



**SIE 2019**

**Rome, June 26-28**

# Technical Program

51<sup>TH</sup> ANNUAL MEETING OF THE  
ASSOCIAZIONE SOCIETÀ  
ITALIANA DI ELETTRONICA



Contents date: June 17<sup>th</sup>, 2019 12:00

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# POOL OF REVIEW

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# Program at a glance

Wednesday, June 26

10:30-13:00	<b>Registration</b>
10:30-11:30	<b>SIE Governing Council</b>
11:30-13:00	<b>SIE Scientific Council</b>
13:00-14:00	<b>LUNCH</b>
14:00-14:30	<b>Welcome Address</b>
14:30-15:15	<b>Invited Lecture</b> <i>Young Hee Lee</i> <i>Institute for Basic Science (IBS), Department of Energy Science &amp; Department of Physics, Sungkyunkwan University (SKKU)</i>
15:15-15:30	<b>Electronic Industry: Italy, what's next ?</b> <i>Gabriele Braga, Director of Engineering, Arrow</i>
15:30-16:50	<b>Oral Sessions</b> I.a - Electronic Systems and Applications I I.b -Power Electronics
16:50-17:20	<b>COFFEE BREAK</b>
17:20-19:00	<b>Oral Sessions</b> II.a - Electronic Systems and Applications II II.b – Integrated Circuits and Systems

# Program at a glance

Thursday, June 27

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8:40-10:00

## Oral Sessions

III.a - Microwave Electronics	III.b - Micro- and Nano-Electronic Devices
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10:00-10:30

## Poster Session I

10:30-11:00

## COFFEE BREAK (Poster Session I)

11:00-11:30

### Teaching Electronics in Degree Courses: a possible syllabus

*Paolo Pavan*

*University of Modena e Reggio Emilia*

11:30-13:00

### Round table: Future technology scenarios for the aerospace and security industry

*Moderator: Ernesto Limiti*

13:00-14:00

## LUNCH

14:00-14:30

## Invited Keynote Lecture

*Arnaldo D'Amico*

*Emeritus, University of Rome Tor Vergata*

14:30-15:50

## Oral Sessions

IV.a Sensors, Microsystems and Instrumentation I	IV.b Optoelectronics and Photonics I
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15:50-16:20

## Poster Session II

16:20-16:50

## COFFEE BREAK (Poster Session II)

16:50-18:30

## Oral Sessions

V.a Sensors, Microsystems and Instrumentation II	V.b Optoelectronics and Photonics II
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# Program at a glance

Friday, June 28

- 09:00-09:30     **Ju on KDT- key digital technologies**  
*Bert De Colvenaer, JU ECSEL*
- 9:30-10:00     **The ECSEL project “Digital  
Manufacturing”**  
*Tommaso Giunti, FCA*
- 10:00-10:30     **NEREID, a roadmap for Europe**  
*Enrico Sangiorgi, Danilo Demarchi,  
Università di Bologna, Politecnico di Torino*
- 10:30-10:45     **Recognitions and awards**
- 10:45-11:15     **COFFEE BREAK**
- 11:15-12:15     **IEEE Fellow Lectures**  
*Luca Roselli,  
Università di Perugia*  
*Piero Tortoli,  
Università di Firenze*
- 12:15-13:15     **Special session**  
**University, start-up and SME: a winning  
synergy**  
*Moderator: Gian Carlo Cardarilli*
- 13:15-14:30     **LUNCH**
- 14:30-16:00     **SIE General Assembly**



# Invited Lecture

Young Hee Lee



14.30-15.15, *Wednesday June 26*  
Ground floor hall

IBS Center for Integrated Nanostructure  
Physics, Institute for Basic Science,  
Sungkyunkwan University, Korea

## VAN DER WAALS HETEROSTRUCTURES TOWARDS HIGH-PERFORMANCE TRANSISTOR

### ABSTRACT

Two-dimensional (2D) heterostructures often provide extraordinary carrier transport as exemplified by superconductivity or excitonic superfluidity. Recently, a double-layer graphene (Gr) separated by few-layered boron nitride demonstrated the Coulomb drag phenomenon: carriers in the active layer drag carriers in the passive layer. Here, we propose a new switching device operating via Coulomb drag interaction at a graphene/MoS<sub>2</sub> (GM) heterointerface. The ideal van der Waals distance allows strong coupling of the interlayer electron-hole pairs, whose recombination is prevented by the Schottky barrier formed due to charge transfer at the heterointerface. This device exhibits a high carrier mobility (up to  $\sim 3,700 \text{ cm}^2\text{V}^{-1}\text{s}^{-1}$ ) even at room temperature, while maintaining a high on/off current ratio ( $\sim 108$ ), outperforming those of individual layers. In the electron-electron drag regime, graphene-like Shubnikov-de Haas oscillations are observed at low temperatures. Our Coulomb drag transistor could provide a shortcut for the practical application of quantum-mechanical 2D heterostructures at room temperature.

### BIOGRAPHY

Prof. Lee has been a full professor of the Physics Department at SKKU, since 2001. He received Ph. D. from Kent State University in Ohio (1986) in physics. Prior to joining SKKU in 2001, Prof. Lee was a full professor in the Physics Department at Chonbuk National University since 1986. He was a visiting scholar at Ames Laboratory, Iowa State University in 1989, IBM, Zurich in 1993, and Michigan State University in 1996. Currently, he is the Director of Center for Integrated Nanostructure Physics, Institute for Basic Science at SKKU. He was awarded the first SKKU fellow in 2004 at SKKU, Science award from Korean Physical Society in 2005, Lee Hsun Research Award, IMR, Chinese Academy of Sciences, China in 2007, Presidential Award in Science and Education in 2008 and Einstein Award IMR, Chinese Academy of Sciences, China in 2017. He was also nominated

as a National Scholar by Ministry of Education in 2006 and has been a fellow of Korean Academy of Science and Technology since 2007. He recently got Sudang prize. He serves for an Associate Editor of ACS Nano. Prof. Lee's work has focused on understanding the fundamental properties of nanostructures in 0D, 1D, 2D and their hybrid heterostructures, design and synthesis of various heterostructures to implement unique physical and chemical properties. His research covers carrier dynamics, carrier multiplication phenomena, hot carrier solar cell, thermoelectrics, quantum mechanical tunneling phenomena, and nanocarbon-based soft electronics.

# Invited Lecture

## Arnaldo D'Amico

*14:00-14.30, Thursday, June 27*  
Ground floor hall



Emeritus Professor of Electronics  
University of Rome Tor Vergata

### SENSOCENE: CONTEMPORARINESS AND EVOLUTION

#### ABSTRACT

After the recognition of the most important scientists who gave sound contributions to the sensors and actuators fields, the genesis of the SENSOCENE is given with some due details. The overall sensor status is illustrated together with new perspectives foreseen for the near future of the sensors development. The influence of the electronics is stressed for a better evolution of the sensor field.

#### BIOGRAPHY

He graduated in Physics, and in Electronic Engineering. Since 1968, he dedicated all his life to sensors and actuators research. He developed a pyroelectric sensor for the Pd/H<sub>2</sub> catalytic heat detection and then he contributed to the development of the first hydrogen sensor based on surface-acoustic-wave transducer. He gave contributions to the development of the Electronic nose and tongue. He was chairman of the EUROSENSORS Conference. He is coauthor of about 650 publications. Arnaldo D'Amico is emeritus professor at University of Roma Tor Vergata, currently engaged in teaching a course of Sensors and Application in the Medical Engineering context.

# Invited Lecture

Piero Tortoli



11.15-11.45, Friday, June 28  
Ground floor hall

Professor of Electronics  
University of Florence

## THE ROLE OF ELECTRONICS IN ULTRASOUND RESEARCH ADVANCEMENT

### ABSTRACT

In a few years, ultrasound research platforms, also known as open scanners, have become a unique tool to promote the experimental activities of ultrasound laboratories. Different advanced research platforms, designed according either to the software- or to the hardware-based approach, are now available. In this paper, the design criteria adopted in the recent development of ULA-OP 256, a 256-channel research scanner, are reported, and some illustrative applications are presented. Differently from open systems that adopt a software approach (based on the acquisition of raw data through high-speed serial links followed by elaboration performed by GPUs), ULA-OP 256 was designed to permit continuous real-time processing of data before their transmission to a host CPU. The new open scanner was programmed to satisfy the requirements of different real-time applications. The implementation of an efficient FPGA-based parallel beamformer, in association with the transmission of plane waves, allows to continuously produce thousands of B-Mode images/s. The capability of transmitting arbitrary sequences and waveforms was exploited to implement, in real-time, multi-line and coded transmit modes, respectively. The processing power of onboard DSPs is exploited in vector Doppler applications in which the velocity profiles along parallel lines are detected at PRF higher than 10 kHz. Future directions for possible further improvement of research scanners performance are also discussed.

### BIOGRAPHY

Piero Tortoli is full Professor of Electronics at the Information Engineering Department of the University of Florence. His research interests include the development of ultrasound research systems and novel imaging/Doppler methods. He has authored more than 280 papers on these topics and chaired 5 international ultrasound Conferences.

Professor Tortoli is currently Associate Editor of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. He is Fellow member of the IEEE and of the AIMBE Societies, and Honorary Member of the Polish Ultrasound Society. Since 2016 he is an elected Member of the Academic Senate at the University of Florence.

# Invited Lecture

Luca Roselli



11.45-12.15, Friday, June 28  
Ground floor hall

Professor of Electronics  
University of Perugia

## FROM SAWS TO GREEN ELECTRONICS: THIRTY YEARS OF WALKING WITH RADIO-FREQUENCIES

### ABSTRACT

### BIOGRAPHY

Qualified Full-Professor at the University of Perugia. Teacher of Electronic Circuits and System for IoT; HFE-Lab coordinator. Founder of the spin-offs WiS Srl (2000), DiES Srl (2005) and LGE Srl (2019). Member of the BoD of ART srl (2007-2012). Chair of the VII CEM-ITD-2007 conference. Chair of the first IEEE-WPTC (2013). Member of the ERC Panel PE7; H2020 evaluator; expert of MIUR and evaluator for several European and national institutions. Member of the board of MIUR for the PNR 2021 – 2023, Group 12 “Green Technologies”. Member of several conference committees: IEEE MTT-24-RFID (past-chair), -25-RF nanotechnologies (chair) and -26-WPT (vice-chair); member of the Advisory Committee of IEEE-WPTC, IEEE-IMS-TPRC; co-chair of the IEEE-WiSNet Conference. Associate Editor of IEEE-Microwave Magazine. Reviewer for many international reviews (including IEEE-Proceedings, -MTT and -MWCL). Main interests: HF electronic systems, RFID, Green electronics and electronics for IoT. 300+ publications (HI 29, I10 84, 3090+ citations – Scholar). Author of the CUP book: “Green RFID Systems”; under contract with CUP, for the publication of the book: “IoT technologies” (expected end of 2019).

# Electronic Systems and Applications I

15:30 – 16:50, Wednesday, June 26

Ground floor hall

Oral session I.a

*Chair: Sergio Saponara*

- 15.30-15.50 **Lithium-ion Battery Electrothermal Circuit and Polynomial Chaos based Stochastic Model**  
*M. Conti and S. Orcioni*  
Department of Information Engineering, Università Politecnica delle Marche, Ancona, Italy
- 15.50-16.10 **Synchronization uncertainty versus power efficiency in LoRaWAN networks**  
*E. Sisinni, A. Depari, P. Ferrari, A. Flammini, M. Pasetti and S. Rinaldi*  
Department of Information Engineering, University of Brescia, Brescia, Italy
- 15.10-16.30 **Wearable Wireless sEMG System for Long-term Muscle Synergies Monitoring**  
*A. Tuoheti<sup>1</sup>, F. Rossi<sup>1</sup>, P. Motto Ros<sup>2</sup>, S. Sapiezko<sup>3</sup>, P. Bonato<sup>3</sup>, E. Bizzi<sup>4</sup>, D. Demarchi<sup>1</sup>*  
1 Department of Electronics and Telecommunications, Politecnico di Torino, Torino, Italy  
2 Electronics Design Laboratory, Istituto Italiano di Tecnologia, Torino, Italy  
3 Motion Analysis Lab, Harvard Medical School, Boston, USA  
4 Department of BCS, Massachusetts Institute of Technology, Boston, USA
- 16.30-16.50 **Pre-Impact Fall Detection FPGA based Architecture through Neuromuscular Connectivity Monitoring**  
*Giovanni Mezzina<sup>1</sup>, Federica Aprigliano<sup>2</sup>, Silvestro Micera<sup>2</sup>, Vito Monaco<sup>2</sup>, Daniela De Venuto<sup>1</sup>*  
1 Dept. of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy  
2 The BioRobotics Institute, Scuola Superiore Sant'Anna, Pontedera (PI), Italy

# Power Electronics

15:30 – 16:50, Wednesday, June 26

Mezzanine hall

Oral session I.b

Chair: *Giorgio Spiazzi*

15.30-15.50

**A Software Solution to Mitigate the EM Emissions of Power Inverters**

*M. Perotti, F. Fiori*

Department of Electronics and Telecommunications, Politecnico di Torino, Torino, Italy

15.50-16.10

**Analysis and Modulation of High-Efficiency dc-dc Converters in Microgrids Applications**

*Simone Pistollato, Tommaso Caldognetto, Paolo Mattavelli*

DTG, University of Padova, Vicenza, Italy

15.10-16.30

**A Scalable SiC MOSFET Model for Circuit-Level Simulation of Vast Arrays of Parallel Devices**

*A. Borghese, M. Riccio, L. Maresca, G. Breglio, and A. Irace*

Dept. of Electrical Eng. and Information Technology, University of Naples Federico II, Naples, Italy

16.30-16.50

**A Smart Maximum Power Point Tracker (SMPPT) for up to 450W solar modules**

*D. Iero<sup>1</sup>, M. Merenda<sup>1</sup>, G. Pangallo<sup>1</sup>, G. Adinolfi<sup>2</sup>, G. Graditi<sup>2</sup>, F.G. Della Corte<sup>1</sup>*

<sup>1</sup> Dipartimento di Ingegneria dell'Informazione, delle Infrastrutture e dell'Energia Sostenibile (DIIES) Università Mediterranea, Reggio Calabria, Italy

<sup>2</sup> ENEA-CR Portici, Napoli, Italy

# Electronic Systems and Applications II

17.20 –19.00, Wednesday, June 26

Ground floor hall

Oral session II.a

Chair: Sergio Saponara

17.20-17.40

**Analysis of Digital Nonlinear Oscillators for the Reliable Design of True Random Bit Generators**

*T. Addabbo, A. Fort, R. Moretti, M. Mugnaini, V. Vignoli*

Department of Information Engineering and Mathematics, University of Siena, Siena, Italy

17.40-18.00

**PSK Symbol Synchronizer based on Q-Learning**

*G.C. Cardarilli, L. Di Nunzio, R. Fazzolari, D. Giardino, M. Matta, M. Re, F. Silvestri, S. Spanò*

Department of Electronic Engineering, University of Rome “Tor Vergata”, Rome, Italy

18.00-18.20

**“Ugo 1st” robotic platform for landmines detection based on the integration of multiple sensors data.**

*L. Bossi, P. Falorni, L. Capineri*

DINFO (Department of Information Engineering), University of Florence, Florence, Italy

18.20-18.40

**IoT Multi-Purpose Edge Engine Implementation**

*R. Berta, A. Kobeissi, F. Bellotti, A. De Gloria*

DITEN, University of Genoa, Genoa, Italy

18.40-19.00

**NEURAghe: a Scalable and Flexible Zynq based CNN Inference Accelerator**

*M.Carreras, D.Loi, G. Deriu, P. Meloni*

Department of Electric and Electronic Engineering, Università degli Studi di Cagliari, Cagliari, Italy

# Integrated Circuits and Systems

17.20 –19.00, Wednesday, June 26

Mezzanine hall

Oral session II.b

Chair: Salvatore Pennisi

17.20 -17.40

## **A 32 KB Embedded Phase Change Memory for Automotive Applications**

*M. Carissimi<sup>1</sup>, R. Zurla<sup>3</sup>, C. Auricchio<sup>1</sup>, E. Calvetti<sup>1</sup>, L. Capecci<sup>1</sup>, L. Croce<sup>1</sup>, D. Gallinari<sup>1</sup>, M. Pasotti<sup>2</sup>, V. Rana<sup>2</sup>, A. Cabrini<sup>3</sup>, G. Torelli<sup>3</sup>*

1 STMicroelectronics, Agrate Brianza, Italy,

2 STMicroelectronics, Greater Noida, India

3 Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, Italy

17.40-18.00

## **The MFP architecture: an alternative to time-interleaving for high-frequency digitizers**

*F. Centurelli<sup>1</sup>, P. Monsurrò<sup>1</sup>, A. Trifiletti<sup>1</sup>, M. D'Arco<sup>2</sup>, L. Angrisani<sup>2</sup>*

1 DIET, University of Rome Sapienza, Roma, Italy

2 DIETI, University of Naples Federico II, Napoli, Italy

18.00-18.20

## **Ultra-Low-Power LDO Regulator for IoT Applications**

*U. Ferlito, A. D. Grasso, M. Vaiana, G. Bruno*

DIEEI, Università Degli Studi di Catania, Catania, Italy

STMicroelectronics, Catania, Italy

18.20-18.40

## **Logic-in-Memory Circuit Design using a Physics-Based RRAM Compact Model**

*T. Zanotti, F. M. Puglisi, P. Pavan*

DIEF, University of Modena and Reggio Emilia, Modena (MO), Italy

18.40-19.00

## **Mixed-Signal ASICs for X-Gamma Ray Space Telescopes for Astrophysics**

*M. Gandola<sup>1,2</sup>, M. Grassi<sup>3</sup>, F. Mele<sup>1,2</sup>, P. Malcovati<sup>3</sup>, G. Bertuccio<sup>1,2</sup>*

1 Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Como, Italy

2 INFN sez. Milano, Milan, Italy 3 Dipartimento di Ingegneria Industriale e dell'Informazione, Università di Pavia, Pavia, Italy



# Microwave Electronics

8.40-10.00, Thursday, June 27

Ground floor hall

Oral session III.a

Chair: Paolo Colantonio

8.40-9.00

**Key MMIC Components in Advanced GaN/Si Technology for Space Applications**

*L. Pace, W. Ciccognani, F. Costanzo, S. Colangeli, F. Di Paolo, R. Giofrè, P. E. Longhi, L. Scucchia, A. Serino, P. Colantonio, E. Limiti*

Electronic Engineering Department, University of Rome “Tor Vergata”, Rome, Italy

9.00-9.20

**A Radar Sensor to Assist the Autonomous Walking of Visually Impaired and Blind People**

*E. Cardillo<sup>1</sup>, V. Di Mattia<sup>2</sup>, G. Manfredi<sup>2</sup>, P. Russo<sup>2</sup>, A. De Leo<sup>2</sup>, A. Caddemi<sup>1</sup>, G. Cerrì<sup>2</sup>*

<sup>1</sup> Dept. of Engineering, Università di Messina, Messina, Italy

<sup>2</sup> Dept. of Information Engineering, Università Politecnica delle Marche, Ancona, Italy

9.20-9.40

**A Ku-band Analog Vector Modulator in GaN MMIC Technology**

*G. Collodi, M. Passafiume, A. Cidronali*

Department of Information Engineering, University of Florence, Florence, Italy

9.40-10.00

**Measurement of River Surface Velocity by Low-Cost Doppler Radar Sensors**

*Federico Alimenti, Stefania Bonafoni, Valentina Palazzj, Paolo Mezzanotte, Luca Roselli*

Department of Engineering, University of Perugia, Perugia, Italy

# Micro- And Nano-electronic Devices

8.40-10.00, Thursday, June 27

Mezzanine hall

Oral session III.b

Chair: *Fernanda Irrera*

8.40-9.00

## **Modeling Speed and Noise of III V based Avalanche Photodiodes**

*A. Pilotto<sup>1</sup>, F. Driussi<sup>1</sup>, D. Esseni<sup>1</sup>, P. Palestri<sup>1</sup>, L. Selmi<sup>2</sup>, M. Antonelli<sup>3</sup>, F. Arfellì<sup>4</sup>, G. Biasio<sup>5</sup>, G. Causero<sup>3</sup>, R. H. Menke<sup>3</sup>, C. Nichetti<sup>4</sup>, T. Steinbartova<sup>4</sup>*

1 DPIA, University of Udine, Italy

2 DIEF, University of Modena and Reggio Emilia, Italy

3 Elettra-Sincrotrone Trieste S.C.p.A, Italy

4 Department of Physics, University of Trieste, Italy

5 IOM CNR, Laboratorio TASC, Trieste, Italy

9.00-9.20

## **A Comparison of Transport Models for Polysilicon**

*A. Mannara, C. Monzio Compagnoni, A. S. Spinelli, A.L. Lacaita*

DEIB Politecnico di Milano, Milano

9.20-9.40

## **CVD-Diamond Detectors with Laser-Formed Graphite Deep Columnar Contacts**

*S. Salvatori<sup>1</sup>, M.C. Ross<sup>2</sup>, D. Tagnani<sup>1,3</sup>, S. Pettinato<sup>1</sup>, A. Orsini<sup>1</sup>, and G. Conte<sup>4</sup>*

1 Engineering Department, Università degli Studi Niccolò Cusano, Rome, Italy

2 Electronic Engineering Department, Università degli Studi Roma Tre, Rome, Italy

3 INFN, Sez. Roma Tre, Rome, Italy

4 Science Department, Università degli Studi Roma Tre, Rome, Italy

9.40-10.00

## **Fiber-optic piezoelectric AlN-based transducers for sensing and energy harvesting**

*M. Mariello<sup>1,2</sup>, F. Guido<sup>2</sup>, L. Algieri<sup>3</sup>, V. M. Mastronard<sup>2</sup>, F. Rizz<sup>2</sup>, A. Quattieri<sup>2</sup>, F. Pisanello<sup>2</sup>, M. De Vitorio<sup>1,2</sup>*

1 Dipartimento di Ingegneria dell'Innovazione, Università del Salento, Lecce, Italy

2 Center for Biomolecular Nanotechnologies, Istituto Italiano di Tecnologia, Arnesano (Lecce), Italy

3 Piezoskin S.r.l., Arnesano (Lecce), Italy

14.30-15.50 Thursday, June 27

Ground floor hall

Oral session IV.a

Chair: Giuseppe Ferri

14.30-14.50

**Equivalent Electrical Model of Amorphous Silicon p-i-n Junction for Lab-on-Chip Application**

*N. Lovecchio<sup>1</sup>, A. Nascetti<sup>2</sup>, G. de Cesare<sup>1</sup>, D. Caputo<sup>1</sup>*

1 DIET, Sapienza University of Rome, Rome, Italy

2 SAE, Sapienza University of Rome, Rome, Italy

14.50-15.10

**The body-diode as a highly linear and reliable temperature sensor for true T<sub>j</sub> measurement in SiC power MOSFET's**

*D. Iero, M. Merenda, G. Pangallo, S. Rao, R. Carotenuto, F.G. Della Corte*

Dipartimento di Ingegneria dell'Informazione, delle Infrastrutture e dell'Energia Sostenibile (DIIES) Università Mediterranea, Reggio Calabria, Italy

15.10-15.30

**Automatic Stray Compensation for Differential Capacitive Sensor Interfaces**

*G. Barile<sup>1</sup>, A. Deperi<sup>2</sup>, G. Ferri<sup>1</sup>, A. Flammini<sup>2</sup>, E. Sisinni<sup>2</sup>, V. Stornelli<sup>1</sup>*

1 Dept. Industrial and Information Engineering & Economics, University of L'Aquila, L'Aquila, Italy

2 Department of Information Engineering, University of Brescia, Brescia, Italy

15.30-15.50

**Event-based Portable Pen for Monitoring Anaesthetics Delivery**

*S. Aiassa<sup>1,2</sup>, S. Carrara<sup>2,3</sup>, D. Demarchi<sup>1,3</sup>*

1 Dept. Electronics Telecom (DET), Politecnico di Torino, Turin, Italy

2 Integrated Systems Lab (LSI), EPFL, Lausanne, Switzerland

3 Integrated Circuits Lab (ICLAB), EPFL, Neuchâtel, Switzerland

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# Optoelectronics And Photonics I

14.30-15.50, Thursday, June 27

Mezzanine hall

Oral session IV.b

Chair: Luigi Zeni

14.30-14.50

**Lab-on-fiber accelerometers based on Opto-mechanical cavities**

*F. A. Bruno<sup>1</sup>, M. Pisco<sup>1</sup>, G. Gruca<sup>2</sup>, N. Rijnveld<sup>2</sup>, A. Cusano<sup>1</sup>*

1 Optoelectronic Division - Department of Engineering, University of Sannio, Benevento, Italy

2 OPTICS11 B.V., De Boelelaan, HV Amsterdam, The Netherlands.

14.50-15.10

**Perovskite solar cells on ultra-thin flexible glass: an ultra-efficient photovoltaic technology for light harvesting under indoor LED illumination**

*G. Lucarelli<sup>1</sup>, S. Castro-Hermosa<sup>1</sup>, M. Top<sup>2</sup>, M. Fabland<sup>2</sup>, J. Falteich<sup>2</sup>, T. M. Brown<sup>1</sup>*

1 CHOSE (Centre for Hybrid and Organic Solar Energy), Department of Electronic Engineering, University of Rome Tor Vergata, Italy

2 Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Germany

15.10-15.30

**Towards super-resolution illumination from InGaN/GaN nanoLED arrays**

*M. Auf der Maur<sup>1</sup>, D. Palazzo<sup>1</sup>, J. Gülink<sup>2</sup>, S. Bornemann<sup>2</sup>, H. S. Wasisto<sup>2</sup>, J. D. Prades<sup>3</sup>, A. Waag<sup>2</sup>, A. Di Carlo<sup>1</sup>*

1 Dept. Electronic Engineering, University of Rome "Tor Vergata", Rome, Italy

2 Institute of Semiconductor Technology, Technische Universität Braunschweig, Braunschweig Germany

3 MIND-IN2UB, Department of Electronic and Biomedical Engineering, University Barcelona, Barcelona, Spain

15.30-15.50

**Development and up-scaling of perovskite solar cells from rigid glass to flexible plastic substrates**

*F. De Rossi, B. Taberi, G. Lucarelli, T.M. Brown, F. Brunetti*

CHOSE (Centre for Hybrid and Organic Solar Energy), Department of Electronic Engineering, University of Rome Tor Vergata, Italy

16.50-18.30, Thursday, June 27

Ground floor hall

Oral session V.a

Chair: Giuseppe Ferri

16.50-17.10

**Characterization of Piezopolymer Interdigital Transducer's vibrational modes**

*A. Bulletti<sup>1</sup>, L. Capineri<sup>1</sup>, Y. Lugovtsova<sup>2</sup>, J. Prager<sup>2</sup>*

1 Department of Information Engineering (DINFO), University of Florence, Florence, Italy

2 Federal Institute for Materials Research and Testing (BAM), Berlin, Germany

17.10-17.30

**TERA: Throughput Enhanced Readout ASIC for Ultra High-Rate X-ray Detection Applications**

*Idham Hafizh<sup>1,2</sup>, Marco Carminati<sup>1,2</sup>, Carlo Fiorini<sup>1,2</sup>*

1 Politecnico di Milano, Milano, Italy

2 INFN Sezione di Milano, Milano, Italy

17.30-17.50

**The analog readout channel for the Si(Li) tracker of the GAPS experiment**

*E. Riceputi, M. Manghisoni, V. Re, M. Sonzogni*

Department of Engineering and Applied Science, University of Bergamo, Dalmine, Italy

17.50-18.10

**MEMS inclinometer with double-actuator servo-assisted position-feedback and tunable sensitivity**

*A. Nastro, M. Ferrari, V. Ferrari*

Department of Information Engineering, University of Brescia, Brescia, Italy

18.10-18.30

**Omnidirectional Wideband Ultrasonic Transducer**

*A.S. Fiorillo, S.A. Pullano, M.G. Bianco, M. Menniti, C.D. Critello*

Department of Health Sciences, University "Magna Græcia" of Catanzaro, Italy

# Optoelectronics And Photonics II

16.50-18.30, Thursday, June 27

Mezzanine hall

Oral session V.b

Chair: Luigi Zeni

16.50-17.10

## Fully spray-coated polymer solar cells with green solvents: study of interfaces and scale-up

*G. Polino<sup>1</sup>, B. Taberì<sup>1</sup>, L. La Notte<sup>1,2</sup>, S. Dell'Elce<sup>3</sup>, A. Liscio<sup>3,4</sup>, G. Cardone<sup>5</sup>, Aldo Di Carlo<sup>1</sup>, F. Brunetti<sup>1</sup>*

1 CHOSE (Centre for Hybrid and Organic Solar Energy), Department of Electronic Engineering, University of Rome Tor Vergata, Italy

2 ENEA - Energy Efficiency Unit Department - Centro Ricerche Casaccia, Santa Maria di Galeria (Rome), Italy

3 Istituto per la Sintesi e la Fotoreattività CNR, Bologna, Italy

4 Istituto dei Sistemi Complessi CNR Rome, Italy

5 PPG Italy Business Support Srl, Milan, Italy

17.10-17.30

## Optical Fiber Meta-Tip: a Valuable Biosensing Platform for Highly Sensitive Detection of Molecular Interactions

*M. Consales<sup>1</sup>, G. Quero<sup>1</sup>, S. Spaziani<sup>1</sup>, M. Principe<sup>1</sup>, A. Micco<sup>1</sup>, V. Galdi<sup>1</sup>, A. Cutolo<sup>1</sup>, A. Cusano<sup>1</sup>*

1 Department of Engineering, University of Sannio, Benevento, Italy

2 Centro Studi e Ricerche Enrico Fermi, Rome, Italy

17.30-17.50

## Recent results on the fabrication and characterization of Long Period Fiber Grating Sensors

*F. Esposito, A. Srivastava, S. Campopiano, A. Iadicico*

*Department of Engineering, University of Naples "Parthenope", Naples, Italy*

17.50-18.10

## Radiation-Hard Silicon Photonics High-Speed Mach-Zehnder Modulator for High Energy Physics Applications

*S. Cammarata<sup>1,2,3</sup>, S. Farallì<sup>2,3</sup>, P. Velba<sup>2</sup>, F. Palla<sup>3</sup>, G. Magagnoli<sup>3</sup>, K. Androsov<sup>3</sup>, A. Messineo<sup>3,4</sup>, A. Michel<sup>1</sup>, G. Ciarpì<sup>1,3</sup>, F. Di Pasquale<sup>2</sup>, S. Saponara<sup>1</sup>*

1 Università di Pisa, Dipartimento di Ingegneria dell'informazione, Pisa, Italy

2 Scuola Superiore Sant'Anna, Pisa, Italy

3 Istituto Nazionale di Fisica Nucleare, Sezione di Pisa, Pisa, Italy

4 Università di Pisa, Dipartimento di Fisica, Pisa, Italy

18.10-18.30

**Chip-scale electro-phonic system for antimicrobial susceptibility testing**

*D. Contedduca<sup>1,2</sup>, G. Brunetti<sup>1</sup>, F. Dell'Olio<sup>1</sup>, M. N. Armenise<sup>1</sup>, T. F. Krauss<sup>2</sup> and C. Ciminelli<sup>1</sup>*

1 Optoelectronics Laboratory, Politecnico di Bari, Bari, Italy

2 Photonics Group, Department of Physics, University of York, Heslington, York, UK

9.30 – 10.30, Friday, June 28

Ground floor hall

ECSEL from H2020 to Horizon Europe

**Ju on KDT- key digital technologies**

*Bert De Colvenaer,*

Director of JU ECSEL

**The ECSEL project “Digital Manufacturing”**

*Tommaso Giunti,*

FCA

**NEREID, a roadmap for Europe**

*Enrico Sangiorgi, Danilo Demarchi,*

Università di Bologna, Politecnico di Torino



# IEEE Fellow Lectures

11.15-12.15, Friday, June 28

Ground floor hall

IEEE Fellow Lectures

**From SAWs to green electronics: thirty years of walking with radio-frequencies**

*Luca Roselli,*

Università di Perugia

**The role of Electronics in ultrasound research advancement**

*Piero Tortoli,*

Università di Firenze

# University, start-up and SME

12.15-13.15, Friday, June 28

Ground floor hall

University, start-up and SME: a winning synergy

*Moderator: Gian Carlo Cardarilli*

**Creating enterprise from academic research. The PNICube-Start Cup Lazio system**

*Paola Paniccia*

University of Rome “Tor Vergata”, Rome, Italy

**Tools for the cooperation University-SME**

*Vincenzo Tagliaferri.*

University of Rome “Tor Vergata”, Rome, Italy

**PMI, university and startup, a model for innovation**

*Gian Carlo Cardarilli*

University of Rome “Tor Vergata”, Rome, Italy

**Some examples of best practices**

# Poster Sessions

In all poster sessions posters will remain on display only during the specific poster session. Posters can be positioned 10 minutes before the poster session and must be removed 10 minutes after the poster session.

*Location: Hall area*

## POSTER SESSION I (June 27, 10:00 - 11:00)

- PI.1 Nonlinear System Identification with Orthogonal Periodic Sequences**  
*Carimi<sup>1</sup>, S. Oracioni<sup>2</sup>, S. Cecchi<sup>2</sup>*  
1 DIA, University of Trieste, Trieste, Italy  
2 DII, Università Politecnica delle Marche
- PI.2 Exploiting Time Synchronization as Side Effect in UWB Real-Time Localization Devices**  
*A. Depari, P. Ferrari, A. Flammini, S. Rinaldi, E. Sisinni*  
Department of Information Engineering, University of Brescia, Brescia, Italy
- PI.3 A multi-protocol radio transceiver for configurable data streaming on IoT devices**  
*T. Polonelli<sup>1</sup>, D. Brunelli<sup>2</sup>, L. Benini<sup>1,3</sup>*  
1 DEI, University of Bologna, Italy  
2 DII, University of Trento, Italy  
3 Integrated Systems Laboratory, ETH Zurich, Switzerland
- PI.4 Energy-efficient Data Collection on UAV-based Wireless Sensor Networks with Wake-up Radios**  
*Perilli<sup>1</sup>, A. Trotta<sup>2</sup>, M. Di Felice<sup>1, 2</sup>, E. Franchi Scarselli<sup>1</sup>, R. Canegallo<sup>3</sup>*  
1 ARCES, University of Bologna, Bologna, Italy  
2 DISI, University of Bologna, Bologna, Italy  
3 STMicroelectronics, Agrate Brianza, Italy
- PI.5 Brain Waves Digitization: A Symbolization-based Approach for Brain Computer Interface**  
*G. Mezzina, D. De Venuto*  
Dept. of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy
- PI.6 Event-Driven Encoding Algorithms for Synchronous Front-End Sensors in Robotic Platforms**  
*P. Motto Ros<sup>1</sup>, M. Laterza<sup>2</sup>, D. Demarchi<sup>3</sup>, M. Martina<sup>3</sup>, C. Bartolozzi<sup>2</sup>*  
1 Electronic Design Lab, Istituto Italiano di Tecnologia, Genova, Italy  
2 iCub Facility, Istituto Italiano di Tecnologia, Genova, Italy  
3 Politecnico di Torino, Torino, Italy
- PI.7 AW-SOM Algorithm for High-speed Learning in Hardware Self-Organizing Maps**  
*G.C. Cardarilli<sup>1</sup>, L. Di Nunzio<sup>1</sup>, R. Fazzolari<sup>1</sup>, D. Giardino<sup>1</sup>, M. Matta<sup>1</sup>, M. Re<sup>1</sup>, S. Spanò<sup>1</sup>*  
Department of Electronic Engineering, University of Rome "Tor Vergata", Rome, Italy
- PI.8 Event-driven Serial Communication on Optical Fiber for Robotic Sensory Systems**  
*A. De Marcellis<sup>1</sup>, G. Di Patrizio, Stanchieri<sup>1</sup>, M. Faccio<sup>1</sup>, E. Palange<sup>1</sup>, P. Motto Ros<sup>2</sup>, M. Martina<sup>3</sup>, D. Demarchi<sup>3</sup>, C. Bartolozzi<sup>4</sup>*  
1 Dept. of Industrial and Information Engineering and Economics, Univ. of L'Aquila, L'Aquila, Italy  
2 Electronic Design Lab, Istituto Italiano di Tecnologia, Genova, Italy  
3 Dept. of Electronics, Politecnico di Torino, Torino, Italy  
4 iCub Facility, Istituto Italiano di Tecnologia, Genova, Italy

# Poster Sessions

- PI.9 Wearable System for Sensory Substitution for Prosthetics with a UWB-Based Optical link**  
*M. Saleh<sup>1, 2</sup>, A. Ibrahim<sup>1</sup>, F. Ansovini<sup>1</sup>, Y. Mohanna<sup>2</sup>, M. Valle<sup>1</sup>,  
A. De Marcellis<sup>3, \*</sup>, G. Di Patrizio Stanchieri<sup>3</sup>, M. Sciuilli<sup>3</sup>, E. Palange<sup>3</sup>, M. Faccio<sup>3</sup>*  
1 COSMIC Lab, DITEN, University of Genova, Genova, Italy  
2 Lebanese University, Lebanon  
3 EPICS Lab, DIIIIE, University of L'Aquila, L'Aquila, Italy
- PI.10 Wideband Beamforming generation based on MIMO Farrow Filters**  
*S. Acciarito<sup>1</sup>, G.C. Cardarilli<sup>1</sup>, L. Di Nunzio<sup>1</sup>, R. Fazzolari<sup>1</sup>, D. Giardino<sup>1</sup>, M. Matta<sup>1</sup>, M. Re<sup>1</sup>, S. Spanò<sup>1</sup>, L. Simone<sup>2</sup>*  
1 Department of Electronic Engineering, University of Rome "Tor Vergata", Rome, Italy  
2 Thales Alenia Space, Rome, Italy
- PI.11 Intel FPGA Acceleration**  
*S. Acciarito<sup>1</sup>, G.C. Cardarilli<sup>1</sup>, L. Di Nunzio<sup>1</sup>, R. Fazzolari<sup>1</sup>, D. Giardino<sup>1</sup>, M. Matta<sup>1</sup>, M. Re<sup>1</sup>, S. Spanò<sup>1</sup>, F. De Stefani<sup>2</sup>, E. La Rosa<sup>2</sup>*  
1 Department of Electronic Engineering, University of Rome "Tor Vergata", Rome, Italy  
2 Leonardo S.p.A. Roma, Rome Italy
- PI.12 RF and High-speed Radiation-Hard Circuits for Aerospace and High Energy Physics Applications**  
*G. Ciarpi<sup>1, 2</sup>, F. Palla<sup>2</sup>, G. Magazzini<sup>2</sup>, D. Monda<sup>1</sup>, B. Neri<sup>1</sup>, S. Saponara<sup>1</sup>,*  
1 Università di Pisa, Dipartimento di Ingegneria dell'informazione, Pisa, Italy  
2 Istituto Nazionale di Fisica Nucleare
- PI.13 ICT platform for sustainable water management in quality winemaking**  
*M. Soccol, A. Perra, P. Meloni, M. Barbaro*  
Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari, Italy
- PI.14 A Runtime-Adaptive Cognitive IoT Node for Healthcare Monitoring**  
*M.A. Scrugli, D. Loi, L. Raffo, P. Meloni*  
Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari, Italy
- PI.15 Machine Learning on the Edge**  
*A. Parodi, F. Bellotti, R. Berta, A. De Gloria*  
DITEN, Università degli Studi di Genova, Genova, Italy
- PI.16 A portable electronic system for non-invasive real-time acquisition of multiple physiological signals**  
*A. Parisi, R. Pernice, S. Guarino, G. Adamo, L. Faes, A. C. Busacca*  
Department of Engineering, University of Palermo, Palermo, Italy
- PI.17 A Prototype IoT System for Smart Monitoring of Plant Health**  
*P. Placidi<sup>1</sup>, D. Grobmann<sup>2</sup>, G. Marconi<sup>2</sup>, A. Scorzoni<sup>1</sup>*  
1 Department of Engineering, University of Perugia, Perugia, Italy.  
2 Faculty of Agriculture, University of Perugia, Perugia, Italy.
- PI.18 RF Energy Harvesting for ULP Power Management**  
*M. Caselli<sup>1</sup>, M. Tonelli<sup>2</sup>, A. Boni<sup>1, 2</sup>*  
1 Department of Engineering and Architecture, University of Parma, Parma, Italy  
2 Silis SRL, Parma, Italy
- PI.19 Analysis and Design of a Mixer-First Receiver for Full-Duplex Self-Interference Cancellation**  
*D. Prevedelli, G. Pini, D. Manstretta, R. Castello*  
Università di Pavia, Pavia, Italy
- PI.20 THz VCO Signal Source Realization in SiGe 130nm BiCMOS**  
*H. Bello<sup>1, 2</sup>, L. Pantoli<sup>1</sup>, H. J. Ng<sup>2</sup>, D. Kissinger<sup>3</sup>, G. Leuzzi<sup>1</sup>*  
1 Department of Industrial and Information Engineering and Economics  
University of L'Aquila, L'Aquila, Italy  
2 IHP-Leibniz-Institut für innovative Mikroelektronik, Germany,  
3 Ulm University, Germany

# Poster Sessions

- PI.21 Lab-on-a-Chip for Telomerase Activity Detection**  
*S. Sonedda, C. Napoli, M. Barbaro*  
Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari, Italy
- PI.22 Optimized Charge Pump with Clock Booster for Reduced Rise Time or Silicon Area**  
*A. Ballo, A. D. Grasso, G. Giustolisi, G. Palumbo*  
Dipartimento di Ingegneria Elettrica, Elettronica e Informatica (DIEEI), University of Catania, Catania, Italy
- PI.23 Nanowatt Wake Up Radios: Discrete Component and Integrated Architectures**  
*A. Elgani<sup>1</sup>, M. Magno<sup>2</sup>, F. Renzini<sup>1</sup>, L. Perilli<sup>1</sup>, E. Franchi Scarselli<sup>1</sup>, A. Gnudi<sup>1</sup>, R. Canegallo<sup>3</sup>, G. Ricotti<sup>3</sup>, L. Benini<sup>1, 2</sup>*  
1 ARCES - DEI, University of Bologna, Italy  
2 Department of Information Technology and Electrical Engineering, ETH Zurich, Switzerland  
3 STMicroelectronics, Agrate Brianza/Cornaredo, Italy
- PI.24 A UWB-Inspired Communication System-on-Chip for Optical Transcutaneous Biotelemetry**  
*A. De Marcellis<sup>1</sup>, G. Di P. Stanchieri<sup>1</sup>, E. Palange<sup>1</sup>, M. Faccio<sup>1</sup>, T. G. Constandinou<sup>2</sup>*  
1 Electronic and Photonic Integrated Circuits and Systems (EPICS) Lab, Dept. of Industrial and Information Engineering and Economics, University of L'Aquila, L'Aquila, ITALY  
2 Centre for Bio-Inspired Technology, Dept. of Electrical and Electronic Engineering, Imperial College London, London, UK
- PI.25 Indoor Energy-Autonomous WSN Platform**  
*G. Giustolisi<sup>1</sup>, A. D. Grasso<sup>1</sup>, G. Palumbo<sup>1</sup>, S. Pennisi<sup>1</sup>, A. Imbruglia<sup>2</sup>*  
1 DIEEI, University of Catania, Italy  
2 STMicroelectronics, Catania, Italy
- PI.26 Design of Adaptive Filters for In-Band Full-Duplex Application**  
*G. Di Meo, D. De Caro, A.G.M. Strullo*  
DIETI, University of Naples "Federico II", Naples, Italy
- PI.27 Ultra-low-power Oscillator for MEMS RTC**  
*G. Mussi, P. Frigerio, G. Langfelder*  
Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Milano, Italy
- PI.28 Condition monitoring system for power MOSFET on-resistance**  
*P. Magnone, H. Abedini, A. Petuccio*  
Department of Management and Engineering, University of Padova, Vicenza, Italy
- PI.29 Digital Predictive Current-Mode Control for Multilevel Converters**  
*G. Bonanno, L. Corradini*  
Department of Information Engineering, University of Padova, Italy
- PI.30 DC-DC converter with active ripple compensation**  
*V. Montalbano<sup>1</sup>, G. Barbera<sup>1</sup>, G. Vitale<sup>2</sup>, G. Lullo<sup>1</sup>*  
1 Dipartimento di Ingegneria, Università degli Studi di Palermo, Palermo, Italy  
2 Istituto di Calcolo e Reti ad Alte Prestazioni (ICAR), Consiglio Nazionale delle ricerche (CNR), Palermo, Italy

# Poster Sessions

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*Location: Hall area*

## POSTER SESSION II (June 27, 15:50 - 16:50)

### **PII.1 Noise Performance of an AlGaN/GaN MMIC Low-Noise Amplifier Under Laser Exposure**

*A. Caddemi<sup>1</sup>, E. Cardillo<sup>1</sup>, S. Patané<sup>2</sup>, and C. Triolo<sup>2</sup>*

Department of Engineering, University of Messina, Messina, Italy

<sup>2</sup> Dipartimento di Scienze Matematiche e Informatiche, Scienze Fisiche e Scienze della Terra, University of Messina, Messina, Italy

### **PII.2 Reliability in back-side-illuminated CMOS image sensors**

*A. Vici<sup>1</sup>, F. Russo<sup>2</sup>, N. Lovisi<sup>2</sup>, A. Casella<sup>2</sup>, A. Marchioni<sup>2</sup>, F. Irrera<sup>1</sup>*

<sup>1</sup> DIET - Sapienza University of Rome, Rome, Italy

<sup>2</sup> LFoundry, a SMIC Company, Avezzano, Italy

### **PII.3 Impedance spectroscopy characterization of innovative graphene on silicon solar cells contacts**

*I. Matavena*

Department of Electrical Engineering and Information Technology, University of Naples Federico II, Naples, Italy

### **PII.4 Nanogripper Design and Technology for Nanomanipulation in Biological Environment**

*A. Buzzin<sup>1</sup>, A. Veroli<sup>1</sup>, G. de Cesare<sup>1</sup>, M. Verotti<sup>2</sup>, N. P. Belfiore<sup>3</sup>*

<sup>1</sup> Dept. of Information Engineering, Electronics and Telecommunications, Sapienza University of Rome, Rome, Italy.

<sup>2</sup> Dept. of Mechanical Engineering, University of Genoa, Genoa, Italy

<sup>3</sup> Dept. of Engineering, University of Roma Tre, Rome, Italy

### **PII.5 Printed supercapacitors on paper substrates**

*G. Polino<sup>1</sup>, A. Scaramella<sup>1</sup>, V. Manca<sup>1</sup>, E. Tamburri<sup>2</sup>, A. Lanuti<sup>1</sup>, E. Palmieri<sup>2</sup>, S. Orlanducci<sup>2</sup>, F. Brunetti<sup>1</sup>*

<sup>1</sup> CHOSE (Centre for Hybrid and Organic Solar Energy), Department of Electronic Engineering, University of Rome Tor Vergata, Rome, Italy

<sup>2</sup> Department of chemical science and technology, University of Rome Tor Vergata, Rome, Italy

### **PII.6 Smart Microgels for Lab on Fiber Technology**

*M. Giacquinto<sup>1</sup>, A. Aliberti<sup>1</sup>, A. Micco<sup>1</sup>, E. Bobeico<sup>2</sup>, M. Ruvo<sup>3</sup>, A. Cutolo<sup>1</sup>, A. Ricciardi<sup>1</sup>, A. Cusano<sup>1</sup>*

<sup>1</sup> Optoelectronics Group, Department of Engineering, University of Sannio, Benevento, Italy

<sup>2</sup> ENEA, Portici Research Center, Napoli, Italy

<sup>3</sup> Institute of Biostructure and Bioimaging, National Research Council, Naples, Italy

### **PII.7 DFT Simulations and Device Modelling of MXene/Perovskite Solar Cells**

*A. Di Vito<sup>1</sup>, A. Pecchia<sup>2</sup>, D. Rossi<sup>1</sup>, M. Auf der Maur<sup>1</sup>, A. Agresti<sup>1</sup>, S. Pescetelli<sup>1</sup>, A. Pazniak<sup>3</sup> and A. Di Carlo<sup>1,3</sup>*

<sup>1</sup> Department of Electronics Engineering, University of Rome Tor Vergata, Rome, Italy

<sup>2</sup> CNR-ISMN, Monterotondo (Rome), Italy

<sup>3</sup> National University of Science and Technology NUTS-MISiS, Moscow, Russia

### **PII.8 High-Pass Filtering for accuracy enhancement in dark-pulse Brillouin Optical Time Domain Analysis**

*A. Coscetta, E. Catalano, E. Cerri, L. Zeni, A. Minardo*

Department of Engineering, University of Campania Luigi Vanvitelli, Aversa, Italy

# Poster Sessions

- PII.9 Performances variation of SPR sensors based on a D-shaped POF with different S1813-gold layers**  
*N. Cennamo, F. Arcadio, L. Zeni*  
Department of Engineering, University of Campania L. Vanvitelli, Aversa, Italy
- PII.10 Plasmonic NanoAntennas for label-free biodetection**  
*V. Di Meo<sup>1, 2, 3</sup>, A. Crescielli<sup>1</sup>, A. Caporale<sup>2</sup>, M. Jannelli<sup>4</sup>, E. Palange<sup>4</sup>, A. De Marcellis<sup>4</sup>, M. Portaccio<sup>5</sup>, M. Lepore<sup>5</sup>, I. Rendina<sup>1</sup>, M. Ruvo<sup>3</sup>, E. Esposito<sup>1</sup>*  
1 Institute for Microelectronics and Microsystems, National Research Council, Naples, Italy  
2 CeRICT srl, Benevento, Italy  
3 Institute of Biostructure and Bioimaging, National Research Council, Naples, Italy  
4 Department of Industrial and Information Engineering and Economics, University of L'Aquila, Italy  
5 Department of Experimental Medicine – University of Campania “L. Vanvitelli”, Naples, Italy
- PII.11 Blue Emitting Organic Light Emitting Diodes**  
*P. Cusumano, C. Arnone, A. Parisi*  
Dipartimento di Ingegneria, Università di Palermo, Palermo, Italy
- PII.12 Multiparticle drift-diffusion simulations of thermally activated delayed fluorescence OLEDs**  
*D. Rossi, M. Auf der Maur, A. Di Carlo*  
Dept. of Electronic Engineering, Università degli Studi di Roma “Tor Vergata”, Rome, Italy
- PII.13 Deformation monitoring of bi-dimensional structures by embedded FBGs**  
*P. Di Palma, G. Palumbo, A. Iadiccio, S. Campopiano*  
Department of Engineering, University of Naples “Parthenope”, Naples, Italy
- PII.14 Tuneable Gaussian-Shaped Photonic Notch Filter**  
*G. Brunetti, F. Dell’Olio, D. Contedua, M. N. Armenise, C. Ciminelli*  
Optoelectronics Laboratory, Politecnico di Bari, Bari, Italy
- PII.15 A monitoring sensor system for photovoltaic plants**  
*M. Muttillio, T. De Rubeis, D. Ambrosini, V. Stornelli, G. Ferri*  
Dept. of Industrial and Information Engineering and Economics (DIIEE) University of L'Aquila L'Aquila, Italy
- PII.16 A Compact Gated - Integrator for Pulsed Analog Signals Conditioning**  
*S. Pettinato<sup>1</sup>, A. Orsini<sup>1</sup>, D. Tagnani<sup>1, 2</sup>, M.C. Rossi<sup>3</sup>, and S. Salvatori<sup>1</sup>*  
1 Engineering Department, Università degli Studi Niccolò Cusano, Rome, Italy  
2 INFN, Sez. Roma Tre, Rome, Italy  
3 Electronic Engineering Department, Università degli Studi Roma Tre, Rome, Italy
- PII.17 An array of electric field sensors for the measurement of CO<sub>2</sub> and O<sub>2</sub>**  
*A. Zompanti, C. Di Mezza, G. Pennazza, A. Sabatini, S. Grasso and M. Santonico*  
Unit of Electronics for Sensor Systems, Faculty of Engineering, Campus Bio-Medico University of Rome, Italy
- PII.18 FBG-based wireless dynamic measurement system for smart tires**  
*V.R. Marrazzo<sup>1</sup>, S. Strano<sup>2</sup>, L. Romano<sup>4</sup>, M. Riccio<sup>1</sup>, F. Fienga<sup>3</sup>, M. Terzo<sup>2</sup>, A. Irace<sup>1</sup>, G. Breglio<sup>1</sup>*  
1 Department of Electrical Engineering and Information Technologies, Federico II, Naples, Italy;  
2 Department of Industrial Engineering, Federico II, Naples, Italy;  
3 National Institute for Nuclear Physics (INFN), Napoli Section, Naples, Italy;  
4 Department of Maritime and Mechanical Engineering Chalmers, University of Technology Gothenburg, Sweden;
- PII.19 Pre-processing Unit for Virtual Sensors built with Low-power Tri-axial Accelerometers**  
*A. Femia, A. De Vita, L. Di Benedetto, A. Rubino, G.D. Licciardo*  
Department of Industrial Engineering, University of Salerno, Fisciano (SA), Italy
- PII.20 FEM modelling and simulation of a CMUT sparse array element for US imaging**  
*M. La Mura<sup>1</sup>, N. Lamberti<sup>1</sup>, A. Savoia<sup>2</sup>*  
1 Department of Industrial Engineering, Università degli Studi di Salerno, Fisciano, Italy  
2 Department of Engineering, Università degli Studi Roma Tre, Rome, Italy

# Poster Sessions

- PII.21 An electronic interface for an array of Self-adaptive thermal modulation gas sensor**  
*A. Catini, D. Di Giuseppe, R. Capuano, E. Martinelli, C. Di Natale*  
Department of Electronic Engineering, University of Rome Tor Vergata, Rome, Italy
- PII.22 Acquisition device for the ultrasonic identification and authentication of copper canisters for spent nuclear fuel**  
*C. Clementi<sup>1, 2</sup>, F. Littmann<sup>1</sup>, L. Capineri<sup>2</sup>*  
1 Nuclear Security Unit, Joint Research Centre, Ispra (VA), Italy  
2 Department of Information Engineering, University of Florence, Florence, Italy
- PII.23 Wireless Sensors for Intraoral Force Monitoring**  
*M. Merenda<sup>1, 2</sup>, D. Laurendi<sup>1, 2</sup>, D. Iero<sup>1, 2</sup>, D. M. D'Addona<sup>3</sup>, F.G. Della Corte<sup>1, 2</sup>*  
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2 HWA srl, Reggio Calabria, Italy  
3 DICMaPI, Università degli Studi di Napoli Federico II, Naples, Italy
- PII.24 Quartz Resonator Sensor with Printed-on-Crystal Coil for Electromagnetic Distance-Independent Contactless Interrogation**  
*M. Baiù, M. Demori, M. Ferrari, V. Ferrari*  
Department of Information Engineering, University of Brescia, Brescia, Italy
- PII.25 Piezoelectric MEMS Device for Mechanical Vortex Generation in Aqueous Solution Drops**  
*M. Baiù<sup>1</sup>, M. Demori<sup>1</sup>, M. Ferrari<sup>1</sup>, S. Basrou<sup>2</sup>, L. Rujfer<sup>2</sup>, V. Ferrari<sup>1</sup>*  
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2 Univ. Grenoble Alpes, CNRS, Grenoble INP, TIMA, Grenoble, FRANCE
- PII.26 LAB-ON-CHIP BASED MICRO-INCUBATOR FOR CELL-CULTURE ANALYSIS ABOARD NANOSATELLITE**  
*L. Iannascoli<sup>1</sup>, F. Costantini<sup>2</sup>, D. Paglialunga<sup>1</sup>, A. Buzzin<sup>1</sup>, N. Lovocchio<sup>1</sup>, D. Caputo<sup>1</sup>, G. de Cesare<sup>1</sup>, A. Nascetti<sup>2</sup>*  
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2 School of Aerospace Engineering, Sapienza University of Rome, Rome, Italy
- PII.27 DETECTION OF EXTRATERRESTRIAL LIFE MARKERS BY THE USE OF SPACE-READY LAB-ON-CHIP DEVICE**  
*D. Paglialunga<sup>1</sup>, F. Costantini<sup>2</sup>, M. Mirasoli<sup>3</sup>, L. Iannascoli<sup>1</sup>, S. Pirrotta<sup>4</sup>, D. Caputo<sup>1</sup>, G. de Cesare<sup>1</sup>, A. Nascetti<sup>2</sup>*  
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3 Department of Chemistry "Giacomo Ciamician", University of Bologna, Bologna, Italy  
4 Agenzia Spaziale Italiana, Rome, Italy
- PII.28 Ultra-Low Noise Charge Amplifiers for X-ray Detectors at ELETTRA and SESAME Synchrotrons**  
*F. Mele<sup>1, 2</sup>, M. Gandola<sup>1, 2</sup>, M. Sammartini<sup>1, 2</sup>, G. Bertuccio<sup>1, 2</sup>, P. Bellutti<sup>3, 4</sup>, G. Borgbi<sup>3, 4</sup>, J. Bufon<sup>5, 6</sup>, G. Cautero<sup>5, 6</sup>, D. Cirrincione<sup>6, 7</sup>, F. Ficorella<sup>3, 4</sup>, A. Gianoncelli<sup>5, 6</sup>, R. H. Menk<sup>5, 6, 8</sup>, A. Picciotto<sup>3, 4</sup>, I. Rachenskaya<sup>4</sup>, A. Rachenski<sup>6</sup>, G. Zampa<sup>6</sup>, N. Zampa<sup>6</sup>, N. Zorzi<sup>3, 4</sup>, A. Vacchi<sup>6, 7</sup>*  
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3 Fondazione Bruno Kessler, Trento, Italy  
4 TIFPA-INFN, Trento, Italy  
5 Elettra-Sincrotrone Trieste S.C.p.A, Trieste, Italy  
6 INFN sez. Trieste, Trieste, Italy  
7 Dipartimento di Matematica ed Informatica, Università di Udine, Udine, Italy  
8 Department of Medical Imaging, University of Saskatchewan, Saskatoon, Canada



**PII.29 Sensory glove system based on multisource energy harvester**

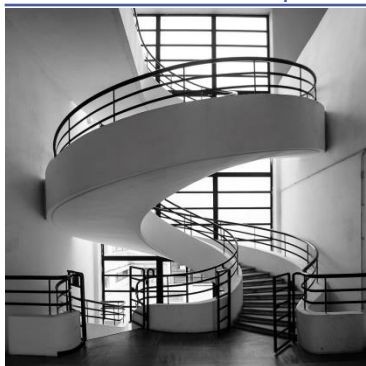
*V. Errico<sup>1</sup>, G. Saggio<sup>1</sup>, A. Leoni<sup>2</sup>, I. Ulisse<sup>2</sup>, G. Ferri<sup>2</sup>*

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# Social events

## Welcome Reception



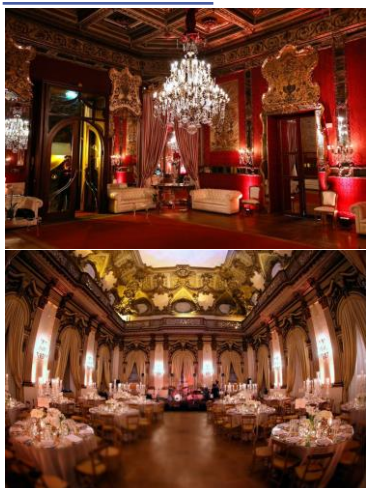
WeGIL

*Largo Ascianghi, 5, 00153 Roma RM*

19:30 – 22:30, Wednesday, June 26

The organization committee is pleased to invite all the participants to the Welcome Reception that will be held in WeGIL in the evening. Welcome Reception

## Gala Dinner



Palazzo Brancaccio

*Viale del Monte Oppio, 7, 00184 Roma RM*

20:00 – 23:00, Thursday, June 27

Transport has been arranged by bus: 19:00 from WeGIL.

Palazzo Brancaccio is the last palace of the Roman Patriciate built in 1880 in the heart of the eternal city by the will of Prince Salvatore Brancaccio, exponent of one of the most ancient and illustrious families of the Neapolitan patriciate, and of his consort Mary Elisabeth Field, rich American heiress. The building – today one of the most beautiful luxury locations in Rome – takes shape thanks to the talent of the architect Gaetano Koch, one of the most famous in the nineteenth-century Roman panorama, also known for the construction of Palazzo Koch and the two palaces of Esedra in Republic square; as well as Luca Carini, another architect and sculptor in vogue in the Umbertine era.

This luxury location today is able to host the most diverse events. The style recalls the “Baroque classicism” and embodies the characteristics of pomp and elegance but with a line of continuity typical of classical art. Curved lines

# Social events

with sinuous curves are enhanced in the Palace, in spaces that link painting, sculpture, stuccoes and mirrors, emphasizing everything through suggestive plays of light and shadows; a decorative exuberance that aims to arouse wonder and amazement, all enriched by a wide original vein, seasoned with classic canons. The originality and the free creation of this style can be found in every room of this splendid Capitoline luxury location, even in the Casina di Caccia, a small external structure located in the secular park, which can accommodate small refreshments and which “hides” an immense gift by Francesco Gai, one of the most versatile painters of the period.

## Musical Event



Palazzo Brancaccio  
*Viale del Monte Oppio, 7, 00184*  
Roma RM 20:00 – 23:00,  
Thursday, June 27



This year, as it happened during the SIE 2017, the now known “**SIE Jazz Group**” will perform to cheer up the participants during the gala dinner. The group consists of the following colleagues:

- Sax: Andrea Scorzoni
- Drums and Percussion: Marco Re
- Bass: Gaetano Palumbo
- Electric guitar: Stefano Possidoni
- Piano and voice: Andrea Palma

# Social events

## Social Tour



Roman Houses of the Celio +  
Taste of Ancient Rome food

*Via Clivo Di Scauro*

17:00 , Friday, June 28,



The Social Tour will take place at the Roman Houses of the Celio. The Roman domus of Celio below the basilica of Santi Giovanni e Paolo, on the slopes of the Celio, on the Clivo di Scauro between the Colosseum and the Circus Maximus, were opened to the public in 2002.

# Conference Venue



The **SIE2019** Annual Meeting is hosted at **WeGIL**  
Largo Ascianghi, 5, 00153 Roma RM

The former Italian "Casa della Gioventù" of Littorio di Trastevere, designed by Luigi Moretti, was designed starting in 1933 and inaugurated in 1937. The WeGIL Center is located in Trastevere in Rome.

