



Gruppo Italiano di Elettronica

47<sup>th</sup> Annual Meeting

Siena, June 24<sup>th</sup>/26<sup>th</sup> 2015

FINAL PROGRAM



**UNIVERSITÀ  
DI SIENA**  
1240



**ASSOCIAZIONE  
GRUPPO ITALIANO  
DI ELETTRONICA**

The GE2015 meeting and the GE2015 PhD School  
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**THALES**

**FIORE**



# GE 2015 Final Program at a Glance

**Wednesday, June 24<sup>th</sup> 2015**

**Palazzo del Rettorato, Via Banchi di Sotto, 55 – Siena**

- 09:00AM – 01:00PM ***The registration desk is open***
- 11:00AM – 01:00PM **GE Scientific Board**  
*Aula Magna del Palazzo del Rettorato*
- 01:00PM – 02:30PM **Lunch**  
*Cortile del Palazzo del Rettorato*
- 02:30PM – 04:30PM **Welcome Address**  
*Aula Magna del Palazzo del Rettorato*

Santina Rocchi, University of Siena  
Francesco Frati, Pro-Rector of the University of Siena

**Opening Speech**  
Andrea Lacaita, GE President

**The Italian University System: prospects of evolution and risks of decline**  
Antonio Vicino, University of Siena, CUN Member

**Electronics Enabling a Smarter World**  
Alessandro Cremonesi, ST Microelectronics

04:30PM – 05:00PM **Coffee Break**  
*Cortile del Palazzo del Rettorato*

05:00PM – 06:40PM **Technical Sessions**

**Optoelectronics and Photonics**  
*Aula Magna Storica del Palazzo del Rettorato*

**Sensors and Actuators**  
*Aula Magna del Palazzo del Rettorato*

07:30PM – 11:00PM **Welcome Dinner** (*different location, check the GE2015 map*)

<p><b>Palazzo del Rettorato WiFi - SSID: Silver</b> <b>User: gesi.u</b> <b>Psw: 77b51e39</b></p>
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## Thursday, June 25<sup>th</sup> 2015

Palazzo del Rettorato, Via Banchi di Sotto, 55 – Siena

- 09:00AM – 09:40AM **Invited Lecture**  
*Aula Magna del Palazzo del Rettorato*
- Potential Technological Breakthroughs for Future Airborne Systems**  
Jean Chazelas, Thales Aerospace Division
- 09:40AM – 10:20AM **Invited Lecture**  
*Aula Magna del Palazzo del Rettorato*
- Circuits and Systems for Electroceuticals**  
Wouter A. Serdijn, University of Technology, Delft
- 10:20AM – 10:50AM **Poster Session, with Coffee Break**  
*Cortile del Palazzo del Rettorato*
- 10:50AM – 12:50AM **Technical Sessions**
- Application Specific Systems**  
*Aula Magna Storica del Palazzo del Rettorato*
- Electron Devices**  
*Aula Magna del Palazzo del Rettorato*
- 12:50AM – 02:20PM **Lunch**  
*Cortile del Palazzo del Rettorato*
- 02:20PM – 03:00PM **Invited Lecture**  
*Aula Magna del Palazzo del Rettorato*
- Why and How Making Image Sensors More Intelligent?**  
Ángel Rodríguez-Vázquez, University of Seville
- 03:00PM – 04:20PM **Technical Sessions**
- Power Electronics**  
*Aula Magna Storica del Palazzo del Rettorato*
- Integrated Circuits and Systems**  
*Aula Magna del Palazzo del Rettorato*
- 04:20PM – 04:50PM **Poster Session (continued), with Coffee Break**  
*Cortile del Palazzo del Rettorato*
- 04:50PM – 06:10PM **Technical Sessions**
- Opto Sensors**  
*Aula Magna Storica del Palazzo del Rettorato*
- Microwaves and High Frequency Electronics**  
*Aula Magna del Palazzo del Rettorato*
- 06:30PM – 08:00PM **Siena Guided Tour**
- 08:00PM – 11:00PM **Social Dinner** (different location, check the GE2015 map)

## Friday, June 26<sup>th</sup> 2015

Rocca Salimbeni, Piazza Salimbeni, 1 – Siena

09:00AM – 10:40AM **Panel Discussion**

*Sala della Rocca, Rocca Salimbeni*

### **ICT startups for turning problems into solutions**

Leonardo Masotti (moderator), El.En. Group

Riccardo Pietrabissa, Netval, Politecnico di Milano

Marco Cantamessa, PNICUBE, Politecnico di Torino

Francesco Svelto, University of Pavia

Fabrizio Schintu, Banca Monte dei Paschi di Siena

10:40AM – 11:10AM **Coffee Break**

*Galleria Peruzziana, Rocca Salimbeni*

11:10AM – 11:40AM **Recognitions and Awards**

*Sala della Rocca, Rocca Salimbeni*

11:40AM – 01:00PM **GE Distinguished Lecturers**

*Sala della Rocca, Rocca Salimbeni*

### **A System Perspective for High-Density Power Electronics in Consumer, Transportation and Energy-Related Applications**

Paolo Mattavelli, University of Padova

### **The New Semiconductor Electronics: Opportunities, Challenges and Lessons for Engineering at the Nanoscale**

Giuseppe Iannaccone, University of Pisa

01:00PM – 02:00PM **Lunch**

*Galleria Peruzziana, Rocca Salimbeni*

02:00PM – 04:30PM **GE Annual Meeting**

*Sala della Rocca, Rocca Salimbeni*

04:30PM – 06:30PM **Visit to the Monte dei Paschi Museum**

<p><b>Please Note: The access to the Rocca Salimbeni is restricted. The GE2015 participants will receive a personal magnetic badge.</b></p>
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## **GE2015 Invited Lecturers**

**Thursday, June 25<sup>th</sup> 2015 – 09:00 AM**

### **Potential Technological Breakthroughs for Future Airborne Systems**

**Jean Chazelas, Scientific Director THALES Defence Mission Systems**

#### *Abstract*

After a rapid overview of the R&T activities inside Thales, this seminar will present the potential technology breakthroughs that should drive the design of those future systems. Moreover, some results on the insertion of emerging technologies in the front ends of active, electronic scanning phased array antennas will be shown. In a second time, recent advances in the field of nanotechnologies for microwave applications will be presented, such as carbon nanotubes or graphene/2D materials for RF-front end functions and optically-controlled microwave functions based on these semiconductor materials.

#### *Biography of Jean Chazelas*

After graduation from “Ecole Centrale Paris”, and a Joint PhD in Atomic and Molecular Physics at Pennsylvania State University and Paris VI (UPMC) University, joined Thomson-CSF Corporate Research Laboratories in 1984 as responsible of structural characterization and physics of semiconductor and superconductor materials and devices. From 1984 to 1990, he has been involved on materials and devices study and characterization especially on Giant Magneto-resistance research with Prof A. FERT (Nobel Prize 2007) and on advanced optoelectronic devices. Since 2006 he is the Scientific Director in Thales DMS (Defence Mission Systems) Division, in charge of the R&T Scientific Policy and Strategy. He has been involved in numerous publications and patents, in european and international projects/contracts in the field of Microwaves, Photonics and Nanotechnologies including spintronics.

## GE2015 Invited Lecturers

Thursday, June 25<sup>th</sup> 2015 – 09:40 AM

### Circuits and Systems for Electroceuticals

**Wouter A. Serdijn, University of Technology, Delft**

#### *Abstract*

The 21st century will be the century of unraveling the intricacies of the brain and in which we will explore the use of electricity to interact with our electro-chemical mainframe better. In this talk Prof. Serdijn will explain how electroceuticals, the electronic counterparts of pharmaceuticals, can help to successfully treat neurological disorders. Further, he will sketch a technological avenue of their future development by making electroceuticals smaller, more energy efficient and more intelligent.

#### *Biography of Wouter A. Serdijn*

Wouter A. Serdijn (IEEE M'98, SM'08, F'11) was born in Zoetermeer ('Sweet Lake City'), the Netherlands, in 1966. He received the M.Sc. (cum laude) and Ph.D. degrees from Delft University of Technology, Delft, The Netherlands, in 1989 and 1994, respectively. Currently, he is a professor at Delft University of Technology, where he heads the Section Bioelectronics. His research interests include integrated circuits and systems for biosignal conditioning and detection, neuroprosthetics, transcutaneous wireless communication, power management and energy harvesting as applied in, e.g., hearing instruments, cardiac pacemakers, cochlear implants, neurostimulators, portable, wearable, implantable and injectable medical devices and electroceuticals. He is co-editor and co-author of 8 books, 8 book chapters, 2 patents and more than 300 scientific publications and presentations. He teaches Circuit Theory, Analog Signal Processing, Micropower Analog IC Design and Bioelectronics. He received the Electrical Engineering Best Teacher Award in 2001 and 2004. He has served, a.o., as General Co-Chair for IEEE ISCAS 2015 and for IEEE BioCAS 2013, Technical Program Chair for IEEE BioCAS 2010 and for IEEE ISCAS 2010, 2012 and 2014, as a member of the Board of Governors (BoG) of the IEEE Circuits and Systems Society (2006—2011), as chair of the Analog Signal Processing Technical Committee of the IEEE Circuits and Systems society, as a member of the Steering Committee of the IEEE Transactions on Biomedical Circuits and Systems (T-BioCAS) and as Editor-in-Chief for IEEE Transactions on Circuits and Systems—I: Regular Papers (2010—2011). Wouter A. Serdijn is an IEEE Fellow, an IEEE Distinguished Lecturer and a mentor of the IEEE.

## GE2015 Invited Lecturers

Thursday, June 25<sup>th</sup> 2015 – 02:20 PM

### Why and How Making Image Sensors More Intelligent?

Ángel Rodríguez-Vázquez, University of Seville

#### *Abstract*

Solid-state image sensors are employed at ever more applications thus reaching overall market volumes in the range of 10 billion units. Besides their extensive usage in cell phones and personal electronic appliances, other application sectors with large volume potentials are rapidly evolving such as medical, military, automotive, surveillance, robotics, machine vision, and the like. Among other reasons, this proliferation of solid-state image sensors is driven by the adequacy of modern CMOS-based imaging technologies to design systems with reduced SWaP, low cost, large speed and large functional capabilities and flexibility. However, CMOS imaging systems are complex systems whose design requires quite different pieces of expertise, namely: pixels, analog signal processing, pixel readout and analog-to-digital conversion, digital signal processing, output drivers, etc. Confronting the design of new imagers require hence the concourse of multidisciplinary teams. This is particularly pertinent for the newer generations of smart imagers required for high-end applications and/or requiring ultra-fast image capture, on-chip image correction, scene interpretation, high dynamic range capture, etc. All these features demand architectural and circuitual innovations and pose significant challenges to designers. Also, the increased interest on sensors capable of capturing 3-D scenes raises new challenges at circuit level related to the necessity to interface pixels different from those employed for 2-D capture, on the one hand, and to extract and convert to digital domain time information, on the other hand. This talk presents an overview of recent advances on smart CMOS imagers covering architectures, circuits and applications.

#### *Biography of Ángel Rodríguez-Vázquez*

Ángel Rodríguez-Vázquez (PhD, IEEE Fellow) is a Full Professor of Electronics at the University of Seville. His research is on the design of analog and mixed-signal front-ends for sensing and communication, including smart imagers, vision chips and low-power sensory-processing microsystems. He has authored 11 books, 34 additional book chapters, and some 150 journal articles. He has presented invited plenary lectures at several international conferences and has received several best paper awards (IEEE Guillemin-Cauer, two Wiley's IJCTA, two IEEE ECCTD, one SPIE-IST Electronic Imaging, IEEE ISCAS best demo and IEEE ICECS best demo). He was elected Fellow of the IEEE for his contributions to the design of chaos-based communication chips and neuro-fuzzy chips. His research work got some 6,400 citations; he has an h-index of 42 and an i10-index of 122. He has always been looking for the balance between long-term research and innovative industrial developments. He founded AnaFocus Ltd. in 2001 on the basis of his patents on vision chips and served as CEO, on leave from the University, until June 2009, when the company reached maturity as a worldwide provider of smart CMOS imagers and vision systems-on-chip. The company was acquired by e2v in 2014. He has served as Editor, Associate Editor and Guest Editor for different IEEE and non-IEEE journals, is in the committee of several international journals and conferences, and has chaired several international IEEE and SPIE conferences. He served as VP Region 8 of the IEEE Circuits and Systems Society (2009-2012) and as Chair of the IEEE CASS Fellow Evaluation Committee (2010, 2012, 2013, 2014 and 2015).



## GE Distinguished Lecturers

Friday, June 26<sup>th</sup> 2015 – 11:40 AM

### **A System Perspective for High-Density Power Electronics in Consumer, Transportation and Energy-Related Applications**

**Paolo Mattavelli, University of Padova**

#### *Abstract*

The recent advances in GaN and SiC power devices have opened the door for a paradigm shift on the power conversion technology changing the barriers for high power density conversion. The presentation will give an overview of some applications ranging from low-voltage point of load (POL) converters, to power factor correction circuits and dc-dc distribution bus converters, up to battery chargers and utility-scaled power electronics. Examples of significantly improved efficiency and increased switching frequency in consumer, transportation and energy-related applications are highlighted together with some issues related to high di/dt and dv/dt and sensitivity to package parasitics.

#### *Biography of Paolo Mattavelli*

Paolo Mattavelli (IEEE S'95, A'96, M'00, SM'10, F'14) (with honors) received the Ph. D. degree in electrical engineering from the University of Padova (Italy) 1995. From 1995 to 2001, he was a researcher at the University of Padova. From 2001 to 2005 he was an associate professor the University of Udine, where he led the Power Electronics Laboratory. In 2005 he joined the University of Padova in Vicenza with the same duties. From 2010 to 2012 he was a member of the Center for Power Electronics Systems (CPES) at Virginia Tech. He is currently (2015) a professor with the University of Padova.

His major field of interest includes analysis, modeling and analog and digital control of power converters, grid-connected converters for renewable energy systems and micro-grids, high-temperature and high-power density power electronics. In these research fields, he has been leading several industrial and government projects.

From 2003 to 2012 he served as an Associate Editor for IEEE Transactions on Power Electronics. From 2005 to 2010 he was the IPCC (Industrial Power Converter Committee) Technical Review Chair for the IEEE Transactions on Industry Applications. For terms 2003-2006, 2006-2009 and 2013-2015 he has been a member-at-large of the IEEE Power Electronics Society's Administrative Committee. He also received in 2005, 2006, 2011 and 2012 the Prize Paper Award in the IEEE Transactions on Power Electronics and in 2007, the 2nd Prize Paper Award at the IEEE Industry Application Annual Meeting. He is an IEEE Fellow.

## **GE Distinguished Lecturers**

**Friday, June 26<sup>th</sup> 2015 – 12:20 AM**

### **The New Semiconductor Electronics: Opportunities, Challenges, and Lessons for Engineering at the Nanoscale**

**Giuseppe Iannaccone, University of Pisa**

#### *Abstract*

Semiconductor electronics was shaped in a form very close to the present one between the 30s and the 60s, as a distinct discipline with respect to solid-state physics and vacuum-tube electronics. Now, the recent progress in CMOS technology, materials science, and physics of two-dimensional materials, provides the opportunity to engineer devices at the atomistic scale. For example, the recently proposed “materials-on-demand” paradigm aims at obtaining three-dimensional materials with tailored characteristics by combining layers of 2D materials. In many ways this paradigm is a sophisticated version of what in the 80s was called “bandgap engineering”, i.e. the artificial modification of band edge profiles using heterostructures and epitaxial growth techniques with the III-V or II-VI materials systems, in order to obtain new or improved device functionalities.

The technological challenges to bring it to reality and to transform it into a major industrial technology are still formidable. From the intellectual point of view, this endeavour requires the confluence of electrical engineering, condensed matter physics, materials science, quantum chemistry, into a new body of knowledge. CMOS technology has already exploited its own limited version of “bandstructure engineering” in recent years, namely in the use of strain to improve mobility and of high-K metal-gate stacks to reduce leakage, and in the use of new geometry for the FinFETs or FDSOI MOSFETs. At the circuit and system level, power considerations have become dominant, especially for the gigascale of integration. In the talk we will discuss the technological and intellectual challenges and opportunities of the new semiconductor electronics, at the materials, device, and circuit level.

#### *Biography of Giuseppe Iannaccone*

Giuseppe Iannaccone is Professor of electronics at the University of Pisa, Italy. His interests include the fundamentals of transport and noise in nanoelectronic and mesoscopic devices, the development of device modeling and TCAD tools, and the design of extremely low-power circuits and systems for RFID and ambient intelligence scenarios. He has published more than 170 papers in peer-reviewed journals and more than 120 papers in proceedings of international conferences, receiving more than 2400 citations according to Thomson-Reuters WoS. He is Fellow of the IEEE for contributions to modeling of transport and noise in nanoelectronic devices. Giuseppe Iannaccone has coordinated a few European and National Projects involving multiple partners and has acted as the Principal Investigator in several research projects funded by public agencies at the European and National levels and by private organizations. He acts as a reviewer for a few funding agencies in Europe and is or has been in the technical committee of several international conferences in the field of semiconductor technology and design. Prior to joining the University of Pisa in 1996, Iannaccone was a researcher with the Italian National Research Council. He received the M.S. and Ph.D. degrees in electrical engineering from the University of Pisa in 1992 and 1996, respectively.

# GE 2015 Technical Sessions

Wednesday 24<sup>th</sup> June 2015, 05:00PM – 06:40PM

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## Optoelectronics and Photonics

*Aula Magna Storica del Palazzo del Rettorato*

Chair: Caterina Ciminelli

- 05:00PM **Electro-optical characterization of highly efficient Dye-Sensitized solar cells**  
Antonino Parisi, Chiara Di Garbo, Riccardo Pernice, Gabriele Adamo, Alfonso Cino, Patrizia Livreri, Fabio Ricco Galluzzo, Giuseppe Calogero, Gaetano Di Marco, Cirino Vasi and Alessandro Busacca
- 05:20PM **Trap-assisted Tunneling in InGaN Single-QW LEDs: correlation with technological parameters**  
Matthias Auf der Maur and Aldo Di Carlo
- 05:40PM **Charge instabilities in electro-thermally stressed blue InGaN laser diodes**  
Carlo De Santi, Matteo Meneghini, Gaudenzio Meneghesso and Enrico Zanoni
- 06:00PM **Polarization independent liquid crystal waveguide for photonic integrated circuits**  
Luca Martini, Rita Asquini, Antonio d'Alessandro, Cesare Chiccoli, Paolo Pasini and Claudio Zannoni
- 06:20PM **Development of High Performance Photovoltaics for Indoor Light Harvesting**  
Francesca De Rossi, Tadeo Pontecorvo and Thomas Brown

Wednesday 24<sup>th</sup> June 2015, 05:00PM – 06:40PM

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## Sensors and Actuators

*Aula Magna del Palazzo del Rettorato*

Chair: Vittorio Ferrari

- 05:00PM **MEMS electrostatic force actuator with capacitive position sensing**  
Fabrizio Cerini, Marco Ferrari, Alfio Russo, Mikel Azpeitia Urquia, Raffaele Ardito, Biagio De Masi and Vittorio Ferrari
- 05:20PM **Photo-assisted chemical sensors based on porphyrins coated nanostructured ZnO**  
Gabriele Magna, Mosciano Francesco, Eugenio Martinelli, Catini Alexandro, Roberto Paolesse and Corrado Di Natale
- 05:40PM **NanoSQUID Sensors to Investigate Magnetic Properties of Nanoparticles**  
Roberto Russo, Emanuela Esposito, Davide Peddis, Carmine Granata, Antonio Vettoliere and Dino Fiorani
- 06:00PM **A new generation of ultrasonic transducers for guided-waves inspections**  
Luca De Marchi, Nicola Testoni, Alessandro Marzani and Guido Masetti
- 06:20PM **Structural Health Monitoring System Using a Flexible Piezopolymer Transducers Array**  
Andrea Bulletti, Lorenzo Capineri, Pietro Giannelli and Marco Calzolari

Thursday 25<sup>th</sup> June 2015, 10:50AM – 12:50AM

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## **Application Specific Systems**

*Aula Magna Storica del Palazzo del Rettorato*

Chair: Alessandro De Gloria

- 10:50AM **Portable electronic system for a fast Radon indoor detection**  
Benedetta Nodari, Michele Caldara, Valerio Re and Lorenzo Fabris
- 11:10AM **An embedded platform for volatile chemical localization and mapping with any mobile carrier**  
Maurizio Rossi and Davide Brunelli
- 11:30AM **Nano-power ICs for Energy Harvesting Applications in the Internet-of-Things**  
Aldo Romani, Michele Dini, Matteo Filippi, Antonio Camarda, Marco Crescentini, Matteo Pizzotti, Roberto Canegallo, Enrico Sangiorgi and Marco Tartagni
- 11:50AM **ULAOP 256: a modular high performance research platform for ultrasound**  
Enrico Boni, Luca Bassi, Alessandro Dallai, Gabriele Giannini, Valentino Meacci, Riccardo Matera, Alessandro Ramalli, Monica Scaringella, Jacopo Viti, Francesco Guidi, Stefano Ricci and Piero Tortoli
- 12:10AM **RF Transceiver and FPGA-based Baseband Design of X-band Radars for Smart Mobility Systems**  
Sergio Saponara, Bruno Neri and Luca Fanucci
- 12:30AM **A Low-Cost, Open-Source Cyber Physical System for Remotely Controlled Agriculture**  
Davide Cimino, Alberto Ferrero, Leonardo Queirolo, Francesco Bellotti, Riccardo Berta and Alessandro De Gloria

Thursday 25<sup>th</sup> June 2015, 10:50AM – 12:50AM

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## **Electron Devices**

*Aula Magna del Palazzo del Rettorato*

Chair: Luca Selmi

- 10:50AM **Electrostatic interactions in nanoscale oxide stacks**  
Francesco Maria Puglisi, Paolo Pavan and Luca Larcher
- 11:10AM **A neuromorphic synapse with resistive-switching devices capable of on-line pattern learning**  
Stefano Ambrogio, Zhong Qiang Wang, Simone Balatti and Daniele Ielmini
- 11:30AM **Pressure-Triggered Non-Volatile Memory Devices Based on Organic/Inorganic Nanocomposites**  
Giulia Casula, Piero Cosseddu, Yan Busby, Jean-Jacques Pireaux, Marcin Rosowski, Beata Tkacz Szczesna, Grzegorz Celichowski, Jaroslaw Grobelny, Jiří Novák, Rupak Banerjee, Frank Schreiber and Annalisa Bonfiglio
- 11:50AM **Micro-for-Nano: a synergy between nanomaterial and CMOS electronics for sensing applications**  
Alberto Bonanno and Danilo Demarchi
- 12:10AM **Mixed device-circuit simulations of 6T/8T SRAM cells employing tunnel-FETs**  
Sebastiano Strangio, Pierpaolo Palestri, David Esseni, Luca Selmi and Felice Crupi

- 12:30AM **Modeling of Package Influences on High-Voltage Semiconductor FETs**  
 Ilaria Imperiale, Susanna Reggiani, Elena Gnani, Antonio Gnudi, Giorgio Baccarani,  
 Luu Nguyen, Alejandro Hernandez-Luna, James Huckabee, Dhanoop Varghese and  
 Marie Denison

Thursday 25<sup>th</sup> June 2015, 03:00PM – 04:20PM

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## Power Electronics

*Aula Magna Storica del Palazzo del Rettorato*

Chair: Paolo Mattavelli

- 03:00PM **Efficient High Step-up Topology for Renewable Energy Source Interfacing**  
 Giorgio Spiazzi, Simone Buso and Davide Biadene
- 03:20PM **SPICE modelling of a complete photovoltaic system based on a multilevel inverter**  
 Demetrio Iero, Rosario Carbone, Riccardo Carotenuto, Corrado Felini, Massimo  
 Merenda, Giovanni Pangallo and Francesco Giuseppe Della Corte
- 03:40PM **Qi-ready, Cortex-M0 based, wireless power charger for low-power, wearable  
 devices**  
 Michael Galizzi and Andrea Vitali
- 04:00PM **NBTI reliability in power U-MOSFETs**  
 Andrea Natale Tallarico, Paolo Magnone, Giacomo Barletta, Angelo Magri, Claudio  
 Fiegna and Enrico Sangiorgi

Thursday 25<sup>th</sup> June 2015, 03:00PM – 04:20PM

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## Integrated Circuits and Systems

*Aula Magna del Palazzo del Rettorato*

Chair: Gaetano Palumbo

- 03:00PM **A 25-Gb/s FIR Equalizer Based on Highly Linear All-Pass Delay Line Stages in 28-  
 nm LP CMOS**  
 Fabrizio Loi, Enrico Mammei, Francesco Radice, Melchiorre Bruccoleri, Simone Erba,  
 Matteo Bassi and Andrea Mazzanti
- 03:20PM **A CMUT Transceiver Front-End with 100-V TX Driver and 1-mW Low-Noise  
 Capacitive Feedback RX Amplifier in BCD-SOI Technology**  
 Marco Sautto, Davide Leone, Alessandro Savoia, Davide Ghisu, Fabio Quaglia, Gino  
 Caliano and Andrea Mazzanti
- 03:40PM **A CMOS bioelectronic interface for neural recording and stimulation applications**  
 Roberto Puddu, Lorenzo Bisoni, Caterina Carboni, Massimo Barbaro and Luigi Raffo
- 04:00PM **CMOS I/O protection circuits for automotive applications**  
 Andrea Boni, Matteo Tonelli and Alessandro Magnanini

Thursday 25<sup>th</sup> June 2015, 04:50PM – 06:10PM

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## **Opto Sensors**

*Aula Magna Storica del Palazzo del Rettorato*

Chair: Antonello Cutolo

- 04:50PM **Long Period Grating in Photonics bandgap fiber: from the idea to the perspectives**  
Agostino Iadicicco and Stefania Campopiano
- 05:10PM **Optoelectronic Sensors for Self Assembling Monolayer Detection**  
Mauro Perino, Elisabetta Pasqualotto, Giulio Rosati, Matteo Scaramuzza, Alessandro Detoni and Alessandro Paccagnella
- 05:30PM **Innovative Optical Fiber Nanoprobes for Biological Sensing**  
Giuseppe Quero, Renato Severino, Benito Carotenuto, Patrizio Vaiano, Armando Ricciardi, Marco Consales, Alessio Crescitelli, Emanuela Esposito, Menotti Ruvo, Anna Borriello, Lucia Sansone, Simona Zuppolini, Laura Diodato, Michele Giordano, Antonello Cutolo and Andrea Cusano
- 05:50PM **Single-Photon Avalanche Diodes: devices and advanced applications**  
Alberto Tosi, Federica Villa and Franco Zappa

Thursday 25<sup>th</sup> June 2015, 04:50PM – 06:10PM

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## **Microwaves and High Frequency Electronics**

*Aula Magna del Palazzo del Rettorato*

Chair: Franco Giannini

- 04:50PM **Fabrication and characterization of graphene field effect transistors (GFET)**  
Marco Angelo Giambra, Stefano Marletta, Enrico Calandra, Salvatore Stivala, Alfonso Carmelo Cino, Alessandro Busacca, Christian Benz, Wolfram Hans Peter Pernice and Romain Danneau
- 05:10PM **Distributed architecture for logarithmic amplifications**  
Leonardo Di Alessandro, Mirko Palomba, Riccardo Cleriti, Marco Vittori and Ernesto Limiti
- 05:30PM **Self-Interference Cancellation for Free-Flow Road-Tolling Collection Transceivers at 5.8 GHz**  
Alessandro Cidronali, Stefano Maddio, Marco Passafiume, Giovanni Collodi and Gianfranco Manes
- 05:50PM **A 40–67GHz Power Amplifier with 13dBm Psat and 16% PAE in 28nm CMOS LP**  
Junlei Zhao, Matteo Bassi, Andrea Mazzanti and Francesco Svelto

# GE 2015 Poster Session

**Thursday 25th June 2015**

*Cortile del Palazzo del Rettorato*

10:20AM – 10:50AM

04:20PM – 04:50PM (Continued)

Chairs: Bruno Neri, Fabrizio Palma

- P1 Plasmonic biosensor for cancer markers detection**  
Maripina De Palo, Donato Conteduca, Filomena Innone, Teresa Tatoli, Francesco Dell'Olio, Caterina Ciminelli and Mario Nicola Armenise
- P2 Optoelectronic beamformer for spaceborne X-band synthetic aperture radar**  
Tatoli Teresa, Giulio D'Amato, Donato Conteduca, Filomena Innone, Maripina De Palo, Francesco Dell'Olio, Caterina Ciminelli, Gianfranco Avitabile and Mario Nicola Armenise
- P3 Ultrasound Imaging for Biometric Recognition through 3D Hand Geometry**  
Antonio Iula, Donatella Nardiello, Gabriel Hine, Alessandro Ramalli and Francesco Guidi
- P4 OpenSpatial ready u-sized, high-performance AHRS module for the Internet of Things era**  
Michael Galizzi, Daniele Comotti, Michele Caldara, Valerio Re and Andrea Vitali
- P5 Simple interference detection and classification in industrial WSN based on symbol error statistics**  
Claudio Crema, Alessandra Flammini, Daniele Marioli, Emiliano Sisinni and Mikael Gidlund
- P6 A smartphone-enhanced pill-dispenser as an example of mHealth application**  
Claudio Crema, Alessandro Depari, Alessandra Flammini, Mirko Lavarini, Daniele Marioli, Emiliano Sisinni and Angelo Vezzoli
- P7 On-Body Battery-Less Sensor Powered by Ball-Impact Piezoelectric Converter**  
Davide Alghisi, Simone Dalola, Marco Ferrari and Vittorio Ferrari
- P8 Low-Noise Charge Preamplifier for Electrostatic Beam Position Monitoring Pick-Up at the ELENA Experiment**  
Marco Bau', Marco Ferrari, Vittorio Ferrari, Daniele Marioli, Lars Soby, Ricardo Marco Hernandez and Flemming Pedersen
- P9 Autonomous Sensors Powered by Energy Harvesting from von Karman Vortices in Airflow**  
Marco Demori, Marco Ferrari, Vittorio Ferrari, Davide Arnone and Pietro Poesio
- P10 Contactless Interrogation of Quartz Crystal Microbalance Sensors by an Electronic Interface Using a Time-Gated Technique**  
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