

# POSTER SESSIONS



### COMMUNICATIONS

C. Benavente and F. Cano  
A. Rodríguez  
M. Patiño and D. Tena  
P. Cheng  
G. Liang  
D. He

*Correlated MIMO Systems*  
*EtherCAT Slave Controller. An evaluation platform with online testing*  
*High efficiency broadband GaN RF and Microwave Amplifiers*  
*High efficiency power amplifier based on EER technique*  
*Implementation and validation of MB-OFDM digital baseband system on FPGA*  
*Let The Deployment Decision Fly: Planning WSNs accurately and efficiently*

### CONTROL TECHNIQUES

S. Zhao  
J. Herrero  
J. Cortes  
V. Svikovic

*Control alternatives for a three phase rectifier with very demanding dynamic loads*  
*Digital control for microinverter*  
*Limits of the frequency response for the analysis of ripple-based controllers*  
*Multiphase Current Controlled Buck Converter with Energy Recycling Output Impedance Correction Circuit (OICC)*

### MODELING, SIMULATION AND OPTIMIZATION OF POWER CIRCUITS

F. Holguín  
C. Iglesias  
D. Martel  
J. Arráz  
D. Cucak  
S. Vesti  
Y. Bouvier and E. Sánchez  
T. Sotorrio  
N. Hensgens

*Analytical approaches for the calculation of windings and core loss in Magnetic Components*  
*Analytical model of Full Bridge converter*  
*CAD tool for the synthesis of power delivery systems*  
*Optimization of the Switching Capacities converter for High Efficiency RF Amplifiers*  
*Physical modeling of GaN HEMTs for high frequency applications*  
*Simplified Small-Signal Stability Analysis for Optimized Power System Architecture*  
*Virtual optimization of a buck converter based on behavioral model of semiconductors*  
*Virtual optimization of integrated inductors by means of analytical and finite element analysis*  
*Virtual prototyping and optimization of EMI input filters*

### POWER TOPOLOGIES

A. Hernández  
J.M. Molina  
Z. Pavlovic  
P.F. Miaja et al. (UO)  
J.A. Moreno  
M. Silva and F. Hernández  
F. Hernandez and M. Silva  
M. Rodríguez  
A. Francés and J.M. Fernández  
A. Rodríguez  
D. Meneses

*45Kw Three Phase Rectifier for aircraft applications*  
*Architecture analysis for three phase rectifier system with very demanding dynamic load*  
*Bidirectional multiple part dc/dc transformer based on a series resonant converter*  
*Buck derived converters based on gallium nitride devices for Envelope Tracking applications*  
*Comparison between SiC and Si diodes in a PFC converter*  
*Comparison of Isolated Single Stage Three Phase Rectifiers Swiss Forward and Swiss Full-Bridge Rectifier*  
*Design details of Swiss Forward three phase rectifier*  
*GaN transistors for efficient power conversion in high frequency dc-dc converters*  
*High-current and low-voltage step-down converter for feeding cold superconducting magnets*  
*High efficiency, high density dc-dc modules based on full bridge phase shift topology*  
*Low Profile Forward Inverter with Primary-Parallel Secondary-Series Multicore Transformer for AC-Module Application*

A. Vázquez et al. (UO)  
D. Díaz

*On the use of front-end cascode rectifiers based on normally-on SiC JFET and Si MOSFET*  
*Ripple Cancellation Technique Applied to a Synchronous Buck Converter to Achieve Very High Bandwidth and Very High Efficiency Envelope Amplifier*

### RE-CONFIGURABILITY and EVOLVABLE HARDWARE

J. Mora  
A. Otero  
A. Gallego and B. López  
F. Veljković  
J. Camarero and F. Pérez  
V. Díaz

*A noise type/level-agnostic self-healing image processing system based on evolvable hardware.*  
*Dynamic Partial Reconfiguration for Dummies: The DREAMS tool.*  
*Dynamically Scalable and Power-aware Evolvable HW Architecture*  
*Prospection of Reconfiguration Capabilities for Space-Qualified SRAM-based systems.*  
*RUNNER: FPGA-based 3D-vision system for an autonomous robot with the HiReCookie Platform.*  
*Thermal compensation to balance silicon process variation in order to mitigate side-channel attacks.*

### SPECIFIC APPLICATION

C.A. Lopez and S. Mate

*Electronics makes the trick: freezing without ice. High-voltage and variable frequency transformer and protection circuit for ice-free freezing*

D. Aledo  
M. Villaverde and D. Perez  
M. Arias (UO)  
R. Ramos  
E. Herranz  
J. de Frutos

*Low-power image compression for wireless networks*  
*Radar target identification using an expert algorithm*  
*Reducing the low-frequency flickering in off-line LED drivers using a low-cost microcontroller*  
*State of the art on Water Supercooling*  
*Test equipment for turn-to-turn short-circuits in automotive alternators*  
*Wireless power transfer. Preliminary steps*

### WIRELESS SENSOR NETWORKS

G. Mujica  
A. Hernando  
J. Valverde  
L. Bonacasa and A. García  
R. Zamacola  
B. Díez  
V. Rosello  
V. Maigler and E. Quesada  
D. Isla

*A Reliable Support Tool for Monitoring, Testing and Debugging Wireless Sensor Cookie Nodes*  
*Connecting Wireless Sensor Networks to the Internet of Things by Using Low Power Wi-Fi*  
*Dependability in FPGA-based WSNs for High Performance Applications*  
*Deployment assistant for Wireless Sensor Networks Based on Android*  
*IEEE 802.15.4 Cookie Layer for Deployment Assistance*  
*Real Time Operation Systems for embedded applications*  
*Route-back delivery protocol for Collection Tree Protocol-based applications*  
*Wireless Sensor Networks for Greening Food Processing*  
*Wireless Sensor Network Detection System Based on Low Cost RADAR*

## Cutting-edge technologies for the 2020 horizon



### Topics

Communications

Control Techniques

Modeling, Simulation and  
Optimization of Power Circuits

Power Topologies

Re-configurability and Evolvable Hardware

Specific Applications

Wireless Sensor Networks



# TECHNICAL SESSIONS

Registration 16:00-16:30

Opening Session 16:30-17:00

**Roberto Prieto** (UPM, Vicepresident of Research )  
**Jesús Félez** (ETSII, Director)  
**Ignacio Romero** (ETSII, Vicedirector of Research )  
**José A. Cobos** (CEI, Director)  
**Óscar García** (CEI, Vicedirector)

Panel debate 17:00-18:30

## CUTTING-EDGE TECHNOLOGIES FOR THE 2020 HORIZON

Session chair: J. Uceda (CEI)

*A new strategy to study the brain: the human brain project*

**Javier DeFelipe**  
 Laboratorio Cajal de Circuitos Corticales (CTB), UPM

*Graphene: challenges and opportunities*

**Francisco Guinea**  
 Instituto de Ciencia de Materiales de Madrid (CSIC)

Visit CEI facilities. Poster Session 18:30-20:30

The poster session will be held in the main lab of Centro de Electrónica Industrial (CEI). You will have the opportunity to discuss with the researchers and to see the latest CEI outcomes. Beverages and food will be available during the session. Find the list of the posters in the last page



Oral Session (I) 9:00-11:15

Session Chair: P. Alou, E. de la Torre

- Evolvable hardware for power aware and self-healing architectures* **A. Gallego**
- High efficiency broadband GaN RF and Microwave Power Amplifiers* **D. Tena and M. Patiño**
- Control alternatives for a three phase rectifier with very demanding dynamic loads* **S. Zhao**
- Limits of the frequency response for the analysis of ripple-based controllers* **J. Cortés**
- Let the deployment decision fly: planning WSNs accurately and efficiently* **D. He**
- Simplified small signal stability analysis for optimized power systems architecture* **S. Vesti**
- HiReCookie: a new platform for hardware reconfiguration in WSNs* **J. Valverde**
- Sistemas de repostado en vuelo* **F. López del Cerro (AIRBUS)**

COFFEE BREAK 11:15-12:00

Oral Session (II) 12:00-14:15

Session Chair: F. Moreno, J.A. Oliver

- Radar target identification using an expert system* **M. Villaverde and D. Pérez**
- Ripple Cancellation Technique Applied to a Synchronous Buck Converter to Achieve Very High Bandwidth and Very High Efficiency Envelope Amplifier* **D. Diaz**
- High Frequency PWM Buck using GaN-on-SiC HEMTs* **M. Rodríguez**
- WSN-based application for environmental monitoring in food industry* **V. Maigler**
- Área de Tecnología de Radiofrecuencia y Antenas* **C. Zarzuelo and D. Madueño (INDRA)**
- Low energy sustainable building infrastructure* **F.J. González-Espín (UTRC, Ireland)**
- How to freeze a heart?* **L. Pita (Fidelia Group)**

COCKTAIL We will serve some appetizers in the Sala de los Retratos at 14:30 h.

