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Technical Program

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June 13, 2019

Welcome and Opening Remarks	
8.30	Daniela De Venuto – General Chair IWASI 2019 Eugenio Di Sciascio – Rector of the Politecnico di Bari, Italy Mauro De Palma – Director of the National Institute of Nuclear Physics (INFN)- Bari, Italy Pierpaolo Cariddi – Otranto Mayor
Opening Session <u>Chairs:</u> Daniela De Venuto, Eugenio Di Sciascio (Politecnico di Bari, Italy)	
9.00	Opening Invited Speaker <u>Luigi Nicolais</u> (Materias S.r.l., Italy) <i>Strategies to create a bridge between the University Research and Enterprise</i>
9.40	Invited Speaker <u>Alberto Sangiovanni Vincentelli</u> (University of California at Berkeley, US) <i>Comparing Innovation Ecosystems</i>
Panel Session What does an innovation policy in Deep Tech need from Industry, Academia and Government? <u>Chair:</u> Eugenio Di Sciascio (Politecnico di Bari, Italy)	
10.10	Panelists <u>Luigi Nicolais</u> (Materias S.r.l., Italy) <u>Alberto Sangiovanni Vincentelli</u> (University of California at Berkeley, US)
10.30	Coffee Break, Exhibition and Poster Session I
Session 1 Neural Dynamics-based Systems and Interfaces <u>Chair:</u> Elisabetta Farella (Fondazione Bruno Kessler (FBK), Italy)	
11.00	Invited Speaker <u>Jan Rabaey</u> (University of California at Berkeley, US) <i>Human-Centric Communication and Computation</i>
11.30	Invited Speaker <u>Silvestro Micera</u> (EPFL, Switzerland and Scuola Superiore Sant'Anna Pisa, Italy) <i>The quest for a bionic hand: recent achievements and future perspectives</i>
12.00	Invited Speaker <u>Cristoph Guger</u> (g.tec medical engineering GmbH, Austria) <i>Current and future applications of non-invasive and invasive Brain-Computer interfaces</i>

12.10	Giovanni Mezzina, Federica Aprigliano, Silvestro Micera, Vito Monaco, Daniela De Venuto. (Politecnico di Bari, Italy) <i>EEG/EMG based Architecture for the Early Detection of Slip-induced Lack of Balance</i>
12.20	Mathias Schulz, Eugene Reese, Ravit Hadar, Chrisine Winter and Roland Thewes. (TU Berlin, Germany) <i>A Rechargeable Battery Driven More than 4 Weeks Runtime Biphasic Bilateral DBS Unit for Rodents</i>
Session 2 Sensor interfaces: analog and digital sensor data processing architectures and ICs <u>Chair:</u> Linda Milor (Georgia Institute of Technology, US)	
12.30	Invited Speaker <u>Georges Gielen</u> (KU Leuven, Belgium) <i>The fantastic voyage towards ultra-miniaturized sensing circuits</i>
13:00	Jeroen van Dijk and Andrei Vladimirescu. (ISEP, France) <i>SPINE (SPIN Emulator) - A Quantum-Electronics Interface Simulator</i>
13:15	Elisa Sacco, Johan Vergauwen and Georges Gielen. (KU Leuven, Belgium) <i>From Open-Loop to Closed-Loop Single-VCO-Based Sensor-to-Digital Converter Architectures: theoretical analysis and comparison</i>
13.30	Lunch
15.00	Coffee & Exhibition and Poster Session I
Session 3 High Energy Physics <u>Chair:</u> Mauro De Palma (INFN Bari, Italy)	
15.30	Invited Speaker <u>Luciano Musa</u> (CERN Geneva, Switzerland) <i>CMOS Active Pixel Sensors for High Energy Physics</i>
16.00	Francesca Romana Pantaleo and Serena Loporchio. (University of Bari and INFN Bari, Italy) <i>Characterization and development of NUV SiPMs for INFN optical modules for the SCT Medium Size Telescope proposed for the CTA Observatory</i>
16.15	Federica Maria Simone, Rosamaria Venditti and Elisabetta Soldani. (University of Bari and INFN Bari, Italy) <i>Upgrade of the CMS Muon system with Triple-GEM detectors</i>
16.30	Heinz-Christoph Neitzert, Giovanni Landi, Felix Lang, Juergen Bundesmann, Andrea Denker, Stefan Keil and Roland Thewes. (University of Salerno, Italy) <i>Monitoring Proton Beam-induced Photodiode Degradation using Low-voltage Ring Oscillators</i>

16:40	Pedro De la Torre Luque, Fabio Gargano and Leonardo DiVenere. (University of Bari and INFN Bari, Italy) <i>Ion identification with the Plastic Scintillator Detector for the High Energy cosmic-Radiation Detection (HERD) experiment</i>
16:50	Francesco Licciulli, Giuseppe De Robertis, Antonio Ranieri and Piet Verwilligen. (INFN Bari, Italy) <i>FATIC: an ASIC for Fast Timing Micro-Pattern Gas Detectors</i>
Session 4 Advances in Lab-on-Chip Technologies <u>Chair:</u> Giuseppe Ferri (University of L'Aquila, Italy)	
17.00	Francesca Criscuolo, Marco Galfione, Sandro Carrara and Giovanni De Micheli. (EPFL, Switzerland) <i>All-solid-state Reference Electrodes for analytical applications</i>
17.15	Fabrizio Torricelli, Eleonora Macchia, Kyriaki Manoli, Cinzia Di Franco, Zsolt M. Kovacs-Vajna, Gerardo Palazzo, Gaetano Scamarcio and Luisa Torsi. (University of Brescia, Italy) <i>Analysis of Label-Free Single-Molecule Biosensors based on Gate-Biofunctionalized Organic Transistors</i>
17.30	Nicola Lovecchio, Augusto Nascetti, Giampiero de Cesare and Domenico Caputo. (University of Rome "La Sapienza", Italy) <i>Equivalent Electrical Model of α-Si:H Diodes for Lab-on-Chip Technology</i>
17.45	Nicola Lovecchio, Francesca Costantini, Augusto Nascetti, Rita Petrucci, Giampiero de Cesare and Domenico Caputo. (University of Rome "La Sapienza", Italy) <i>Development of an Electrochemiluminescence-based Lab-on-Chip Using Thin/Thick Film Technologies</i>
18.00	Social Events

June 14, 2019

Special Session

Energy efficient Smart Sensors and Self-sustainability.

Chairs

Michele Magno
(ETH Zurich, Switzerland)

Sebastian Bader
(MIUN, Sweden)

9.00	Invited Speaker <u>Edoardo Charbon</u> (EPFL, Switzerland) <i>The role of cryo-CMOS in quantum computers</i>
9.30	Manuel Eggimann, Michele Magno, Stefan Mach and Luca Benini. (ETH Zurich, Switzerland) <i>A RISC-V Based Open Hardware Platform for Always-On Wearable Smart Sensing</i>
9.45	Ye Xu, Sebastian Bader, Michele Magno, Philipp Mayer and Bengt Oelmann. (Mid Swenden University, Swenden) <i>Energy-autonomous On-rotor RPM Sensor Using Variable Reluctance Energy Harvesting</i>
10.00	Invited Speaker <u>Luca Benini</u> (University of Bologna, Italy and ETH Zurich, Switzerland) <i>Secure Near-Sensor Analytics: the PULP approach</i>
10.30	Coffee Break, Exhibition and Poster Session II

Session 5

IoT and AI in Industrial and Environmental Applications

Chairs:

Alberto Sangiovanni Vincentelli
(University of California at Berkeley, US)

Cosimo Antonio Prete
(University of Pisa, Italy)

11.00	Invited Speaker <u>Franco Fummi</u> (University of Verona, Italy) <i>Industrial-IoT Data Analysis Exploiting Electronic Design Automation Techniques</i>
11.30	Invited Speaker <u>Benedetto Vigna</u> (STMicroelectronics, Italy) <i>Is Innovating in a large high-tech multinational company possible?</i>
12.00	Michele Ruta, Floriano Scioscia, Saverio Ieva, Giovanna Capurso and Eugenio Di Sciascio. (Politecnico di Bari, Italy) <i>Semantic matchmaking as a way for attitude discovery</i>
12.10	Francesco Paissan, Gianmarco Cerutti, Massimo Gottardi and Elisabetta Farella. (Fondazione Bruno Kessler (FBK), Italy) <i>People/Car Classification using an Ultra-Low-Power Smart Vision Sensor</i>
12.25	Gabriele Antonio De Vitis, Pierfrancesco Foglia and Cosimo Antonio Prete. (University of Pisa, Italy) <i>Algorithms for the Detection of Blob Defects in High Speed Glass Tube Production Lines</i>

Session 6 High Performance Systems for Healthcare, Food, Agriculture and Environment Chair: Giuseppe Ferri (University of L'Aquila, Italy)	
12.35	Invited Speaker <u>Chris Van Hoof</u> (Connected Head Solutions, imec, Belgium) <i>The OnePlanet Research Center – applying nanoelectronics, sensors, circuits and AI in food, health, agriculture and the environment</i>
13.05	Tommaso Polonelli, Davide Brunelli, Alberto Girolami, Gerardo Nahuel Demmi and Luca Benini. (University of Bologna, Italy) <i>A multi-protocol system for configurable data streaming on IoT healthcare devices</i>
13.20	Massimo Ballerini, Michele Magno, Davide Brunelli, Guido Comai and Luca Benini. (MediCon Ingegneria, Italy) <i>NETWIS: A Scalable and Robust Body Sensor Network For Biomedical Application</i>
13.30	Mirco Muttillio, Tullio de Rubeis, Dario Ambrosini, Vincenzo Stornelli and Giuseppe Ferri. (University of L'Aquila, Italy) <i>Sensor monitoring system for PV plant with active load</i>
13.45	Lunch
15.00	Coffee Break, Exhibition and Poster Session II
Session 7 Flexible large-area sensors and Smart Sensing Surfaces Chair: Giampiero de Cesare (University of Rome "La Sapienza", Italy)	
15.30	Invited Speaker <u>Ana Claudia Arias</u> (University of California at Berkeley, US) <i>Towards Wireless Flexible Printed Wearable Sensors</i>
16.00	Invited Speaker <u>Luisa Torsi</u> (University of Bari, Italy) <i>Single molecule detection of markers with a label-free bio-electronic sensor</i>
16.30	Invited Speaker <u>Eugenio Cantatore</u> (Eindhoven University of Technology, The Netherlands) <i>Printed Smart Sensing Surfaces: technology, design and applications</i>
17.00	Valerio F. Annese, Chunxiao Hu, Claudio Accarino, Christos Giagkoulovits, Samadhan B. Patil, Mohammed A. Al-Rawhani, James Beeley, Boon C. Cheah, Srinivas Velugotla, James P. Grant, and David R. S. Cumming (University of Glasgow, UK) <i>The Multicorder: A Handheld Multimodal Metabolomics-on-CMOS Sensing Platform</i>
17.10	Rosaria Anna Picca, Davide Blasi, Eleonora Macchia, Kyriaki Manoli, Cinzia Di Franco, Gaetano Scamarco, Fabrizio Torricelli, Amaia Zurutuza, Ilargi Napal, Alba Centeno and Luisa Torsi. (University of Bari, Italy) <i>A label-free immunosensor based on a graphene water-gated field-effect transistor</i>

17.20	Paola Sabrina Barbato, Paolo Aprea, Domenico Caputo, Valeria Casuscelli, Rossana Scaldaferrri and Andrea Di Matteo. (STMicroelectronics, Italy) <i>0.5(BaZr0.2Ti0.8O3)-0.5(Ba0.7Ca0.3O3) thin films deriving from green sol-gel routes</i>
17.30	Antonio Vincenzo Radogna, Stefano D'Amico, Simonetta Capone and Luca Nunzio Francioso. (University of Salento, Italy) <i>A Simulation Study of an Optimized Impedance Spectroscopy Approach for Gas Sensors</i>
Session 8 Pixel Detectors Applications <u>Chair:</u> Domenico Caputo (University of Rome "La Sapienza", Italy)	
17.40	Fabio Colamaria, Giuseppe Trombetta, Giuseppe Eugenio Bruno, Giuseppe De Robertis, Vito Manzari, Annamaria Mazzone and Cosimo Pastore. (INFN Bari, Italy) <i>Study of the photon rejection of the ALPIDE pixel detector for medical applications</i>
17.50	Iacopo Fara, Lucas Matana Luza, Jérôme Boch, Gianluca Furano, Marco Ottavi and Luigi Dilillo. (University of Rome "Tor Vergata", Italy) <i>Design and Implementation of a Flexible Interface for TID Detector</i>
18.00	Marianne Hromalik, Kevin Burkey and Tyler Burns. (SUNY Oswego, US) <i>Low-noise, low-power, event-driven read-out of counting Pixel Array Detectors</i>
Special Session Building Blocks and Tools for Secure Hardware Design <u>Chair:</u> Francesco Regazzoni (AlaRI - USI, Lugano, Switzerland)	
18.10	Jean-Luc Danger, Alexander Schaub and Sylvain Guilley. (Télécom ParisTech, France) <i>Highly Robust and Secure Delay PUF with Two-Metrics Helper Data</i>
18.25	Mustafa Khairallah, Shivam Bhasin and Anupam Chattopadhyay. (NTU, Singapore) <i>On Misuse of Nonce-Misuse Resistance: Adapting Differential Fault Attacks on (few) CAESAR Winners</i>
18.40	Ayesha Khalid, Maire O'Neill, Sarah McCarthy and Weiqiang Liu. (Queen's University of Belfast, UK) <i>Quantum resistant cryptography for IoT in a quantum world: Are we ready?</i>
18.50	Best Paper Award and Closing Ceremony

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Poster Sessions	
P1.1	Alessio Buzzin, Andrea Veroli, Giampiero de Cesare, Ennio Giovine, Matteo Verotti and Nicola Pio Belfiore. (University of Rome “La Sapienza”, Italy) <i>A new NEMS Based Linear-to-Rotary Displacement-Capacity Transducer</i>
P1.2	Mohammad Zulqarnain, Stefano Stanzione, Jan-Laurens P.J. van der Steen, Gerwin H. Gelinck, Kris Myny and Eugenio Cantatore. (Eindhoven University of Technology, The Netherlands) <i>A Low Power Time Domain ECG Interface Based on Flexible a-IGZO TFTs</i>
P1.3	Evgenia Voulgari, François Krummenacher and Maher Kayal. (EPFL, Switzerland) <i>A programmable low-power ADC interface for an ISFET sweat sensor for a wearable multi-sensing system</i>
P1.4	Marko Gazivoda, Carlo Trigona and Vedran Bilas. (University of Zagreb, Croatia) <i>Weak Signal Detection Utilizing a Mechanically Switched Inductor</i>
P1.5	Eleonora Macchia, Kyriaki Manoli, Holzer, Di Franco, Torricelli, Picca, Palazzo, Scamarcio and Luisa Torsi (University of Bari, Italy) <i>Effect of the ionic strength of the gating solution on the SiMoT response</i>
P1.6	Alessio Buzzin, Lorenzo Iannascoli, Marco Muzi, Andrea Veroli, Giampiero de Cesare, Domenico Caputo, Luca Maiolo, Francesco Maita and Giulia Ricci. (University of Rome “La Sapienza”, Italy) <i>Integrated 3D Microfluidic Device for Impedance Spectroscopy in Lab-on-Chip Systems</i>
P1.7	Vincenza Di Palma, Marco Passoni, Fabio Quaglia, Raffaele Angelo Di Vaio, Francesco Foncellino, Germano Villa, Davide Ruggiero and Andrea Di Matteo. (STMicroelectronics, Italy) <i>Ultrasound Sensor for an Integrated Smart Spatial Exploration System</i>
P1.8	Vincenza Di Palma, Daniela De Venuto, Stefano Ricci, Attilio Frangi, Alessandro Stuart Savoia, Dario Di Nocera, Paolo Zampognaro, Antonio Coronato, Ignazio Infantino, Loreto Pescosolido, Nicola De Luca and Andrea Di Matteo. (STMicroelectronics, Italy) <i>“Medical Assistance in Contextual awareness” (AMICO): a project for a better cardiopathic patients quality of care</i>
P1.9	Gianluca Barile, Alfiero Leoni and Giuseppe Ferri. (University of L’Aquila, Italy) <i>A Differential Capacitive Multi-Material 3D Printed Sensor for Portable Anemometric Applications</i>
P1.10	Roberto de Fazio, Carola Esposito Corcione, Antonio Greco, Francesca Ferrari, Raffaella Striani, Luca Catarinucci, Francesco Chietera, Riccardo Colella, Luigi Patrono, Vincenzo Mighali, Ilaria Sergi, Eugenio Venere, Mario Pucciarelli, Mario Caiazza, Pierluigi Pastore, Olga Ivchenko, Luigi Abbruzzese, Angelo Fornaro and Paolo Visconti. (University of Salento, Italy) <i>Sensors-based treatment system of the organic waste with RFID identification and on-cloud traceability</i>

P1.11	Uriel Cedeño Antunez, Blanca Esther Carvajal Gamez and Abigail Elizabeth Pallares Calvo. (Instituto Politécnico Nacional-Escuela Superior de Computo, Mexico) <i>Wireless System Based in Cellular Network for Monitoring Marine Mammals at Mexican Coast</i>
P1.12	Stefan Keil, Yvonne C. Ebensberger and Roland Thewes. (TU Berlin, Germany) <i>An Active Low Input Capacitance Bond Pad for CMOS Sensor Interface Circuits</i>
P1.13	Rui Zhang, Kexin Yang, Taizhi Liu and Linda Milor. (Georgia Institute of Technology, US) <i>Impact of Front-End Wearout Mechanisms on the Performance of a Ring Oscillator-Based Thermal Sensor</i>
P1.14	Paolo Visconti, Paolo Costantini, Roberto de Fazio, Aimè Lay-Ekuakille and Luigi Patrono. (University of Salento, Italy) <i>A sensors-based monitoring system of electrical consumptions and home parameters remotely managed by mobile app for elderly habits' control</i>
P1.15	Andrea Pietrelli, Nicola Lovecchio, Vincenzo Ferrara and Bruno Allard. (University of Rome "La Sapienza", Italy) <i>Custom measuring system tailored for MFCs</i>
P1.16	Shazad Akram, Muhammad Farhan Alam, Kent Bertilsson and Johan Siden. (Mid Sweden University Sundsvall, Sweden) <i>Capacitive and Optical Sensing for Automatic Detection and Characterization of Cleaning Sponges in Fiber Optic Microduct Installations</i>
P1.17	Caterina Aruta, Federica Maria Simone and Francesco Ivone. (University of Bari and INFN Bari, Italy) <i>Tests and investigation towards the final design of the GEM front-end electronics</i>
P1.18	Francesco Barile, Luigi Schiavulli and Vincenzo Paticchio. (INFN Bari, Italy) <i>Preparation of graphite targets for Accelerator Mass Spectrometry (AMS) radiocarbon measurements at INFN-Bari Laboratory</i>
P1.19	Francesco Barile and Luigi Schiavulli. (INFN Bari, Italy) <i>Gamma radiation measurements of naturally radioactive samples at INFN Bari laboratory</i>
P1.20	Corrado Altomare and Francesco Giordano. (INFN Bari, Italy) <i>A gamma-ray imaging camera for ambient radioactivity detection.</i>
P1.21	Andrea Pietrelli, Irene Bavasso, Nicola Lovecchio, Vincenzo Ferrara and Bruno Allard. (University of Rome "La Sapienza", Italy) <i>MFCs as biosensor, bioreactor and bioremediator</i>
P1.22	Philipp Mayer, Michele Magno, Thomas Brunner, Luca Benini. (ETH Zurich, Switzerland) <i>LoRa Vs LoRa: In-Field Evaluation and Comparison For Long-Lifetime Sensor Nodes</i>
P1.23	Louis Meile, Anja Ulrich, Michele Magno. (ETH Zurich, Switzerland) <i>Wireless Power Transmission Powering Miniaturized Low Power IoT devices: A Review</i>
P1.24	Giovanni Mezzina, Daniela De Venuto. (Politecnico di Bari, Italy) <i>Local Binary Patterning Approach for Movement Related Potentials based Brain Computer Interface</i>

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