazil.

10:20AM - 12:20PM

SOBRAEP ROOM - RE 2 - RENEWABLE ENERGY. Chair: Denizar Cruz Martins

171144 Photovoltaic Micro-Inverter with Active Filtering and Thin-Film Capacitors
Gustavo Knabben, Universidade Federal de Santa Catarina, Brazil
Lenon Schmitz, Federal University of Santa Catarina, Brazil
Odair José Custódio, Inergiae Conversores Estáticos, Brazil
Renato Zampiroli de Medeiros, Empresa de Luz e Força Santa Maria, Brazil
Arlan Luiz Bettiol, A Vero Domino Consultoria e Pesquisa, Brazil
Roberto Coelho, Federal University of Santa Catarina, Brazil
Denizar Martins, Universidade Federal de Santa Catarina, Brazil.

171381 Resonant Harmonic Compensation For Synchronverter, Integrating Wind And Photovoltaic Power Generation Into An Electrical Grid, Case Study: Nonlinear And Unbalanced Load
Jorge Caicedo, André Ramos de Castro, UFRJ, Brazil
Bruno França, Fluminense Federal University, Brazil
Mauricio Aredes, Federal University of Rio de Janeiro, Brazil.

171430 A Novel Stator Voltage Distortion and Unbalance Compensation of a DFIG With Series Grid Side Converter Using Adaptive Resonant Controllers
Gustavo Gontijo, Thiago Tricarico, Daniel Krejci, Federal University of Rio de Janeiro, Brazil
Bruno França, Fluminense Federal University, Brazil
Mauricio Aredes, Federal University of Rio de Janeiro, Brazil.

171457 Single-Phase To Three-Phase Reduced-Switch-Count Converters Applied To Wind Energy Conversion Systems Using Doubly-Fed Induction Generator
Guilherme Leandro, Emerson Soares, Nady Rocha, Universidade Federal da Paraíba, Brazil.

171506 Efficient Scheme of Battery Charging Based on One Cycle Control Applied in Photovoltaic Systems
João Teixeira, Federal Institute of Education, Science and Technology of Rio Grande do Norte, Brazil
Andrés Salazar, Alan Leite, André Hyago, Rafael Araújo, UFRN, -- Select Country --.

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171514 Maximum Power Point Tracking of a Wind Generator using a SEPIC Converter with LMI Control
Igor Henrique Oliveira, State University of Londrina (UEL), Brazil
Newton da Silva, Universidade Estadual de Londrina, Brazil.

10:20AM - 12:20PM

PHB SOLAR ROOM - SG 1 - SMART GRIDS. Chair: Luiz Henrique Silva Colado Barreto

171021 Advantages of Grid-Tied DC microgrid
Marcello Neves, Federal University of Rio de Janeiro, Brazil
Maynara Aredes, Universidade Federal do Rio de Janeiro, Brazil
Hamidreza Khezri, Elisa Ida, Mauricio Aredes, Federal University of Rio de Janeiro, Brazil.

171507 Analysis of AC Dispatchable Microgrid During Grid-connected and Isolated Modes Transitions
Gabriel Fogli, UFJF, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil.

171321 Multiobjective Approach for Power Flow and Unbalance Control in Low-Voltage Networks Considering Distributed Energy Resources
Willian Ferreira, Federal University of Minas Gerais, Brazil
Danilo Iglesias Brandao, Frederico G. Guimarães, UFMG, Brazil
Elisabetta Tedeschi, Norwegian University of Science and Technology, Norway
Fernando Marafão, Unesp - Univ. Estadual Paulista, Brazil.

171322 One-Cycle Control Based Maximum Power Point Tracker Using Constant Voltage Method for Battery Charging Applications
João Teixeira, Federal Institute of Education, Science and Technology of Rio Grande do Norte, Brazil
Andrés Salazar, André Hyago, Alan Leite, UFRN, Brazil.

171473 Reduced-Order Model of AC Microgrid for Stability Analysis and Adjustment of Droop Control
Everton Correa, State University of Santa Catarina, Brazil
Marcello Mezaroba, UDESC, Brazil
Gustavo Azevedo, Universidade Fedeal de Pernambuco, Brazil.

170963 VSG Based Control Application for Inverter-Interfaced Distributed Generators in Microgrids
César Palacio Restrepo, Santa Catarina State University, Brazil
José Renes Pinheiro, Federal University of Santa Maria, Brazil
Marcello Mezaroba, UDESC, Brazil.

171663 Analysis, Design and Implementation of a Isolated Full-Bridge Converter for Battery Charging
Edivan Carvalho, Federal University of Technology - Paraná , Brazil
Emerson Carati, Jean Patric da Costa, Universidade Tecnológica Federal do Paraná, Brazil
Carlos Marcelo de Oliveira Stein, Federal Technological University of Paraná, Brazil
Rafael Cardoso, Universidade Tecnológica Federal do Paraná, Brazil.

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2:00PM - 4:10PM

KEYSIGHT ROOM - LI 1 - LIGHT APPLICATIONS. Chair: Edilson Mineiro Sá Junior

171200 A Charge-Pump LED Driver with PFC and Low-Frequency-Flicker Reduction
Rodrigo Santos, Federal University of Ceara, Brazil
Diogo Rufino, Maxwell Morais, Federal Institute of Ceará, Brazil
Edilson Sá Jr., Instituto Federal de Educação, Ciência e Tecnologia do Ceará - Campus Sobral, Brazil.

171344 Comparative Analysis of Basic Single-Stage Non-Isolated AC-DC Topologies Employed as High-Current COB LED Drivers
Denis de Castro Pereira, Wesley de Paula, Pedro Tavares, Federal University of Juiz de Fora, Brazil
Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil.

171409 Application of a Flyback Converter and Variable Pulse Position Modulation for Visible Light Communication
Marlon Salmento, Rafael Brier, Jhulliane Amaral, Federal University of Juiz de Fora, Brazil
Lucas Diniz, Vinicius Albuquerque, Universidade Federal de Juiz de Fora, Brazil
Guilherme Márcio Soares, UFJF, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil.

171445 Self-Oscillating Resonant Converter for LED Applications at 500 kHz
William da Rosa, Álysson Raniere Seidel, Fábio Bisogno, Federal University of Santa Maria, Brazil
Maikel Menke, Universidade Federal de Santa Maria, Brazil.

172959 A Comparative Study the Percent Flicker and Photometric Measurement in Three-Phase and Single-Phase Drivers
Maxwell Morais, Diogo Rufino, Pedro Ferreira, Federal Institute of Ceará, Brazil
Rodrigo Santos, Federal University of Ceara, Brazil
Edilson Sá Jr., Instituto Federal de Educação, Ciência e Tecnologia do Ceará - Campus Sobral, Brazil.

2:00PM - 4:10PM

UFJF ROOM - MD 3 - ELECTRICAL MACHINE AND DRIVES. Chair: Marcelo Aroca Tomim

171659 Comparative study of PI-AW and MPC-T controllers, with feedback noise applied for speed control to a Switched Reluctance Motor (SRM)
Misael Quispe Maidana, University Federal of Ceará, Brazil
Wellington Silva, Wilkley Correia, Bismark Torrico, Universidade Federal do Ceará, Brazil
Fabricio Gonzalez Nogueira, University Federal of Ceará, Brazil.

172698 Analytical modeling of permanent magnetic synchronous motors considering spatial harmonics
Amir Ebrahimi, Fraunhofer IPA, Germany.

171723 Analysis Of Modulation Techniques For An Alternative Five-Level NPC Converter Used On Adjustable-Speed Drives
Ramon Souza, Centro Federal De Educação Tecnológica De Minas Gerais, Brazil
José Lucas de Lima Magalhães, Centro Federal de Educação Tecnológica de Minas Gerais, Brazil
Gabriela Silva, Federal Center of Technological Education of Minas Gerais, Brazil

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Alex-Sander A. Luiz, Marcelo Stopa, Centro Federal de Educação Tecnológica de Minas Gerais, Brazil.

172849 Silent Low Speed Self-Sensing Strategy for Permanent Magnet Synchronous Machines Based on Subtractive Filtering
Joao Bonifacio, Notker Amann, ZF Friedrichshafen AG, Germany.
Ralph Kennel, Technical University of Munich, Germany.

171568 Cost Function Tuning Methodology for FCS-MPC Applied to PMSM Drives
Arthur Bartsch, Universidade do Estado de Santa Catarina, Brazil
Gabriel Negri, UDESC, Brazil
Mariana Cavalca, Jose Oliveira, Ademir Nied, Universidade do Estado de Santa Catarina, Brazil.

171602 An Optimal MIMO Control Approach for PMSM Drives
Christian Meirinho, Universidade do Estado de Santa Catarina, Brazil
José de Oliveira, UDESC, Brazil
Mariana Cavalca, Arthur Bartsch, Jose Oliveira, Universidade do Estado de Santa Catarina, Brazil.

2:00PM - 4:10PM

OHMINI ROOM - MS 2 - MODELING AND SIMULATION. Chair: Fernando Lessa Tofoli & Lourenço Matakas Junior

169639 Small-Signal Model Validation of A SEPIC Converter Based on the Three-State Switching Cell in CCM Using the PWM Switch Model
Fernando Lessa Tofoli, José Augusto Rocha Carvalho, Universidade Federal de São João del-Rei, Brazil.

171139 A Control Technique to Balance the Voltage of DC-Link for Three-Level NPC Converter
Abinadabe Andrade, Universidade Federal de Campina Grande, Brazil
Luciano Barros, Federal University of Campina Grande, Brazil
Alvaro Maciel, Instituto Federal de Educação, Ciência e Tecnologia da Paraiba, Brazil
Reuben Rezende de Sousa, Universidade Federal de Campina Grande, Brazil
Marcelo Vieira, Universidade Federal de Sergipe, Brazil.

171347 Decoupled Stationary ABC Frame Current Control of Three-Phase Four-Leg Four-Wire Converters
Pedro Hayashi, Universidade de São Paulo, Brazil.
Lourenço Matakas Junior, Universidade de São Paulo, Brazil.

171358 Fullbridge MMC Control for Hybrid HVDC Systems
Jose Rafael Lebre, Edson H. Watanabe, COPPE/UFRJ, Brazil.

171443 Modeling and Control of AC Current and DC Voltage of PWM Converters using Polynomial RST and PI Controllers
Wilson Santana, Camila Salomon, Universidade Federal de Itajuba, Brazil
Germano Lambert-Torres, Federal University of Itajuba, Brazil
Eduardo Borges, Universidade Federal de Itajubá, Brazil
Erik Bonaldi, Levy Oliveira, PS Soluções, Brazil
Denis Mollica, Joselino Santana Filho, EDP Sao Paulo Distribuicao de Energia, Brazil.

171458 H-infinity robust control with application for active power filters
Gustavo Koch, Caio Osorio, Federal University of Santa Maria, Brazil

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Humberto Pinheiro, Robinson Camargo, Universidade Federal de Santa Maria, Brazil
Ricardo Oliveira, FEEC-UNICAMP, Brazil
Vinícius Montagner, Alexandre Pereira, Universidade Federal de Santa Maria, Brazil.

172894 Cascade DC/DC Converter Modeling Developed to Supercapacitor Energy Management System
Jonathan Hunder Dutra Gherard Pinto, Guilherme Avelar, Salatiel Lobato, Universidade Federal de Juiz de Fora, Brazil
Ettore Aquino, Federal University of Juiz de Fora, Brazil
Marcio Barbosa Poncilio Rodrigues, IF Sudeste MG, Brazil
Marcelo Tomim, UFJF, Brazil
Pedro Barbosa, André Augusto Ferreira, Universidade Federal de Juiz de Fora, Brazil.

2:00PM - 4:10PM

PHB SOLAR ROOM - SG 2 - SMART GRIDS. Chair: Francisco de Assis dos Santos Neves & Cassiano Rech

171519 A case study of adaptive microgrid protection during transitions and operations
Bruno I. Pacheco, Marcos A. I. Martins, Cesare Q. Pica, Nilo Rodrigues, ERTI Foundation, Brazil.

171546 Implementation of Droop Control with Enhanced Power Calculator for Power Sharing on a Single-Phase Microgrid
Tiago Cardoso, Federal University of Pernambuco, Brazil
Gustavo Medeiros de Souza Azevedo, Universidade Federal de Pernambuco, Brazil
Marcelo Cavalcanti, Francisco Neves, Leonardo Limongi, Federal University of Pernambuco, Brazil.

171595 A solution proposal for communication and management of converters operating in microgrids
Guilherme Eichstädt, Felipe Joel Zimann, Universidade do Estado de Santa Catarina - UDESC, Brazil
Marcello Mezaroba, UDESC, Brazil
Christofer Schwartz, Universidade do Estado de Santa Catarina, Brazil.

171607 Comparative analysis of predictive current control techniques applied to single-phase grid-connected inverters
Caio Osorio, Federal University of Santa Maria, Brazil
Guilherme da Silva, Federal University of Pampa, Brazil
Julian Giacomini, Farroupilha Federal Institute, Brazil
Cassiano Rech, Federal University of Santa Maria, Brazil.

171622 Impedance Shaping of Grid-Connected Three-Phase PV Systems
João Silva, Evandro Nunes, UFRN, Brazil
Thiago Rocha, DEE/UFRN, Brazil
Flávio Costa, Federal University of Rio Grande do Norte, Brazil.

171626 Impact of pv systems on microgrids under different levels of penetration and operational scenarios
Ricardo lucio De Araujo Ribeiro, Evandro Nunes, UFRN, Brazil
Thiago Rocha, DEE/UFRN, Brazil
Flávio Costa, Denis Alves, Federal University of Rio Grande do Norte, Brazil
Everton Dantas, UFRN, Brazil.

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4:40PM - 6:40PM

UFJF ROOM - AT 2 - AUTOMOTIVE APPLICATIONS. Chair: José Antenor Pomilio.

171495 Modeling and Prototype of a Dynamic Wireless Charging System Using LSPS Compensation Topology
Glauber Lima, Universidade Federal de Santa Catarina, Brazil
Ruben Godoy, Universidade Federal de Mato Grosso do Sul, Brazil.

171523 CBERS04A power supply simulation and power budget analysis
Renato Magalhaes, Instituto Nacional de Pesquisas Espaciais, Brazil.

171729 Analysis and Operation of an Integrated Battery Charger Using the EV Traction Motor as Filter
Alisson Mengatto, Santa Catarina State University, Brazil
Joselito A Heerdt, Universidade de Santa Catarina, Brazil.

172876 Railway Trajectory Modeling For Simulation Of Locomotives Drive Systems
Lucas de Paula Resende, Loan Silva, Federal University of Juiz de Fora, Brazil
Marcelo Tomim, UFJF, Brazil.

172935 Modeling and Control of Interleaved Buck Converter for Electric Vehicle Fast Chargers
Gleisson Balen, Universidade Federal de Santa Maria, Brazil
Andrei Reis, GEPOC - Federal University of Santa Maria, Brazil
Humberto Pinheiro, Luciano Schuch, Universidade Federal de Santa Maria, Brazil.

172937 Wireless power transmission applied to pure electric vehicle
Marcus Jorgetto, IFMS - Institute Federal of Education, Science and Tecnology of Mato Grosso do Sul, Brazil
Guilherme Melo, UNESP - Campus de Ilha Solteira, Brazil
Jean Ribeiro, Universidade Estadual Paulista - UNESP, Brazil
Carlos Canesin, Sao Paulo State University - UNESP, Brazil.

172958 Modularized bidirectional step-up DC-DC converter with predictive battery equalization method
Edson Lorencetti, Santa Catarina State University, Brazil
Joselito A Heerdt, Universidade de Santa Catarina, Brazil.

4:40PM - 6:40PM

KEYSIGHT ROOM - IA - INDUSTRY APPLICATIONS. Chair: João Onofre Pinto

171502 Adaptions in a Three Phase Water Pump Drive to Improve Dynamic Control and Reduce Costs
Caio da Silva Moraes, Ruben Godoy, Luigi Galotto, Universidade Federal de Mato Grosso do Sul, Brazil.

171707 An Aiding Tool to the Design and Simulation of Multilevel Inverters
Samuel Mesquita, Federal University of Ceara, Brazil
Fernando Antunes, Sergio Daher, Federal University of Ceará, Brazil
Rene Bascopé, Universidade Federal do Ceará, Brazil.

171715 Energy efficiency in the replacement of fluorescent lamps by led: application in a store
Larissa Souza Pereira, Yury Pontes, Federal University of Ceará, Brazil
Francisco Costa, Irla Maria Pedrosa Rodrigues

172888 Selective Compensation of Harmonics Applied in a Multi-Level Single-Phase UPQC System

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Rodrigo Barriviera, Federal Institute of Parana - IFPR, Brazil
Edson Acordi, Instituto Federal do Parana - IFPR, Brazil
Ricardo Machado, Universidade de São Paulo, Brazil.

172938 Droop control strategy using resonant controllers to achieve resistive output impedance characteristics for UPS inverters
Roberto Carballo, Fernando Botteron, Universidad Nacional de Misiones, Argentina
Germán Oggier, Universidad Nacional de Río Cuarto, Argentina
Guillermo Oscar García, Grupo de Electrónica Aplicada, Argentina.

171543 Solid-State Light Simulator for Horticultural Applications
Klaus Martin, Federal University of Santa Maria, Brazil
Marcelo Da Silva, Saul Bonaldo, Olinto Araújo, Universidade Federal de Santa Maria, Brazil.

172844 DEVELOPMENT AND IMPLEMENTATION OF A SMART INDUCTION STOVE
Diego Chacón, Universidad Politecnica Salesiana, Ecuador.

4:40PM - 6:40PM

PHB SOLAR ROOM - RE 3 - RENEWABLE ENERGY. Chair: Fernando Soares dos Reis

171573 Control strategy for a current-source boost-buck converter for PV systems
Daniel Westerman Spier, Federal University of Technology - UTFPR-CP, Brazil
German Oggier, Universidad Nacional de Río Cuarto, Argentina
Sergio Oliveira da Silva, Universidade Tecnológica Federal do Paraná, Brazil.

171590 DESIGN AND IMPLEMENTATION OF LEAD-ACID BATTERY STATE-OF-HEALTH AND STATE-OF-CHARGE MEASUREMENTS
Gabriel Bressanini, Tiago Busarello, Federal University of Santa Catarina, Brazil
Adriano Péres, Universidade Federal de Santa Catarina - UFSC Blumenau, Brazil.

171593 A Zero Axis Robust Model Reference Adaptive Controller Applied to Voltage Regulation in Standalone Self-Excited Induction Generator under Unbalanced Loads
Francisco Gentile, Victor Kurtz, Universidad Nacional de Misiones, Argentina
Lucas Scherer, UFSM, Brazil
Robinson Camargo, Universidade Federal de Santa Maria, Brazil.

171624 SEPIC Converter With Wide Bandgap Semiconductor for PV Battery Charger
Manisha Maharjan, Prajina Tandukar, Abhilasha Bajracharya, Fernando Bereta dos Reis, Ujjwol Tamrakar,
Dipesh Shrestha, South Dakota State University, USA
Fernando dos Reis, PUCRS, Brazil
Reinaldo Tonkoski Jr., Concordia University, Canada.

172301 Sliding Mode Control of a Grid-Emulator Converter Applied on a PHIL
Igor Souza, Universidade Federal de Juiz de Fora, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil.

171672 Performance Comparison Of Igbts And Sic-Mosfet Applied In Photovoltaic Inverters During Reactive

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Power Injection
Paulo Júnior, University of Viçosa, Brazil
Lara Rios, Wesley Ribeiro, Universidade Federal de Viçosa, Brazil
Allan Cupertino, CEFET-MG, Brazil
Heverton Pereira, Universidade Federal de Viçosa, Brazil.

4:40PM - 6:40PM

OHMINI ROOM - MS 3 - MODELING AND SIMULATION. Chair: Leandro Michels & Ernane Antônio Alves Coelho

172963 AN ALTERNATIVE ANALYSIS OF AC-AC PWM CONVERTER VOLTAGE STABILIZER
Ana Caroline Costa, Universidade Federal de Uberlândia, Brazil
Antônio Oliveira Costa Neto, Federal University of Uberlandia, -- Select Country --
Joaquim Henrique Reis, Ernane A. A. Coelho, Universidade Federal de Uberlândia, Brazil
Luiz Freitas, Universidade Federal de Uberlândia - Núcleo de Pesquisa em Eletrônica de Potência, Brazil
Joao Vieira Jr, Universidade Federal de Uberlandia, Brazil
Luiz Carlos Freitas, Universidade Federal de Uberlândia, Brazil.

171477 Flexible Control System For Experimental Evaluation Of Static Converters Applied To Dc/Dc Converters
Paula Stael Barbosa, Centro Federal de Educação Tecnológica de Minas Gerais-CEFET-MG, Brazil
Jéssica Bertolino Gregório, CEFET-MG, Brazil
Matusalém Lanes, Universidade Federal do Rio de Janeiro, Brazil
Natã Franco Soares de Bem, Centro Federal de Educação Tecnológica de Minas Gerais, Brazil.

171481 Finite Set Model Predictive Control of Grid Connected Split-Source Inverters
Juliano Borges, Felipe Grigoletto, Universidade Federal do Pampa, Brazil.

171531 MODELING AND SIMULATION OF CONTROLLABLE AC SERIES RESISTIVE LOAD
Rafael Oliveira, Luis Ferreira, Federal University of Itajuba, Brazil
Enio Roberto Ribeiro, UNIFEI, Brazil.

171551 Considerations on One Cycle Control Technique
Aluisio Bento, universidade estadual do rio de janeiro, Brazil
Luis Monteiro, UERJ, Brazil.

171566 Cascaded MPPT Control with Adaptive Voltage Controller Applied to Boost Converters for PV Applications
Lucas Bellinaso, Universidade Federal de Santa maria, Brazil
Mauro Fernando Basquera Júnior, PHB Eletrônica Ltda, Brazil
Rodrigo Padilha Vieira, Federal University of Santa Maria, Brazil
Hilton Gründling, UFSM, Brazil
Leandro Michels, Universidade Federal de Santa Maria, Brazil.

172899 Design and implementation of a predictive current controller applied to regulate a battery bank's power flow connected to a DC microgrid
Pedro Peters, Federal University of Juiz de Fora (UFJF), Brazil
João Pedro Peters Barbosa, Universidade Federa de Juiz de Fora, Brazil

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Pedro de Almeida, Federal University of Juiz de Fora, Brazil
Rodolfo Lacerda Valle, Universidade Federal de Juiz de Fora, Brazil.

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10:20AM - 12:20PM

PHB SOLAR ROOM - MD 4 - ELECTRICAL MACHINE AND DRIVES. Chair: Richard Magadalena Stephan

172870 Mathematical modeling and numerical simulation of locomotives electrical drive systems in Modelica
Loan Silva, Lucas de Paula Resende, Federal University of Juiz de Fora, Brazil
Marcelo Tomim, UFJF, Brazil.

172875 Sensorless Vector Control for BLDC Machine
Thales Portes de Almeida, Geyverson Teixeira de Paula, Universidade de São Paulo, Brazil
Allan de Castro, USP, Brazil
William César Andrade Pereira, José Roberto Monteiro, Universidade de São Paulo, Brazil.

172877 Real-Time Simulator of Interior Permanent-Magnet Synchronous Motor Based on FPGA Devices
Eisenhawer Fernandes, Federal University of Campina Grande, Brazil.

172898 Brushless Cascaded Doubly-fed Induction Machine: Modeling and Simulation
Ryan Berriel, Universidade Federal do Rio de Janeiro, Brazil
Richard Stephan, COPPE-UFRJ, Brazil
Ivan Eduardo Chabu, USP, Brazil
Ântonio Ferreira, Universidade Federal do Rio de Janeiro, Brazil.

172907 Induction motor parameter estimation from manufacturer data using genetic algorithms and heuristic relationships
Sandro Lima, Carlos Wengerkievicz, UFSC, Brazil
Nelson Batistela, Nelson Sadowski, Universidade Federal de Santa Catarina, Brazil
Pedro Da Silva Jr., IFSC, Brazil
Anderson Beltrame, ENGIE Brasil Energia, Brazil.

172919 Parameter estimation of the transient model of a synchronous generator from accessible measurements and with parameter constraints
Taylon Landgraf, Elmer Cari, University of São Paulo, Brazil
Luis Alberto, Universidade de São Paulo, Escola de Engenharia de São Carlos, Departamento de Engenharia Elétric, Brazil.

10:20AM - 12:20PM

OHMINI ROOM - MS 4 - MODELING AND SIMULATION. Chair: Vinícius Montagner

171534 Design and Lifetime Analysis of a DSCC-MMC STATCOM
João Victor Matos Farias, UFV, Brazil
Allan Cupertino, CEFET-MG, Brazil

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Victor de Nazareth Ferreira, UFMG, Brazil
Seleme Seleme Jr, Universidade Federal de Minas Gerais, Brazil
Heverton Pereira, Universidade Federal de Viçosa, Brazil
Remus Teodorescu, Aalborg University, Denmark.

171586 Modelling of a ZVS full bridge DC-DC converter for photovoltaic applications
Bernardo Andres, Rafael Concatto Beltrame, Universidade Federal de Santa Maria, Brazil
Mário Lúcio Martins, Helio Hey, Federal University of Santa Maria, Brazil
Leonardo Cassol Bach, UFSM, Brazil.

171634 A discrete repetitive current controller for single-phase grid-connected inverters
Fabiano Costa, Universidade Federal da Bahia, Brazil
James Neves da Silva, Universidade Federal do Vale do São Francisco, Brazil
Alfeu Squarezi, UFABC, Brazil
André Nóbrega, Federal University of Bahia, Algeria
Edison da Silva, Universidade Federal da Paraíba, Brazil.

171653 Filtered Smith Predictor Applied to a Boost Converter for Minimizing the Effect of Non-Minimal Phase and Rejection of Disturbances
Francisco Everton Uchoa Reis, Universidade Federal do Ceará, Brazil
Kristian Santos, Federal University of Ceará, Brazil
Bismark Torrico, Paulo Praça, Rene Bascopé, Universidade Federal do Ceará, Brazil
Tobias Neto, Federal University of Ceará, Brazil.

171671 Current source converter model and control for a particle accelerator quadrupole magnet.
Fernando Henrique de Oliveira, Ettore Aquino, Federal University of Juiz de Fora, Brazil
Cleber Rodrigues, Brazilian Synchrotron Light Laboratory, Brazil
Janaina Goncalves de Oliveira, Universidade Federal de Juiz de Fora, Brazil
Vinícius Montagner, Universidade Federal de Santa Maria, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil
André Augusto Ferreira, Universidade Federal de Juiz de Fora, Brazil.

171721 A hybrid digital control method for synchronous buck converters using multisampled linear PID and V^2 constant on-time controllers
Renan Vasconselos, Universidade Federal de Santa Maria, Brazil
Mário Lúcio Martins, Federal University of Santa Maria, Brazil.

10:20AM - 12:20PM

SOBRAEP ROOM - PE 4 - POWER ELECTRONICS. Chair: Demercil de Souza Oliveira Junior & José Renes Pinheiro

171520 Carrier-based pwm technique applied to single-phase asymmetric npc inverters with three levels on input and seven on output, using fpga
Francisco de Oliveira, Federal University of Paraiba, Brazil
Isaac de Freitas, Universidade Federal da Paraíba, Iceland
Ronnan Cardoso, Universidade Federal da Paraiba, Brazil

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Zariff Gomes, University of Paraíba, Brazil.

171660 Loss Analysis of a High Frequency Isolated AC-AC Converter Applied to Voltage Regulation
Olympio Silva Filho, Universidade Federal de Campina Grande, Brazil
Bruno de Almeida, Federal University of Ceará, Brazil
Demercil Oliveira Jr, UFC, Brazil
Tobias Neto, Federal University of Ceará, Brazil.

171541 A HF transformer design methodology for high efficiency isolated zvs dc/dc converters
Julio Maragaño Schmidt, Federal University of Santa Maria-UFSM, Brazil
Gustavo Medeiros de Souza Azevedo, Universidade Federal de Pernambuco, Brazil
Marcelo Cavalcanti, Federal University of Pernambuco, Brazil
José Renes Pinheiro, Federal University of Santa Maria, Brazil.

171553 A Normalized approach for analysis and design a flyback resonant converter for energy harvesting systems
Lucas Mendonça, Thiago Cattani Naidon, Fábio Bisogno, Universidade Federal de Santa Maria, Brazil.

171591 Cooling Methods Design For Power Electronics Converters
Adriano Dias, Anand Almeida, Diogo Brum Candido, WEG Drives & Controls, Brazil
Joable Alves, WEG, Brazil.

171612 The D-Converter in CCM: Analysis, Design And Results
Fernando dos Reis, PUCRS, Brazil
Henrique Cabral, Pontifical Catholic University of Rio Grande do Sul, Brazil
Reinaldo Tonkoski, South Dakota State University, USA.

10:20AM - 12:20PM

UFJF ROOM - RE 4 - RENEWABLE ENERGY. Chair: André Augusto Ferreira

171933 Optimal Reactive Power Compensation in Weak Grids with Insertion of Wind and Solar Sources
Yuri Stypulkowski, Federal University of Rio Grande do Sul (UFRGS), Brazil
Roberto Chouhy Leborgne, UFRGS, Brazil.

171670 Generation analysis of a small wind turbine with a back-to-back converter connected to the grid at Juiz de Fora.
Fernando Henrique de Oliveira, Ettore Aquino, Federal University of Juiz de Fora, Brazil
Janaina Goncalves de Oliveira, Universidade Federal de Juiz de Fora, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil
André Augusto Ferreira, Universidade Federal de Juiz de Fora, Brazil.

172315 Transformerless DC-DC Converter with High Voltage Gain Based on Switched-Inductor Applied to Photovoltaic Systems
Julio Cezar de Morais, Roger Gules, Juliano Luiz dos Santos de Morais, UTFPR, -- Select Country --
Leonardo Göbel Fernandes, Universidade Tecnológica Federal do Paraná, Brazil.

172341 An Experimental Comparative Study of Perturb and Observe and Incremental Conductance MPPT techniques for Two-Stage Photovoltaic Inverter

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Hugo Moreira, Marcos Vinicios Gomes dos Reis, University of Campinas, Brazil
Lucas Savoi de Araujo, UNICAMP, Brazil
Tisciane Oliveira, University of Campinas, Brazil
Marcelo Gradella Villalva, UNICAMP, Brazil.

171678 Real-Time Data Monitoring with Zigbee Wireless Transmission Applied to a WECS
Samanta Barbosa, Bruno de Almeida, Federal University of Ceará, Brazil
Demercil Oliveira Jr, UFC, Brazil.

172369 Enhancing Harmonic Rejection Capability Of Grid-Connected Module-Integrated Converters
Sebastián Manrique Machado, Universidade Tecnológica Federal Do Paraná, Brazil
Rodrigo Pereira, Universidade Tecnológica Federal do Paraná - Apucarana, Brazil
Cicero De Oliveira, Universidade Tecnológica Federal Do Paraná, Brazil
Newton da Silva, Universidade Estadual de Londrina, Brazil.

10:20AM - 12:20PM

KEYSIGTH ROOM - SG 3 - SMART GRIDS. Chair: Cassiano Rech

171630 Enhanced Power Flow Control of Distributed Generator Units by using Virtual Impedance Scheme
Ricardo Iucio De Araujo Ribeiro, Thales Fonseca, UFRN, Brazil
Flavio B. Costa, Universidade Federal de Campina Grande, Algeria
Thiago Rocha, DEE/UFRN, Brazil.

171635 Hybrid DC and AC Power Distribution Network as an Alternative Solution for Isolated Microgrids
Hércules Oliveira, Federal University of Maranhão, Brazil
Luiz Ribeiro, UFMA, Brazil
José Gomes de Matos, UFMA-Federal University of Maranhão, Brazil
Osvaldo R. Saavedra Mendez, Universidade Federal do Maranhão, Brazil
Marcos Assunção, Federal University of Maranhão, Brazil.

171692 Feed-forward active attenuation of low frequency common-mode voltages in DC microgrids
Thiago Oliveira, Pedro Donoso-Garcia, Seleme Seleme Jr, Universidade Federal de Minas Gerais, Brazil.

171722 Proposal of model predictive control (MPC) method for a four-leg three-phase inverter applied in a distributed generation system
Lázaro Rubens Pinto, Universidade Federal de Goiás, Brazil
Sérgio Pimentel, Enes Marra, Bernardo Alvarenga, Thaissa Cesar, Ciliana Lima, UFG, Brazil.

171930 A Hybrid Simulation Tool for Penetration Studies of Distributed Generation in Smartgrids
Thainan Theodoro, University of Juiz de Fora, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil
Marcelo Tomim, UFJF, Brazil
Antonio Carlos S. de Lima, UFRJ, Brazil.

172736 Comparison of harmonic detection methods applied in a photovoltaic inverter during harmonic current compensation
Felipe Antunes, UFSJ, Brazil

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Lucas Xavier, Universidade Federal de Viçosa, Brazil
Allan Cupertino, CEFET-MG, Brazil
Leonardo Felix, Heverton Pereira, Universidade Federal de Viçosa, Brazil.

2:00PM - 4:10PM

PHB SOLAR ROOM - MD 5 - ELECTRICAL MACHINE AND DRIVES. Chair: José Santisteban

171508 Modelling and control of a switched reluctance machine for application in a Flywheel Energy Storage System
Lucas Almeida, Universidade Federal de Juiz de Fora, Brazil
Guilherme Sotelo, Gustavo Ferreira, Universidade Federal Fluminense, Brazil
Janaina Goncalves de Oliveira, Thomás Vieira, Universidade Federal de Juiz de Fora, Brazil.

172920 Adaptive Observer for Sensorless Permanent Magnet Synchronous Machines with Online Pole Placement
Cesar Volpato Filho, Filipe Scalcon, University of Santa Maria, Brazil
Thieli Gabbi, Federal University of Santa Maria, Brazil
Rodrigo Padilha Vieira, Universidade Federal de Santa Maria, Brazil.

172930 Sliding Mode Vector Control of Non-Sinusoidal Permanent Magnet Synchronous Machine
José Roberto Monteiro, Thales Portes de Almeida, Universidade de São Paulo, Brazil
Allan de Castro, USP, Brazil.

172972 Design of a MIMO IMC-TS Fuzzy Speed Controller for PMSM
Raymundo Cordero, UFMS, Brazil
João Onofre Pinto, Federal University of Mato Grosso, Brazil
Edson Antonio Batista, UFMS, Brazil
Luigi Galotto, Universidade Federal de Mato Grosso do Sul, Brazil.

172982 Turning Induction Motors in Four Poles Active Magnetic Poles With Coupled Fluxes
Christian Tshizubu, José Santisteban, Universidade Federal Fluminense, Brazil.

2:00PM - 4:10PM

OHMINI ROOM - MS 5 - MODELING AND SIMULATION. Chair: Rodolfo Lacerda Valle

171355 Grid Connected Voltage-Source Converter Pre-energization Strategy
Samuel Duarte, Pedro de Almeida, Federal University of Juiz de Fora, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil.

172230 Comparative Analysis of PID, Resonant and Repetitive Controllers Applied to a Single-Phase PWM Inverter
Henrique Jank, Federal University of Santa Maria, Brazil
William Venturini, Federal Univesity of Santa Maria, Brazil
André Meurer, University of Santa Maria, Brazil
Fábio Bisogno, Mário Lúcio Martins, Cassiano Rech, Federal University of Santa Maria, Brazil.

172479 Generalized Predictive Control with Harmonic Rejection Applied to a Grid-Connected Inverter with LCL Filter
Daniel Martins Lima, Universidade Federal de Santa Catarina, Brazil

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Luiz Antonio Maccari Jr., Federal University of Santa Maria, Brazil
Vinícius Montagner, Universidade Federal de Santa Maria, Brazil.

172861 Modeling and analysis of a DC-DC converter for renewable energy applications
Daniel Westerman Spier, Federal University of Technology - UTFPR-CP, Brazil
German Oggier, Universidad Nacional de Río Cuarto, Argentina
Sergio Oliveira da Silva, Universidade Tecnológica Federal do Paraná, Brazil.

172932 Analysis of an Adaptive Voltage Control of DC Microgrids Using CHIL Real Time Simulation
Rodrigo Ferreira, Instituto Federal Sudeste de Minas Gerais, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil
Marcio Barbosa Poncilio Rodrigues, IF Sudeste MG, Brazil.

172934 Discontinous Carrier-Based Modulation for Three Level Flying Capacitor Converter
Mauricio da Silva, Federal University of Santa Maria, Brazil
Ademir Toebe, Humberto Pinheiro, Universidade Federal de Santa Maria, Brazil.

3:10PM - 4:10PM

KEYSIGHT ROOM - PQ 3 - POWER QUALITY. Chair: Rondineli Pereira

172910 Hardware in the Loop Simulation of Shunt Active Power Filter (SAPF) utilizing RTDS and dSPACE
Dalmo Cardoso da Silva Júnior, Universidade Federal de Juiz de Fora, Brazil
Bernardo Ferraz Musse, Federal University of Juiz de Fora, Brazil
Nathan Silva, Universidade Federal de Juiz de Fora, Brazil
Pedro de Almeida, Federal University of Juiz de Fora, Brazil
Janaina Goncalves de Oliveira, Universidade Federal de Juiz de Fora, Brazil.

172955 Influence of the PLL phase-angle quality on the static and dynamic performance of grid-connected systems
Vinicius Bacon, Vinicius Souza, UTFPR, Brazil
Sergio Oliveira da Silva, Universidade Tecnológica Federal do Paraná, Brazil
Estevao Padim, UTFPR, Brazil.

172966 Fast and Robust Fundamental Component Estimation Algorithm for a Single Phase System
Andre Sousa, Centro Federal de Educação Tecnológica Celso Suckow da Fonseca, Brazil
João Moor, CEFET-RJ, Brazil
Júlio Ferreira, Centro Federal de Educação Tecnológica Celso Suckow da Fonseca, Brazil
Mauro Reis, mauro.s.reis@gmail.com, Brazil
Lívia Peres, Centro Federal de Educação Tecnológica Celso Suckow da Fonseca, Brazil.

172969 Harmonic compensation as ancillary service of a grid- connected photovoltaic power system
Jéssica Rocha, Fabiano Salvadori, Camila Gehrke, UFPB, Brazil.

3:10PM - 4:10PM

SOBRAEP ROOM - SG 4 - SMART GRIDS. Chair: Marcelo Lobo Heldwein

172953 A comparative study of lead-acid batteries and lithium iron phosphate batteries used in micro-gridsystems

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Cristiane Figueira Brasil, University of the State of Amazonas, Brazil
Charles Luiz Melo, Universidade do Estado do Amazonas, Brazil.

172918 Evaluation of the performance of state of charge of a lithium-ion battery energy storage systems applied to primary frequency regulation of microgrids
Tatiana Tostes, Mariana Silva, Kelvin Do Nascimento, Debora Rosana Ribeiro Penido Araujo, Leandro Araujo, Universidade Federal de Juiz de Fora, Brazil.

172939 Stability Analysis of a Smart Microgrid Solar Photovoltaic System
Gustavo Andres Finamor, Universidade Federal de Santa Catarina, Brazil
Diego Suarez Solano, UFSC-INEP, Brazil
Marcio Ortmann, Federal University of Santa Catarina, Brazil
Adriano Ruseler, UFSC, Brazil
Lucas Munaretto, UFSC-INEP, Brazil
Luiz Carlos Gili, Universidade Regional de Blumenau, Brazil
Roberto Coelho, Federal University of Santa Catarina, Brazil
Marcelo Heldwein, Universidade Federal de Santa Catarina, Brazil.

172904 Controller-Hardware-In-The-Loop Simulation of a Distribution System with PV Penetration Using RTDS and dSPACE
Bernardo Ferraz Musse, Federal University of Juiz de Fora, Brazil
Nathan Silva, Dalmo Cardoso da Silva Júnior, Leonardo Willer Oliveira, Janaina Oliveira, Universidade Federal de Juiz de Fora, Brazil.

3:10PM - 4:10PM

UFJF ROOM - PD 2 - POWER DEVICES. Chair: Pedro Santos Almeida

171170 A Review on Gallium Nitride Switching Power Devices and Applications
Wesley de Paula, Denis de Castro Pereira, Pedro Tavares, Federal University of Juiz de Fora, Brazil
Filipe Silva, UFJF, Brazil
Gabriel Tavares, Pedro Almeida, Federal University of Juiz de Fora, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil.

172892 Optimal Inductor Design for Single-Phase Three-Level Bridgeless PFC Rectifiers
André Lange, Federal University of Santa Catarina, Brazil
Marcelo Heldwein, Universidade Federal de Santa Catarina, Brazil.

172900 SiC Power Devices In Power Electronics: An Overview
Luciano Alves, Ruan Gomes, Federal University of Campina Grande, Brazil
Pierre Lefranc, University Grenoble Alpes - G2Elab, France
Raoni Pegado, Federal University of Paraíba, Brazil
Pierre Jeannin, University Grenoble Alpes - G2Elab, France
Benedito Luciano, Universidade Federal de Campina Grande, Brazil
Filipe Rocha, Federal University of Paraíba, Brazil.

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177941 Bipolar power semiconductor devices failure modes and best practices
Ricardo Prado, SEMIKRON, Brazil
Clovis Gajo, Semikron, Brazil.

4:40PM - 6:40PM

PHB SOLAR ROOM - ED 3 - EDUCATION AND SPECIAL TOPICS. Chair: André Augusto Ferreira

172257 A First Order Model plus a Buck Converter Emulating a Solar Panel
Stefanie Recla Schwab, Thiago Sales Rocha, Sofía Pola Simonetti, Domingos Simonetti, UFES, Brazil.

171712 Worst Case Response Time Approach Evaluation for Computing CAN Messages Response Time in an Automotive Network
Saulo Marcos Torres de Carvalho, Gustavo Lobato Campos, Instituto Federal de Educação, Ciência e Tecnologia de Minas Gerais (IFMG), Brazil.

171392 Development of a Compact Platform for Power Converter Prototyping
Vinicius Albuquerque, Universidade Federal de Juiz de Fora, Brazil
Lívia Mendes, Luiz Loures, Pedro Almeida, Federal University of Juiz de Fora, Brazil.

171522 Implementation of a High Frequency PWM Signal in FPGA for GaN Power Devices Switching
Gabriel Tavares, Marlon Salmento, Wesley de Paula, Federal University of Juiz de Fora, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil
Denis de Castro Pereira, Federal University of Juiz de Fora, Brazil.

172882 Simplified Educational Platform for SVPWM Control of a Two-Level Three-Phase Inverter using MATLAB GUI and FPGA
Raymundo Cordero, UFMS, Brazil
Igor Ono, Vitoria Fahed, Federal University of Mato Grosso do Sul, Brazil
João Onofre Pinto, Federal University of Mato Grosso, Brazil.

172886 Position and current controller design for an electromagnetic levitation platform
Alan Endalecio, Paulo Silva, Hugo Ferreira, Universidade Federal do Rio de Janeiro, Brazil
Afonso Celso Gomes, Universidade Fedreal do Rio de Janeiro, Brazil
Richard Stephan, COPPE-UFRJ, Brazil.

172897 Didactic Prototype to Model and to Design Linear Control applied to a RLC plant
Salatiel Lobato, Diego Carvalho, Universidade Federal de Juiz de Fora, Brazil
Andre Ferreira, Federal University of Juiz de Fora, Brazil
Vinícius Montagner, Universidade Federal de Santa Maria, Brazil.

4:40PM - 6:40PM

KEYSIGHT ROOM - LI 2 - LIGHT APPLICATIONS. Chair: Ricardo Nederson do Prado

171346 Current Multilevel PFC Buck Rectifier Applied to a High-Power COB LED Driver
Denis de Castro Pereira, Wesley de Paula, Pedro Tavares, Federal University of Juiz de Fora, Brazil
Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil.

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171611 Switched Capacitor Converter with Variable Duty Cycle to Feed LED Tubular Lamp
Priscila Bolzan, UFSM CT PPGEE GEDRE, Brazil
Igor Barboza, Josué Puntzke, Veridiane Rosa, GEDRE - UFSM, Brazil
Ricardo Prado, Universidade Federal de Santa Maria, Brazil.

171679 PWM ALGORITHM FOR REAL-TIME POWER MONITORING AND BRIGHTNESS CONTROL OF LARGE SCALE MATRIX LEDs
Denis Martins, Universidade Estadual de Campinas, UNICAMP, Brazil
Yuzo Iano, Unicamp, Brazil
Eduardo Tozetto, Universidade Estadual de Campinas, UNICAMP, Brazil
Jacobus Swart, Unicamp, Brazil.

172035 Analysis of a High Power COB LED Light Source Driven by Offline Double-Stage PFC Converter
Denis de Castro Pereira, Wesley de Paula, Pedro Tavares, Pedro Almeida, Federal University of Juiz de Fora, Brazil
Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Guilherme Soares, Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil
Bruno Rosa, Federal University of Juiz de Fora, Brazil.

172890 Design of a High-Power Factor Offline LED Driver Employing a Cuk-Based Low Frequency Pre-Regulator
Fernando Nogueira, Lucas Resende, UFJF, Brazil
Cristiano Gomes Casagrande, Universidade Federal de Juiz de Fora, Brazil
Felipe Marinho, Edmar Silva, UFJF, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil.

172917 LED System with Independent Red and Blue Channels Employing Radiant Flux Estimation and Indirect Flux Control for Greenhouse Hop Cultivation
Pedro Tavares, Federal University of Juiz de Fora, Brazil
Inah Guimarães, UFJF, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil
Vitor Bender, UNIPAMPA - Federal University of Pampa, Brazil
Pedro Almeida, Federal University of Juiz de Fora, Brazil.

172962 Simplified Control Techniques Applied to a Boost-Based Low Frequency Offline LED Driver
Fernando Nogueira, Lucas Resende, Ruan Ferraz, UFJF, Brazil
Cristiano Gomes Casagrande, Universidade Federal de Juiz de Fora, Brazil
Felipe Marinho, UFJF, Brazil
Henrique A C Braga, Universidade Federal de Juiz de Fora, Brazil.

4:40PM - 6:40PM

SOBRAEP ROOM - PE 5 - POWER ELECTRONICS. Chair: Claudinor Bittencourt Nascimento

171469 An Isolated Bidirectional Soft-Switching Converter based on LLC Resonant Half-Bridge with Synchronous Rectification
João Coimbra, Renan Pontara, Luiz Loures, Pedro Almeida, Federal University of Juiz de Fora, Brazil.

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171683 Fast transient response capacitorless DC-DC converter.
Dalton Vidor, Nataniel Rigo, Everton Rosa, UFSM, Brazil
José Renes Pinheiro, Federal University of Santa Maria, Brazil.

172222 Three-Phase Bridgeless Boost Pfc Converter With Variable Duty Cycle Control
Douglas Morais, São Paulo State University (UNESP), School of Engineering, Ilha Solteira São Paulo - Brazil, Brazil
Falcondes J. M. de Seixas, Luciano Silva, UNESP - Campus de Ilha Solteira, Brazil
João Pelicer Junior, Univ. Estadual Paulista, Brazil.

172891 A novel non-isolated high DC-DC voltage based on boost converter employing coupled inductor
Eduardo Hass, Fernanda Corrêa, Universidade Tencológica Federal do Paraná, Brazil
Claudinor Nascimento, Federal University of Technology - Parana, Brazil.

172921 DCM Forward-Flyback converter integrated with a 5-order Cockcroft-Walton voltage multiplier: a steady-state and resonant current analysis.
Matheus Schramm Dall Asta, Vinícius Bernardi Fuerback, Telles Brunelli Lazzarin, Federal University of Santa Catarina, Brazil.

4:40PM - 6:40PM

UFJF ROOM - RE 5 - RENEWABLE ENERGY. Chair: Leandro Michels

172879 Comparative Analysis of Buck and Boost Converters Applied to Different Maximum Power Point Tracking Techniques for Photovoltaic Systems
Deividi Zaions, Anderson Balbino, Cássio Baratieri, Regional Integrated University of High Uruguay and Missions - Campus of Erechim, Brazil
Adilson Stankiewicz, URI, Brazil.

172895 Inverter losses analysis for dual fed open winding machines with a novel modulation technique
Herbert Ramos, Caio Oliveira, Universidade Federal de Itajubá, Brazil
Marcos Mendes, Frederico Matos, Universidade Federal de Minas Gerais, Brazil
Victor F. Mendes, Federal University of Minas Gerais, Brazil.

172929 Photovoltaic Dg With Accumulation, Active And Reactive Power Control For Grid-Connected And Intentional Islanding Operations
Marcos G Alves, Sao Paulo State University - UNESP, Brazil
Moacyr de Brito, Federal Technological University of Parana, Brazil
Guilherme Melo, UNESP - Campus de Ilha Solteira, Brazil
Carlos Canesin, Sao Paulo State University - UNESP, Brazil.

172936 PORTABLE AND LOW COST PHOTOVOLTAIC CURVE TRACER
Eduardo Vicente, Fernando Lessa Tofoli, Universidade Federal de São João del-Rei, Brazil
Paula dos Santos, Universidade Federal de Itajubá, Brazil
Ítalo Silva , UFSJ, -- Select Country --.

172946 ANALYSIS OF MODULAR MULTILEVEL CONVERTERS FOR HVDC CONNECTION OF OFFSHORE WIND POWER PLANTS

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Roberto Batista, University Federal of Santa Maria, Brazil
Humberto Pinheiro, UFSM, Brazil
Fernanda Carnielutti, Federal University of Santa Maria, Brazil
André Nicolini, University Federal of Santa Maria, Brazil.

172947 Project of a Solar Module Emulator Using a Zener Diode to Analyze the Behavior of Mppt Algorithms
Rafael Magossi, University of São Paulo, Brazil
Mateus Quinalia, Universidade de São Paulo, Brazil
Plinio Gonçalves Bueno Ferreira, University of São Paulo, Brazil
Marina Carvalho, Ricardo Machado, Universidade de São Paulo, Brazil.

172949 Compatibilizing Multifunctional Photovoltaic Converters with Brazilian Standards: Analysis and Discussion
Ricardo Bortolini, Universidade Federal de Santa Maria, Brazil
Lucas Bellinaso, Universidade Federal de Santa maria, Brazil
Leandro Michels, Jorge Massing, Universidade Federal de Santa Maria, Brazil.

4:40PM - 6:40PM

OHMINI ROOM - MS 6 - MODELING AND SIMULATION. Chair: Márcio do Carmo Barbosa Poncilio Rodrigues

172968 A Control method for DG connected to the utility grid based on current droop with accurate gain
Gustavo Pontes, Camila Gehrke, Universidade Federal da Paraíba, Brazil.

172941 PI + Resonant Controller With Active Damping for High Efficiency PV-Module-Integrated Buck Inverter
André Meurer, University of Santa Maria, Brazil
Antonio Andrade, Mário Lúcio Martins, Helio Hey, Federal University of Santa Maria, Brazil.

172948 Proportional-Resonant Stabilizing Set Applied For Three-Phase Voltage Source Inverter with a LCL Filter
Mateus Quinalia, Universidade de São Paulo, Brazil
Rafael Magossi, Plinio Gonçalves Bueno Ferreira, University of São Paulo, Brazil
Ricardo Machado, Vilma Oliveira, Universidade de São Paulo, Brazil.

172950 A Control System for Battery Current Sharing in DC Microgrids with DC Bus Voltage Restoration
Wagner Coelho Leal, Federal University of Ouro Preto, Brazil.

171327 DC capacitor energization and voltage regulation of a single-phase hybrid active filter
Mateus Braga, University of Juiz de Fora, Brazil
Samuel Duarte, Federal University of Juiz de Fora, Brazil
Pedro Barbosa, Universidade Federal de Juiz de Fora, Brazil
Pedro Almeida, Federal University of Juiz de Fora, Brazil.

172973 Closed-loop control for a single-phase cascaded multilevel inverters operating with SHE-PWM
Fabricio Dupont, Chapecó Region Community University (Unochapecó), Brazil
Júnior Romani, Federal University of Santa Maria, Brazil.

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