POSTER SESSIONS

Advanced Power Electronic Converters and Systems

Power Stage to Drive Piezoelectric Actuators for Space Applications	**M. Alonso**
Single-Phase Single Stage PFC Based on a Novel Floating Capacitor Filter for Electric Vehicle On Board Charger Application	**I. Alzuguren**
Impact of a DC/DC commutable converter in the global stability of a DC Micro-grid with renewable production	**A. Arsic**
Isolated High Frequency and High Density DC-AC Converter for Residential Micro Inverter	**V. López**
Design of an auto-synchronous rectifier for an LLC resonant converter	**G. Núñez**
Core optimization for different Box Inductor Designs	**E. Peredo**
High power density, high frequency Wye-Delta three-phase LLC DC/DC converter	**D. Ríos**
GaN-based Half-Bridge building block	**A. Sánchez**
Layout Design Techniques for a High-Voltage and High-Frequency Resonant Converter	**M. Serrano**

Embedded Intelligence, IoT and Reconfigurable Systems

ML-based modeling of reconfigurable multi-accelerator systems	**J. Encinas**
Generation of 3D environments with Unity for LG simulator for auto-labeled dataset generation with LIDAR	**R. Hernández**
Optimizing Beamforming using Neural Networks for 5G communication	**L. Honrubia**
Reconfigurable and Fault-Tolerant RISC-V Processing System for Space Applications	**A. Ortega**
Analysis of the NTRU Post-Quantum Cryptographic Scheme in Constrained IoT Edge Devices	**J. Señor**
Exploiting CGRA overlays inside RISC-V processor datapaths	**D. Vázquez**
Point Cloud-Based Object Detection and Classification at the Edge of the Internet of Things	**C. Wisultschew**
Qbitstream: A Post-Quantum secure bitstream distribution mechanism for FPGAs	**J. Zhu & J. Señor**

Emerging Applications

Complete design of IPT coil structures for dynamic wireless charging of electric vehicles	**M. Alegre**
Development of a Vagus-Nerve stimulator for epilepsy patients	**P. García**
Bidirectional WPT converter - increasing efficiency via compensation of the magnetizing inductance and controller synchronization strategy	**N. Mirkovic**
IPT DC Transformer	**M.A. Moya**
Study of energy requirements for a brain-implanted device with wireless power transfer	**M. Peñate**

Modeling, Characterization and Simulation of Components and Power Converters

Methodology for designing embedded real-time electrothermal models in PYNQ Z1 system on chip	**J. Barón**
Simulation and Analysis of the Skin and Proximity Effects at a Wireless Power Transfer System	**A. Cameo**
Thermal Modeling of High Power PCB Magnetic Components	**L. Clavero**
New design methodology for low-profile high-current high-frequency planar Transformers considering heat-transfer limitations	**G. Elezgarai**
Power Losses Model for GaN Switching Cell	**A. García**
Modeling of three-phase matrix-converter power losses for real time control	**M. Gómez**
Characterization and modeling of 650 GaN E-HEMT high current modules for DC/DC power converters	**I. Hernández**
Desarrollo de una interfaz gráfica para la simulación rápida de componentes magnéticos basados en conductores planos	**M. Íñiguez**
Design of an automated testing platform for SiC DC/DC converters based on Python	**C. Jiménez**
A polytopic extension of a blackbox Wiener-Hammerstein model for modeling DC-DC converters with strong dynamic nonlinearities	**F. Pérez**
Power Losses model of a Matrix Converter Topology	**L. Sánchez-Gallego**
Bidirectional Power Flow Control of a Three-Port Wireless Power Transfer System	**C. Muntean**

POLITÉCNICA
"Ingeniamos el futuro"

Final Program

Open Hardware & RISC-V

XIV CEIAM

15th-17th June, 2022

Topics

- Advanced Power Electronic Converters and Systems
- Embedded Intelligence, IoT and Reconfigurable Systems
- Emerging Applications
- Modeling, Characterization and Simulation of Components and Power Converters

CEI UPM
Centro de Electrónica Industrial

Wednesday, June 15th — Room C

POWER ELECTRONICS WORKSHOP — 15:30-19:00

NEXT GENERATION OF LOW-VOLTAGE HIGH-CURRENT POWER CONVERTERS LIKE POL OR VRM

- *Improved Planar Matrix Transformer for Low-Voltage High-Current LLC converter*
  Dr. Ziwei Ouyang, Technical University of Denmark (DTU) (on line) **(15:30 – 15:55)**
- *Direct to Chip Power Conversion*
  Dr. José A. Cobos, Universidad Politécnica de Madrid (UPM) **(16:00 – 16:25)**
- *Hybrid Switched-Capacitor Circuits and Magnetics for High-Current CPU Voltage Regulators*
  Dr. Minjie Chen, Princeton University (on line) **(16:30 – 16:55)**

***Coffe Break* (17:00 – 17:55)**

- *Power Delivery Architecture and Topologies for Low Voltage High Current Applications*
  Mr. Ratul Das and Dr. Hanh-Phuc Le, California University, San Diego (on line) **(18:00 – 18:25)**
- *Hybrid Switched-Capacitor Power Architectures for 48V Datacenter DC-DC Conversion: Circuit Topologies and Control Techniques for Extreme Efficiency and Power Density*
  Dr. Robert Pilawa-Podgursky, California University, Berkeley (on line) **(18:30 – 18:55)**

Thursday, June 16th — CEI

SHORT COURSES — 9:00-12:00

Attendees are invited to attend the following short course:

- *Building custom RISC-V Systems on Chip with open-source tolos*
  Coordinators: Alfonso Rodríguez & Andrés Otero
- *Modeling and Control of Three-Phase Grid-Connected Inverters*
  Coordinators: Airán Francés & Dionisio Ramírez

XIV CEI ANNUAL MEETING
Open Hardware & RISC-V

Thursday, June 16th — Salón de Actos

Registration at CEI Annual Meeting — 15:00-15:30

OPENING SESSION — 15:30-16:00

Óscar García, ETSII Director
Teresa Riesgo, Innovation General Secretary
Javier Uceda, CEI Director

Thursday, June 16th — Salón de Actos

INVITED CONFERENCE — 16:00-18:00

Supercomputing and European Sovereignty
Mateo Valero, Director of BSC (Barcelona Supercomputing Center, Spain)

RISC-V and Open hardware: The path for cooperative research, training and innovation around Open-source Hw/Sw
Lluís Terés, IMB-CNM (Barcelona, Spain)

Open Hardware and Space: RISC-V, Airbus Crisa
Juan Antonio Ortega CRISA (Madrid, Spain)

CEI GRANTS PROGRAM ANNOUCEMENT — 18:00-18:30

We will present you the latest CEI Initative to excel the development of new and groundbreaking ideas among our researchers. The 2022 grantees will exhibit their novel High Risk, High Gain ideas and inspire you with the original concepts that will be developed in the following months.

CEI LAB TOUR AND POSTER SESSION — 18:30-20:30

You will have the opportunity to meet our young researchers, exchange interesting ideas and enjoy beverages and food that will be available during the poster session. Do not miss this great opportunity to know us better.

The poster session will be held in the main lab of Centro de Electrónica Industrial (CEI). Find the provisional list of the posters in the last page.

Friday, June 17th — Room C

TECHNICAL SESSIONS — 9:00-14:00

Adaptable RISC-V Datapaths via CGRA extensions	**D. Vázquez (CEI)**
Generation of 3D environments with Unity for LG simulator for auto-labeled dataset generation with LIDAR	**R. Hernández (CEI)**
Why do we need to learn quantum computing?	**J. Señor (CEI)**
ML-based modeling of reconfigurable multi-accelerator systems for computing offloading in IoT	**J. Encinas (CEI)**
A polytopic extension of a blackbox Wiener-Hammerstein model for modeling DC-DC converters with strong dynamic nonlinearities	**F. Pérez (CEI)**

***Coffe Break* (11:00 – 11:45)**

Increasing efficiency in bidirectional WPT system and synchronization of primary and secondary microcontrollers	**N. Mirkovic (CEI)**
IPT DC Transformer	**M.A. Moya (CEI)**
Integration of a 1kW Three-Phase LLC Converter into a Low-Profile Housing	**D. Ríos (CEI)**
Wireless power transfer for EVs based on standard J2954	L. Shi (Wallbox Charger, Spain)
Single-Phase Single Stage PFC Based on a Novel Floating Capacitor Filter for Electric Vehicle On Board Charger Application	**I. Alzuguren (CEI-IKERLAN)**
Thermal Modeling of High Power PCB Magnetic Components	**L. Clavero (CEI-HUAWEI)**

At 14:15 h. photo group at the ETSII Main entrance. COCKTAIL will be served in the **Sala de los Retratos** at 14:30 h.