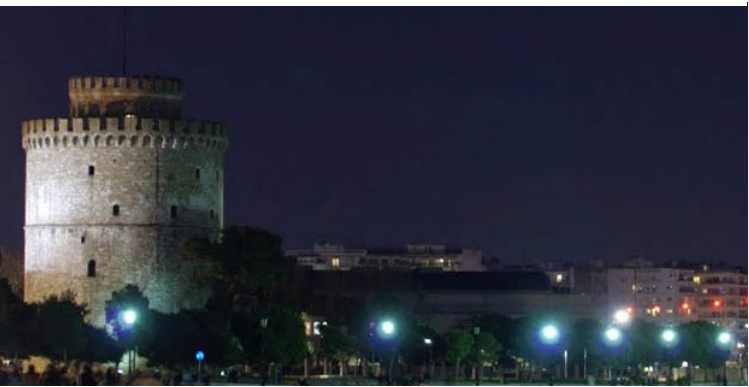


# MOCAST

INTERNATIONAL CONFERENCE ON  
MODERN CIRCUITS AND SYSTEMS TECHNOLOGIES.



## Conference Guide



**13-15 May 2019**  
**Thessaloniki, Greece**

## Sponsors - Supporters



ΕΛΛΗΝΙΚΟ ΠΑΡΑΡΤΗΜΑ ΙΕΕΕ  
ΚΥΚΛΩΜΑΤΑ & ΣΥΣΤΗΜΑΤΑ /  
ΚΥΚΛΩΜΑΤΑ ΣΤΕΡΕΑΣ ΚΑΤΑΣΤΑΣΗΣ

ΙΕΕΕ GREECE CASS/SSCS CHAPTER



## About MOCAST

The International Conference on Modern Circuits and Systems Technologies (MOCAST) on Electronics and Communications aims to bring together leading academic and industrial scientists and researchers to exchange and share their knowledge and experiences about all aspects of Circuits and Systems. It also provides a forum for exchanging ideas, discussing research results, and presenting practical applications in the areas of modeling, design, simulation, synthesis and implementation of Circuits and Systems. It provides an interdisciplinary and multidisciplinary forum for researchers, engineers and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted in these fields.

MOCAST takes place in Thessaloniki, Greece. Thessaloniki sits in north Greece in a city which never doubted its own cultural identity and its millennia of existence, it stands there since 315BC. Historically one of Europe's oldest and most multiethnic cities, Thessaloniki is home to architectural marvels that testify to its centrality in Byzantine, Ottoman and Sephardic Jewish history. The city is anchored by Aristotelous Square, where curved, columned facades open to the waterfront in one direction and frame views of the historic Ano Poli (Upper City) in the other. Though it has only about one million people, compared with Athens' five million, Salonika is widely considered the cultural capital of Greece. Thessaloniki is truly unique in the sense that it intricately marries its thousands-year-old multicultural heritage with cutting-edge art performances and cinematic avant-garde.



## Organizing Committee

### General Chair

Prof. Spiros Nikolaidis, Aristotle University of Thessaloniki, Greece.

### Co-Chairs

Prof. Alberto Garcia-Ortiz, University of Bremen, Germany

Prof. Andrea Massa, University of Trento, Italy

### Technical Program Co-Chair

Prof. Sotirios Goudos, Aristotle University of Thessaloniki, Greece

### Publicity Co-Chairs

Prof. Maciej Ogorzalek, Jagiellonian University in Krakow, Poland.

Prof. Thanos Stouraitis, University of Patras, Greece

Prof. George Karagiannidis, Aristotle Univ of Thessaloniki, Greece.

Prof. Ronald Tetzlaff, TU Dresden, Germany

Prof. Sandro Carrara, EPFL Lausanne, Switzerland

Prof. Dietmar Fey, University Erlangen-Nyremberg, Germany

Prof. Andrea Zanella, University of Padova, Italy

Prof. Gianluca Traversi, University of Bergamo, Italy

Prof. Alkis Hatzopoulos, Aristotle Univ. of Thessaloniki, Greece.

Prof. Wout Joseph, Ghent University/iMinds, Belgium

Prof. Lazaros Nalpantidis, Aalborg University, Denmark.

Prof. Dimitrios Soudris, National Technical Univ. of Athens, Greece

Prof. Magdy Aboeela, Cairo University, Egypt

Prof. George Sirakoulis, Dimokritus University of Thrace, Greece.

Prof. Yiorgos Tsiatouhas, University of Ioannina, Greece.

Prof. Traianos Yioultsis, Aristotle Univ. of Thessaloniki, Greece

Prof. Ahmed G. Radwan, Cairo University, Egypt

Prof. Costas Psychalinos, University of Patras, Greece

Prof. Dimitrios Vergados, University of Piraeus, Greece

Prof. Kostas Kordas, Aristotle University of Thessaloniki, Greece

Prof. Leandro dos Santos Coelho, Pontifical Catholic Univ. of Parana, Brazil

Prof. Thanos Kakarountas, University of Thessaly, Greece

Prof. Panagiotis Sarigiannidis, Univ. of Western Macedonia, Greece

Prof. Paul Sotiriadis, National Technical University of Athens, Greece

Prof. Christos Volos, Aristotle University of Thessaloniki, Greece

### Special Sessions Co-Chairs

Prof. Kostas Siozios, Aristotle University of Thessaloniki, Greece

### Publication Co-Chairs

Prof. Rodrigo Picos, Universitat de illes balears, Spain.

Prof. Carol De Benito, Universitat de illes balears, Spain.

### PhD/Master Student Contest Chair

Dr. Calliope-Louisa Sotiropoulou, Campera Electronic Systems Srl., Italy.

### Local Organizing Committee

Prof. Nikolaos Konofaos, Aristotle Univ. of Thessaloniki, Greece

Prof. Minas Dasygenis, Univ. of Western Macedonia, Greece

## Program Committee

Alkiviadis Hatzopoulos	Nicholas Karampetakis
George Karagiannidis	Alexander Astaras
Stylianios Siskos	Kostas Siozios
Dimitrios Soudris	Angelos Amanatiadis
Kohei Yorita	Sotirios Xydis
Georgios Tsiatouhas	Sotirios Poulos
Giannis Papaefstathiou	George Kyriakou
Georgios Sirakoulis	M.T. Chryssomallis
Kostas Doris	Nikolaos Deligiannis
Costas Psychalinos	George Koudouridis
Mustak Yalcin	Christos Koukourlis
Andrea Casula	Ahmad G. Radwan
Rodrigo Picos	Kamil Mielcarek
Carol de Benito Crosetti	Tomislav Matic
Lazaros Nalpantidis	Alon Ascoli
Charles Augustine	Georgia Tsirimokou
Nikolaos Konofaos	Thanos Kakarountas
Francesco Crescioli	Vasileios Konstantakos
Sotirios Goudos	Maria Drakaki
Vassilis Paliouras	Prasanjeet Das
Katherine Siakavara	Efstathios Kyriakis-Bitaros
Paul Sotiriadis	Alberto Stabile
Ikhwana Elfitri	Konstantinos Tatas
Theodoros Samaras	Ioannis Vourkas
Chrysovalantis Kavousianos	Larysa Titarenko
Athanasios Panagopoulos	Alexander Barkalov
Carl James Debono	Magdy Aboelela
Ahmad Fakharian	Alberto Garcia-Ortiz
Dimitrios Bakalis	Gianluca Traversi
Stavros Koulouridis	Hariton Polatoglou
Naoki Kimura	Valeri Mladenov
Traianos Yioultsis	Fotis Plessas
Emmanouil Kriezis	Dionysios Reisis
Jesus Manuel Munoz Pacheco	Norocel Codreanu
Nikolaos Kantartzis	Vasileios Tenentes
Dimitrios Vergados	Angelos Michalas
Nestoras Evmorfopoulos	Alexandros Boulogeorgos
Minas Dasygenis	Konstantinos Baltzis
Moad Mowafi	Kostas Psannis
Ektoras Nistazakis	Andrea Zanella
Christos Volos	Wout Joseph
Theodoros Zygidis	George Tsoulos
Dimitrios Papakostas	George-Othon Glentis
Nikolaos Petrellis	Giorgos Dimitrakopoulos
Nicolas Sklavos	Panagiotis Sarigiannidis
George Theodoridis	Dimitrios Babas
Symeon Nikolaou	Achilles Boursianis
Eftichios Koutroulis	Mattias Bucher
Esteban Tlelo Cuautle	Michael Birbas
Ioannis Kalomiros	Kyriakos Zoiros
Constantinos Hilas	Theodoros Kaifas
Ilias Pappas	Anastasios Politis
Calliope-Louisa Sotiropoulou	
Panayotis Merakos	

## Keynote Speeches, Tutorials

### Keynote Speech 1



**Wireless Power Transfer for Mobile Devices: Research challenges and Future trends.**

**Prof. George Karagiannidis, IEEE Fellow, Aristotle University of Thessaloniki, Greece**

**Abstract:** Wireless power transfer (WPT) is regarded as a disruptive technological paradigm to prolong the lifetime of energy-constrained devices, such as the ones used in the Internet-of-Things (IoT) applications. Far-field WPT is based on the transmission/reception of propagating electromagnetic waves, including radio frequency (RF) and light waves. However, as it will be highlighted in this talk, lightwave WPT is fundamentally different to RF, due to the divergent channels characteristics, transmission/reception equipment, and energy harvesting (EH) model, among others. Lightwave WPT creates many new challenges, including the increase of the EH efficiency, the optimal design of the optical devices, and the support of multiuser scenarios, which call for an interdisciplinary approach. Moreover, simultaneous lightwave information and power transfer (SLIPT) will be presented and compared to the corresponding RF-based technology, while future research directions will also be discussed.

**Short CV:** George K. Karagiannidis received a PhD degree in ECE from the University of Patras, in 1999. In 2004, he joined the faculty of Aristotle University of Thessaloniki, where he is now Professor in the Electrical & Computer Engineering Dept. and Director of Digital Telecommunications Systems and Networks Laboratory. His research interests are in the broad area of Digital Communications Systems and Signal processing, with emphasis on Wireless Communications, Optical Wireless Communications, Wireless Power Transfer and Applications, Communications for Biomedical Engineering, Stochastic Processes in Biology and Wireless Security. He was Editor in IEEE Transactions on Communications and several times Guest Editor in IEEE Selected Areas in Communications. From 2012 to 2015 he was the Editor-in Chief of IEEE Communications Letters. Dr. Karagiannidis is one of the highly-cited authors across all areas of Electrical Engineering, recognized as Web-of-Science Highly-Cited Researcher in the four consecutive years 2015-2018.

## Keynote Speeches, Tutorials

### Keynote Speech 2



#### Antennas toward the New Generation of Wireless Systems

**Prof. John N. Sahalos, IEEE Fellow, Univ. of Nicosia & Aristotle Univ. of Thessaloniki, Technical Director of PELLAS Nature S.A.**

**Abstract:** Antennas are part of the most growing and promising technologies for the new generation of wireless networks. In the past, antennas of the Base Station sectors were mostly with fixed patterns. Nowadays, antennas become smarter and/or massive and they highly increase the data throughput. By bringing beamforming (spatial multiplexing) to the base stations and user devices, they offer almost perfect coverage. Antennas include massive MIMO that steer the energy toward an individual user. They improve the S/N ratio and increase the throughput. Such antennas seem to be essential for 5G base stations.

In this talk, the new wireless technology for the daily life convenience will be discussed. The critical parameters and the application of Synthesis Methods will be explained. In addition, the R&D for the multi-billion euro-valued industry worldwide will be given. Finally, ideas on future research will be discussed.

**Short CV:** John N. Sahalos received B.Sc. degree in Physics, M.Sc. degree in Electronic Physics, Diploma in Civil Engineering and PhD in Electronic Physics from the Aristotle University of Thessaloniki, AUTH, Greece. Since 1986, Prof. Sahalos is with Radio-Communications Laboratory at the AUTH, Greece and also, since 2010 with the Department of Engineering and the Research Foundation at the University of Nicosia, Cyprus. Before 1986, he was for 8 years Professor at the ECE Department of Democritus University of Thrace. Prof. Sahalos was invited and worked as a visiting faculty member at the Ohio State University, the University of Colorado and the Technical University of Madrid. He was in the board of directors of the National Research & Technology Committee of Greece and in the Board of Directors of OTE S.A., the largest Telecommunications Company in Southeastern Europe. Except of his academic duties, he is now the Technical R&D Director at the PELLAS Nature Ltd, a Microwave High Tech Food Industry.

Prof. Sahalos is an IEEE Life Fellow, an Honorary Fellow of the Electronic Physics Society, a Fellow of the Physical Society and a member of the Technical Chamber of Greece.

He is the author of 4 books and of more than 500 articles published in the scientific literature. He has also written several well-edited course packs, and has delivered short courses on Antennas, RFIDs and Microwave Heating. He has mentored 32 doctoral students/post-docs. Among his Ph.D. students, several have become leaders in major corporations, and 12 of them are faculty members at major Universities. He received several distinctions and awards from foreign Countries & Scientific Societies. His research interests include Antennas, Radio-communications, EMC/EMI, RFIDs, Microwaves, and Biomedical Engineering. With his colleagues he designed innovative products like the EIT, the MLS, the ORAMA simulator and the SMS-K monitoring system.

## Keynote Speeches, Tutorials

### Keynote Speech 3



#### Advanced FIT Rate Mitigation Technique for Automotive SoCs

by Dr. Costas Argyrides, Advanced Micro Devices, USA

**Abstract:** Automotive innovation is driving the need for built-in reliability, safety and security solutions and architectural design to mitigate emerging threats and, particularly, the number of possible sources affecting arisen failures. In other words, the problem can be stated as reduction of failure rate – one of the most common metrics used for reliability evaluation. Soft errors in memories will be considered in the presentation. Their FIT rate is significantly more than the typical FIT rate for a hard reliability failure. A special technique is described to assess the soft error rate and to mitigate the effects of soft errors via error correcting codes (ECC). Ways to calculate the failure rate in the presence of ECC are considered jointly with different ECC solutions. Since ECC also incurs a significant area overhead, a problem arises how to choose memories in SoC which should have ECC in order to meet the reliability requirements and, at the same time, the area constraints. In this presentation, an efficient ECC planning solution is presented to solve the problem. The experimental results are adduced which show the advantages of the proposed solution.

**Short CV:** Costas Argyrides (S'07–M'10–SM'16) received the BSc degree in informatics and computer science from Moscow Power Engineering Institute-Technical University (MPEI-TU), Moscow, Russia, with distinction in 2004 and the M.Sc. degree in advanced computing and the PhD degree in Computer Science from the University of Bristol (UoB), Bristol, UK in 2005 and 2008 respectively. Currently he is a RAS Architect at Radeon Technologies Group (RTG) of Advanced Micro Devices, Inc (AMD). He joined AMD at 2014. Prior to this he served as validation engineer at Intel Corp. Before joining the industry he served as a Postdoctoral Researcher with the Polytechnic University of Catalonia, Newcastle University, Oxford Brookes University, University of Bristol, University of Warwick and the University of Cambridge. He is the author or coauthor of more than 50 technical papers. His research interests include fault-tolerant computer systems, software fault tolerance, reliability improvement, error correcting codes, algorithmic based fault tolerance and nanotechnology-based designs.



## Keynote & Invited Speeches, Tutorials

### Tutorial



#### The Memristor as Target Device Technology for in-Memory Computing and Learning

Prof. Ioannis Vourkas, Department of Electronic Engineering, Universidad Técnica Federico Santa María and Adjunct Researcher, Advanced Center for Electrical and Electronic Engineering (AC3E) Valparaíso, Chile

**Abstract:** Resistive switching electronic devices (ReRAM devices or memristors) have been known ever since the 60s. However, owing to the physical realization of the Chua's memristor by a team of scientists at the Hewlett-Packard (HP) Laboratories in 2008, new research tracks and trends in modern circuit design have indeed been created. The memristor, a nanoscale, nonvolatile, two-terminal resistive device whose resistance changes depending on the input signal applied to its terminals, is currently being explored for several emerging applications regarding upgraded and novel, energy-efficient digital/analog implementations such as nonlinear (chaotic) circuits, storage systems, logic circuits, neuromorphic and generally unconventional circuit architectures. This talk covers a timely topic of academic and industrial interest, aiming to stimulate further research on memristive devices, circuits, and systems. It particularly considers the design of nanoelectronic circuits, systems and computing architectures focusing on memristor as the main storage and computing element. Moreover, experimental results from measurements on commercial memristor devices from Knowm Inc. will be discussed in an attempt to facilitate comprehension of memristive behavior and motivate researchers and enthusiasts to expand experimentation beyond the labs and dare implement/test memristor application ideas in hardware.

**Short CV:** Ioannis Vourkas received his M. Eng. diploma and Ph.D. in electrical and computer engineering (ECE) from Democritus University of Thrace (DUTH), Xanthi, Greece, in 2008 and 2014, respectively. He is currently Assistant Professor of the Electronic Engineering Department, Universidad Técnica Federico Santa María, Valparaíso, Chile, where he is also PI in the research projects CONICYT FONDECYT Iniciación 11180706 y CONICYT REDI 170604. In early 2019 he was visiting researcher in the Department of Electronic Engineering of Polytechnic University of Catalonia - BarcelonaTECH for 2 months. Recently he joined the Advanced Center for Electrical and Electronic Engineering (AC3E) as Adjunct Researcher. His current research emphasis is novel nanoelectronic circuits and architectures comprising memristors. His research interests include neuromorphic and unconventional computing, software and hardware aspects of parallel complex computational (bio-inspired) circuits and systems, and cellular automata. So far, in these areas he is main author of more than 20 articles, of 2 book chapters, several conference papers, and of one of the first published books focusing on memristor-based computing, namely "Memristor-Based Nanoelectronic Computing Circuits and Architectures" published by Springer in 2016. Dr. Vourkas serves in the Editorial Board of Elsevier Microelectronics Journal. He has been a scholar of the Greek BODOSSAKI Foundation (2011 to 2014) and Santander Universities Program in 2019.

**Monday, May 13th**

08:30-09:00

**Registration**

09:00-09:30

**Opening Session****General Chair: Prof. S. Nikolaidis****Technical Chair: Prof. S. Goudos**

09:30-10:30

**Keynote Speech 1****Wireless Power Transfer for Mobile Devices: Research challenges and Future trends.****Keynote Speaker: Prof. George Karagiannidis, IEEE Fellow, Aristotle University of Thessaloniki, Greece****Chair: Prof. Sotirios Goudos**

10:30-11:00

**Coffee break**

11:00-12:30

**Session A1: Digital Circuits I**  
**Session Chair: Prof. Alkis Hatzopoulos**

22 min

Hardware Acceleration on Gaussian Naive Bayes Machine Learning Algorithm.

G. Tzanos<sup>1</sup>, Ch. Kachris<sup>2</sup> and D. Soudris<sup>1</sup><sup>1</sup>Dep. of Electr. and Computer Engineering, NTUA<sup>2</sup>ICCS-NTUA & DUTH, Greece

22 min

Optimizing SVM Classifier through Approximate and High Level Synthesis Techniques.

K. Koliogeorgi<sup>1</sup>, G. Zervakis<sup>1</sup>, D. Anagnostos<sup>1</sup>, N. Zompakis<sup>1</sup>, K. Siozios<sup>2</sup><sup>1</sup>School of Electrical & Computer Engineering, NTUA<sup>2</sup>Physics Department, AUTH, Greece

22 min

Hardware Accelerated Epileptic Seizure Detection System Using Support Vector Machine.

Yahya Alhazek<sup>1</sup>, Ahmed Ibrahim<sup>1</sup>, Mostafa Amer<sup>1</sup>, Ahmed Abubakr<sup>1</sup> and Hassan Mostafa<sup>1</sup><sup>1</sup>Univ. Of Science and Technology, Zewail City of Science and Technology, Egypt.<sup>2</sup>Electronics and Communications Dpt, Cairo Univ, Egypt.

22 min

A New Technique for Stochastic Division in Unipolar Format.

Nikos Temenos, and Paul Sotiriadis

National Technical University of Athens, Greece

11:00-12:30

**Session B1: Communication systems I**  
**Session Chair: Prof. Stavros Koulouridis**

22 min

An Alternative to Zigbee Routing Using a Cycles Description Of a Planar Graph

Cristian E. Onete<sup>1</sup>, Maria Cristina C. Onete<sup>2</sup><sup>1</sup>Former NXP Semiconductors, The Netherlands<sup>2</sup>XLIM/Univ. of Limoges/CNRS 7252, France

**Monday, May 13th**

22 min	<p>Superimposed Pilots based Estimation of Sparse Multipath massive-MIMO NOMA Channels.</p> <p>Imdad UI Haq<sup>1</sup>, Syed Junaid Nawaz<sup>1</sup>, Babar Mansoor<sup>1</sup>, and Konstantinos B. Baltzis<sup>2</sup></p> <p><sup>1</sup>Dpt. of Electrical &amp; Computer Engineering, COMSATS University Islamabad, Pakistan. <sup>2</sup>Dpt. of Physics, Aristotle Univ. of Thessaloniki, Greece.</p>
22 min	<p>Reconfigurable BPF with Wide Tuning Bandwidth Range Using Open- and Short-ended Stubs</p> <p>Salman Arain, Abdul Quddious, Aqeela Saghir, Symeon Nikolaou and Photos Vryonides.</p> <p>Frederick Research Center, Frederick Univ., Cyprus</p>
22 min	<p>MIMO architecture modelling utilizing Overlapped Element Antenna Arrays.</p> <p>Theodoros N. Kaifas<sup>1</sup>, Dimitrios G. Babas<sup>1</sup>, John N. Sahalos<sup>2</sup></p> <p><sup>1</sup>Dpt. of Physics Aristotle Univ. of Thessaloniki, Greece <sup>2</sup>Dpt. of Electrical &amp; Computer Engineering, Univ. of Nicosia, Cyprus</p>

12:30-13:40

Light lunch

13:45-15:15

**Session A2: Sensors and Systems**  
**Session Chair: Prof. Alberto Garcia-Ortiz**

22 min	<p>Computationally Efficient Calibration Algorithm for Three-Axis Accelerometer and Magnetometer</p> <p>Konstantinos Papafotis and Paul P. Sotiriadis</p> <p>Dpt. of Electrical and Computer Engineering, NTUA, Greece</p>
22 min	<p>Wearable Device for Monitoring Heart Rate Based on Low-Cost Piezoresistive Sensor</p> <p>Vu Ngoc Quy<sup>1</sup>, Do Tran Xuan Duy<sup>1</sup>, Dinh Trung Kien<sup>1</sup>, Vu Hong Tu<sup>1</sup>, Qijun Sun<sup>2</sup>, Vellaisamy A. L. Roy<sup>2</sup>, Viet-Thanh Pham<sup>3,4</sup>, Toan Thanh Dao<sup>1</sup></p> <p><sup>1</sup>Faculty of Electrical-Electronic Engineering, University of Transport and Communications, Hanoi, Vietnam. <sup>2</sup>State Key Laboratory of Terahertz and Millimeter Waves and Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong. <sup>3</sup>Faculty of Electrical and Electronic Engineering, Phenikaa Institute for Advanced Study (PIAS), Phenikaa Univ. Hanoi, Vietnam. <sup>4</sup>Phenikaa Research and Technology Institute (PRATI), A&amp;A Green Phoenix Group, Hanoi, Vietnam.</p>

## Monday, May 13th

22 min	<p>Electrical Impedance Tomography Image Reconstruction: Impact of Hardware Noise and Errors</p> <p>Christos Dimas, Nikolaos Uzunoglu, Paul P. Sotiriadis</p> <p>Dpt. of Electrical and Computer Engineering, National Technical University of Athens, Greece</p>
22 min	<p>Improving the evaluation of the Period and Amplitude of a Signal for Visually Impaired Individuals</p> <p>Dimitris Kampelopoulos, Hariton M. Polatoglou, Spyridon Nikolaidis</p> <p>School of Physics, Aristotle Univ. of Thessaloniki, Greece</p>
13:45-15:15	<p><b>Session B2: Special Session on Nonlinear Systems and Memristive Devices : Theory and Applications.</b></p> <p><b>Session Chairs: Prof. Viet - Thanh Pham and Prof. Christos Volos</b></p>
22 min	<p>Synchronization of a Chaotic System with Line Equilibrium using a Descriptor Observer for Secure Communication.</p> <p>Lazaros Moysis<sup>1</sup>, Christos Volos<sup>1</sup>, Viet-Thanh Pham<sup>2</sup>, S.Goudos<sup>1</sup>, I. Stouboulos<sup>1</sup>, Mahendra Kumar Gupta<sup>3</sup></p> <p><sup>1</sup>Physics Dpt, Aristotle Univ. of Thessaloniki, Greece.</p> <p><sup>2</sup>Faculty of Electrical and Electronic Engineering, Phenikaa University, Vietnam</p> <p><sup>3</sup>Dpt. of Mathematics, National Inst. of Technology, India</p>
22 min	<p>Coverage Performance of a Chaotic Mobile Robot Using an Inverse Pheromone Model</p> <p>E. K. Petavratzis<sup>1</sup>, Ch. K. Volos<sup>1</sup>, I.N. Stouboulos<sup>1</sup>, H. E. Nistazakis<sup>2</sup>, K. G. Kyritsi<sup>1</sup>, K. P. Valavanis<sup>3</sup></p> <p><sup>1</sup>Laboratory of Nonlinear Systems, Circuits &amp; Complexity, Dpt. of Physics, Aristotle Univ. of Thessaloniki, Greece</p> <p><sup>2</sup>Faculty of Physics, Dpt. of Electronics, Computers, Telecommunications and Control, National and Kapodistrian University, Greece</p> <p><sup>3</sup>Daniels Felix Ritchie School of Engineering and Computer Science, University of Denver, USA</p>
22 min	<p>Memristive Circuits for the Simulation of the Earthquake Process</p> <p>Grigorios Tastzoglou<sup>1</sup>, Vasileios Ntinias<sup>1,2</sup>, Ioakeim G. Georgoudas<sup>1</sup>, Angelos Amanatiadis<sup>1</sup>, G. Ch. Sirakoulis<sup>1</sup></p> <p><sup>1</sup>Department of Electrical and Computer Engineering Democritus University of Thrace (DUTH), Greece</p> <p><sup>2</sup>Department of Electronic Engineering Universitat Politècnica de Catalunya (UPC), Spain</p>

## Monday, May 13th

22 min

Self-learning perceptron using a digital memristor emulator

C. de Benito<sup>1</sup>, M. M. Al Chawa<sup>1</sup>, M. Roca<sup>1</sup>, R. Picos<sup>1</sup>, S. G. Stravinides<sup>2</sup>

<sup>1</sup>Physics Department, University of Balearic Islands, Palma de Mallorca, Spain

<sup>2</sup>School of Science and Technology, International Hellenic University, Greece

15:15-16:15

Poster Session & Coffee break

Session Chair: Mr. Nikolaos Karagiorgos

Ultra low-voltage current squaring and multiplier

Spyridon Vlassis<sup>1</sup>, George Souliotis<sup>2</sup>, Fotis Plessas<sup>3</sup>

<sup>1</sup>Electronics Laboratory, Physics Department, University of Patras, Greece

<sup>2</sup>Department of Electrical Engineering, Technological Educational Institute of Western Greece, Greece

<sup>3</sup>Department of Electrical and Computer Engineering University of Thessaly, Greece

Design of a Digital PLL Real Number Model Using SystemVerilog

Nikolaos Georgouloupoulos, Alkiviadis Hatzopoulos

Dept. of Electrical and Computer Engineering, Aristotle University of Thessaloniki, Greece

A New Fractional-order Map and Its Control

Adel Ouannas<sup>1</sup>, Amina–Aicha Khennaoui<sup>2</sup>, Giuseppe Grassi<sup>3</sup>, Viet-Thanh Pham<sup>4</sup>, Christos Volos<sup>5</sup>

<sup>1</sup>Department of Mathematics and Computer Science, University of Larbi Tebessi, Algeria

<sup>2</sup>Departement of Mathematics and Computer Sciences, University of Larbi Ben M'hid, Algeria

<sup>3</sup>Dipartimento Ingegneria Innovazione, Universita del Salento, Italy

<sup>4</sup>Faculty of Electrical and Electronic Engineering, Phenikaa University, Vietnam

<sup>5</sup>Dpt. of Physics, Aristotle Univ. of Thessaloniki, Greece

On Fractional Forms of Modified and Generalized Arnold Mappings

Amina–Aicha Khennaoui<sup>1</sup>, Adel Ouannas<sup>2</sup>, Giuseppe Grassi<sup>3</sup>, Viet-Thanh Pham<sup>4</sup>, Christos Volos<sup>5</sup>

<sup>1</sup>Departement of Mathematics and Computer Sciences, University of Larbi Ben M'hid, Algeria

## Monday, May 13th

<sup>2</sup>Department of Mathematics and Computer Science, University of Larbi Tebessi, Algeria.

<sup>3</sup>Dipartimento Ingegneria Innovazione, Università del Salento, Italy

<sup>4</sup>Faculty of Electrical and Electronic Engineering, Phenikaa University, Vietnam

<sup>5</sup>Dpt. of Physics, Aristotle Univ. of Thessaloniki, Greece

Design of a SystemVerilog-based VCO Real Number Model  
Nikolaos Georgoulopoulos, Athanasios Mekras, Alkiviadis Hatzopoulos

Dept. of Electrical and Computer Engineering, Aristotle University of Thessaloniki, Greece

Breast Cancer Diagnosis Using Image Processing and Machine Learning for Elastography Images

Mohamed Adel <sup>1,2</sup>, Ahmed Kotb<sup>3</sup>, Omar Farag<sup>3</sup>, M. Saeed Darweesh <sup>1,4</sup>, Hassan Mostafa <sup>4,5</sup>

<sup>1</sup>Institute of Aviation Engineering and Technology, Egypt

<sup>2</sup>NILES, Cairo Univ., Egypt

<sup>3</sup>Germany University in Cairo, Egypt

<sup>4</sup>University of Science and Technology, Nanotechnology Program, Zewail City of Science and Technology, Egypt

<sup>5</sup>Faculty of Engineering, Cairo University, Egypt

Interfacing USRP Kit With Zynq-7000 Evaluation Kit

Khadija Khaled<sup>1</sup>, Chaymaa Osama<sup>1</sup>, Mahetab Osama<sup>1</sup>, Heba Magdy<sup>1</sup>, Heba Mahmoud<sup>1</sup>, Yara Hossam<sup>1</sup>, Sherif Hosny<sup>2</sup>, and Hassan Mostafa <sup>1,3</sup>.

<sup>1</sup>Electronics and Communications Engineering Department, Cairo University, Egypt.

<sup>2</sup>Mentor Graphics.

<sup>3</sup>University of Science and technology, Nanotechnology and Nanoelectronics Program, Zewail City of Science and Technology, Egypt.

Smart IoT Monitoring System for Agriculture with Predictive Analysis

Alaa Adel Araby<sup>1</sup>, Mai Mohamed Abd Elhameed<sup>1</sup>, Nada Mohamed Magdy<sup>1</sup>, Loa'a Ahmed Said<sup>1</sup>, Nada Abdelaal<sup>1</sup>, Yomna Tarek Abd Allah<sup>1</sup>, M. Saeed Darweesh <sup>2,3</sup>, Mohamed Ali Fahim<sup>4</sup>, Hassan Mostafa<sup>1,3</sup>.

<sup>1</sup>Faculty of Engineering, Cairo University, Egypt

<sup>2</sup>Electronics and Communications Department, Institute of Aviation Engineering and Technology, Egypt

<sup>3</sup>University of Science and Technology, Nanotechnology Program, Zewail City of Science and Technology, Egypt

<sup>4</sup>Plant Protection, CLAC, Egypt

## Monday, May 13th

Performance Comparison of Companding-Based PAPR Suppression Techniques in OFDM Systems

Abdulwahid Mohammed<sup>1</sup>, Mohamed Shehata<sup>1</sup>, Amin Nassar<sup>1</sup> and Hassan Mostafa<sup>1,2</sup>.

<sup>1</sup>Electronics and Communication Engineering Department, Cairo University, Egypt.

<sup>2</sup>University of Science and technology, Nanotechnology and Nanoelectronics Program, Zewail City of Science and Technology, Egypt.

Demonstration of Forward Collision Avoidance Algorithm Based on V2V Communication

Ahmed Hosny<sup>1</sup>, Mohamed Yousef<sup>1</sup>, Wessam Gamil<sup>1</sup>, Mohamed Adel<sup>1,2</sup>, Hassan Mostafa<sup>2,3</sup>, M. Saeed Darweesh<sup>1,3</sup>.

<sup>1</sup>Electronics and Communications Department, Institute of Aviation Engineering and Technology, Egypt

<sup>2</sup>Faculty of Engineering, Cairo University, Egypt

<sup>3</sup>University of Science and Technology, Nanotechnology Program, Zewail City of Science and Technology, Egypt

Design of a Low-Power Phase Interpolator For Multi-Standard Transceiver PHYs

Athanasios Stefanou, Emmanouil Bochoridis

HDL Design House, Thessaloniki Branch, Greece

Application of the power contributors method for the AOI22 CMOS cell

Nikolaos Karagiorgos and Spiros Nikolaidis

Physics Dpt, Aristotle Univ. of Thessaloniki, Greece

A New Simplified Model for HfO<sub>2</sub>-based Memristor

Valeri Mladenov

Dpt of Theoretical Electrical Engineering Technical University of Sofia, Bulgaria

A Pattern Reconfigurable Antenna System Integrated in a Truck Side Mirror

L. Marantis, A. Paraskevopoulos, D. Rongas, K. Maliatsos, P. Bithas, A. Kanatas

Dpt of Digital Systems, School of ICT, Univ. of Piraeus, Greece

Discone Rectenna Implementation for Broadband RF Energy Harvesting.

M.G. Tampouratzis<sup>1</sup>, D. Vouyioukas<sup>2</sup>, D. I. Stratakis<sup>1</sup>.

<sup>1</sup>Dpt of Information and Communication Systems Engineering, University of Aegean, Greece.

<sup>2</sup>Dpt of Informatics Engineering, Technological Educational Institute of Crete, Greece.

## Monday, May 13th

Triple Hybrid Terrestrial FSO/RF/MMW System with Receiver's Diversity.

G. D. Roumelas<sup>1</sup>, H.E. Nistazakis<sup>1</sup>, A.N. Stassinakis<sup>1</sup>,  
G.S. Tombras<sup>1</sup>, Ch. K. Volos<sup>2</sup>

<sup>1</sup>Department of Electronics, Computers, Telecommunications and Control, Faculty of Physics, National and Kapodistrian University of Athens, Greece.

<sup>2</sup>Dpt of Physics, Aristotle Univ. of Thessaloniki, Greece.

DF Relayed QAM or DBPSK FSO Links with Generalized Pointing Errors over Mixture Gamma Turbulence Channels

N.A. Androutsos<sup>1</sup>, H.E. Nistazakis<sup>1</sup>, A.N. Stassinakis<sup>1</sup>,  
G.S. Tombras<sup>1</sup>, A.D. Tsigopoulos<sup>2</sup>

<sup>1</sup>Department of Electronics, Computers, Telecommunications and Control, Faculty of Physics, National and Kapodistrian University of Athens, Greece.

<sup>2</sup>Department of Battle Systems, Sea Studies, Navigation, Electronics and Telecommunications, Hellenic Naval Academy, Greece

Neural Networks and Random Forests: A Comparison Regarding Prediction of Propagation Path Loss for NB-IoT Networks.

Sotirios P. Sotiroudis, Sotirios K. Goudos, Katherine Siakavara

Radiocommunications Laboratory. Physics Department, Aristotle University of Thessaloniki, Greece

16:15-17:45

### Session A3 : Systems and Applications I Session Chair: Prof. Minas Dasygenis

22 min

Multiple Transient Faults in Combinational Logic with Placement Considerations

Georgios Ioannis Paliaroutis<sup>1</sup>, Pelopidas Tsoumanis<sup>1</sup>,  
Nestor Evmorfopoulos<sup>1</sup>, George Dimitriou<sup>1,2</sup>, Georgios I.  
Stamoulis<sup>1,2</sup>.

<sup>1</sup>Dpt. of Electrical and Computer Engineering Univ. of Thessaly, Greece

<sup>2</sup>Dpt. of Computer Science, Univ of Thessaly, Greece

22 min

A Battery Equalization Technique Based on Cuk Converter Balancing for Lithium Ion Batteries

Ali Farzan Moghaddam, Alex Van den Bossche

Department of Electrical Energy, Metals, Mechanical Constructions and Systems, Gent University, Belgium



## Monday, May 13th

22 min

Plant Disease Diagnosis with Color Normalization

Nikos Petrellis

Computer Science and Engineering Dept. TEI of Thessaly, Greece

22 min

ECG Analysis and Heartbeat Classification Based on Shallow Neural Networks

Konstantinos Balaskas, Kostas Siozios

Dpt. of Physics, Aristotle Univ. of Thessaloniki, Greece

16:15-17:45

**Session B3: Device modeling & Education in Circuits**

**Session Char: Dr. Theodoros Kaifas**

22 min

Design of Micropower Operational Transconductance Amplifiers for High Total Ionizing Dose Effects

Alexia Papadopoulou, Nikolaos Makris, Loukas Chevas, Aristeidis Nikolaou, Matthias Bucher

School of Electrical and Computer Engineering, Technical University of Crete, Greece

22 min

Non-Quasi-Static Small-Signal Modeling of TGRC MOSFET in Parameter Perspective for RF/Microwave Applications

Ajay Kumar<sup>1</sup>, Neha Gupta<sup>2</sup>, M.M. Tripathi<sup>1</sup>, Rishu Chaujar<sup>3</sup>

<sup>1</sup>Electrical Engineering Department, Delhi Technological University, India

<sup>2</sup>Applied Science and Humanity Department, AGITM, Indraprastha University, India

<sup>3</sup>Applied Physics Department, Delhi Technological University, India

22 min

Introducing Senior Undergraduate Students to the Open-Circuit Time-Constant Method for Circuit Analysis

Nikolaos F. Voudoukis, Dimitrios Baxevanakis, Konstantinos Papafotis, Christos Dimas, Costas Oustoglou and Paul P. Sotiriadis.

Department of Electrical and Computer Engineering, National Technical University of Athens, Greece

22 min

Simple Measurements with Network Time Protocol for Teaching Time and Frequency Metrology

Charalampos Sarafidis<sup>1</sup>, Christina Sfetsiou<sup>1,2</sup>, Hariton M. Polatoglou<sup>1</sup>.

<sup>1</sup>Dept. of Physics, Aristotle Univ. of Thessaloniki, Greece

<sup>2</sup>Hellenic Institute of Metrology, Sindos, Greece

## Tuesday, May 14th

08:45-09:30

Registration

09:30-10:30

Keynote Speech 2

**Antennas toward the New Generation of Wireless Systems.**

**Keynote Speaker:** Prof. John N. Sahalos, IEEE Fellow, University of Nicosia & Aristotle University of Thessaloniki, Technical Director of PELLAS Nature S.A.

**Chair:** Prof. Sotirios Goudos

10:30-11:00

Coffee Break

11:00-12:30

**Student Session A4 on Electronics**

**Session Chair:** Prof. Kostas Siozios

22 min

Simple Multi-Function Fractional-Order Filter Designs

P. Bertias<sup>1</sup>, C. Psychalinos<sup>1</sup>, A.S. Elwakil<sup>2</sup>, B.J. Maundy<sup>3</sup>

<sup>1</sup>Dept of Physics, Electronics Lab, Univ of Patras, Greece.

<sup>2</sup>Dept of Electrical and Computer Eng, Univ of Sharjah, UAE.

<sup>3</sup>Dept of Electrical and Computer Eng, Univ of Calgary, Canada.

22 min

LiTE-DTU: online data selection, compression, and transmission ASIC for the upgraded front-end of the CMS Electromagnetic Calorimeter.

Simona Cometti<sup>1</sup>, Giovanni Mazza<sup>2</sup>

<sup>1</sup>on behalf of CMS collaboration, Politecnico di Torino, DET department, INFN Torino, Italy

<sup>2</sup>INFN Torino, Italy

22 min

Efficient computation of the Grunwald-Letnikov method for ARM-based Implementations of Fractional-Order Chaotic Systems

D. Clemente-Lopez<sup>1</sup>, J.M. Munoz-Pacheco<sup>1</sup>, O.G. Felix-Beltran<sup>1</sup>, C. Volos<sup>2</sup>

<sup>1</sup>Faculty of Electronics Sciences, Autonomous University of Puebla, Puebla, Mexico

<sup>2</sup>Aristotle University of Thessaloniki, Greece.

22 min

Digital signal processing in FPGA for particle track reconstruction at the HL-LHC ATLAS

Riccardo Poggi

Univ. of Geneva, on behalf of the ATLAS collaboration.

## Tuesday, May 14th

12:30-13:40

Light lunch

13:45-15:15

### Session A5: Analog/RF and Mixed Signal Circuits

Session Chair: Prof. Ioannis Vourkas

22 min

Second-Order Bandpass OTA-C Filter Designs for Extracting Waves from Electroencephalogram.

Kleoniki Baxevanaki and Costas Psychalinos

Physics Dpt, Electronics Laboratory, Univ of Patras, Greece

22 min

A 30 GHz Low Power & High Gain Low Noise Amplifier with Gm-boosting in 28nm FD-SOI CMOS Technology.

Georgios Konidas, Panagiotis Gkoutis, Vasilis Kolios and Grigorios Kalivas

Applied Electronics Laboratory, Department of Electrical & Computer Engineering, University of Patras, Greece.

22 min

Single Active Element Fractional-Order PI- $\lambda$  Controller for Vehicle Throttle and Brake Control

Stavroula Kapoulea<sup>1</sup>, Costas Psychalinos<sup>1</sup>, A. Tepljakov<sup>2</sup>

<sup>1</sup>Physics Department, Electronics Laboratory, University of Patras, Greece

<sup>2</sup>Department of Computer Systems, Tallinn University of Technology, Estonia

22 min

A 0.6V, 700nW Chopper Capacitively-Coupled Instrumentation Amplifier for Biomedical Applications.

S. Pokamisas, D. Baxevanakis and Paul P. Sotiriadis

Department of Electrical and Computer Engineering, National Technical University of Athens, Greece

13:45-15:15

### Session B5 : Systems and Applications II

Session Chair: Dr. Vasileios Konstantakos

22 min

Area Optimization with Non-linear Models in Core Mapping for System-on-Chips.

Jan Moritz Joseph<sup>1</sup>, Dominik Ermel<sup>1</sup>, Tobias Drewes<sup>1</sup>, Lennart Bamberg<sup>2</sup>, Alberto Garcia-Ortiz<sup>2</sup>, Thilo Pionteck<sup>1</sup>

<sup>1</sup>Otto-von-Guericke-Universität Magdeburg, Institut für Informations- und Kommunikationstechnik, Magdeburg, Germany.

<sup>2</sup>University of Bremen, Institute of Electrodynamics and Microelectronics, Germany

## Tuesday, May 14th

22 min

Multi-Robot Coverage Path Planning in 3-Dimensional Environments.

Nikolaos Baras, Minas Dasygenis, Nikolaos Ploskas

Department of Informatics and Telecommunications Engineering, University of Western Macedonia, Greece

22 min

Vehicle Windshield Detection by Fast and Compact Encoder-Decoder FCN Architecture

A. Mountelos, A. Amanatiadis, G. Sirakoulis and E.B. Kosmatopoulos

Department of Electrical and Computer Engineering, Democritus University of Thrace, Greece

22 min

Autonomous Obstacle Avoidance Vehicle using LIDAR and an Embedded System

N. Baras, G. Nantzios, D. Ziouzos, M. Dasygenis

Department of Informatics and Telecommunications Engineering, University of Western Macedonia, Greece.

15:15-16:15

### Poster Session & Coffee break

Session Chair : Mr. Georgios Kousiopoulos

Flyback Converter Balancing Technique for Lithium Based Batteries

Ali Farzan Moghaddam, Alex Van den Bossche

Department of Electrical Energy, Metals, Mechanical Constructions and Systems, Gent University, Belgium

Design of FPGA-based Mealy FSMs with Counters

Alexander Barkalov<sup>1</sup>, Larysa Titarenko<sup>1,2</sup>, Sławomir Chmielewski<sup>3</sup> and Kamil Mielcarek<sup>1</sup>

<sup>1</sup>Institute of Metrology, Electronics and Computer Science, University of Zielona Góra, Poland

<sup>2</sup>Department of Infocommunication Engineering, Faculty of Infocommunications, Kharkiv National University of Radio Electronics, Ukraine

<sup>3</sup>Institute of Science and Technology State University of Applied Sciences in Głogów, Poland.

Designing FPGA-based Mealy FSMs with two levels of logic

A. Barkalov<sup>1</sup>, L. Titarenko<sup>1,2</sup> and K. Mielcarek<sup>1</sup>

<sup>1</sup>Institute of Metrology, Electronics and Computer Science, University of Zielona Góra, Poland

<sup>2</sup>Department of Infocommunication Engineering, Faculty of Infocommunications, Kharkiv National University of Radio Electronics, Ukraine.

## Tuesday, May 14th

Encoding of microoperations in FPGA-based Moore FSMs

Alexander Barkalov<sup>1</sup>, Larysa Titarenko<sup>1,2</sup>, Małgorzata Mazurkiewicz<sup>3</sup>, Kamil Mielcarek<sup>1</sup>

<sup>1</sup>Institute of Metrology, Electronics and Computer Science, University of Zielona Góra, Poland

<sup>2</sup>Department of Infocommunication Engineering, Faculty of Infocommunications, Kharkiv National University of Radio Electronics, Ukraine

<sup>3</sup>Institute of Control & Computation Engineering University of Zielona Góra, Poland.

Development of a Fractional Order PID Controller for a Physical System based on Bat Inspired Algorithm

Magdy A. S. Aboelela

Electric Power and Machines Dept., Faculty of Engineering, Cairo University, Egypt

28nm STT-MRAM Array and Sense Amplifier

Jin Woong Kwak, Andrew Marshall, Harvey Stiegler

Electrical and Computer Engineering, The University of Texas at Dallas, Texas, USA

Low utilization FPGA implementation of OFDM transceiver based on IEEE 802.11n standard

Ahmed El-Gohary<sup>1</sup>, Mohamed Saad<sup>1</sup>, Omar Mahmoud<sup>1</sup>, Mohamed Thabet<sup>1</sup>, Sayed Shaban<sup>1</sup>, Mohannad Khaled<sup>1</sup>, and Hassan Mostafa<sup>1,2</sup>

<sup>1</sup>Electronics and Communications Engineering Department, Cairo University, Egypt.

<sup>2</sup>University of Science and technology, Nanotechnology and Nanoelectronics Program, Zewail City of Science and Technology, Egypt.

Optimal EEG Window Size for Neural Seizure Detection

Aya Alzah<sup>1</sup>, Mohamed Elgammal<sup>2</sup>, Haitham Mohammed<sup>3</sup>, Hassan Mostafa<sup>4</sup>

<sup>1</sup>Univ. of Science and technology, Information and Communications Engineering Program, Egypt

<sup>2</sup>Dpt of Electronics and Communications Engineering, Cairo Univ., Egypt

<sup>3</sup>Dpt of Biophysics, Faculty of Science, Cairo Univ., Egypt

<sup>4</sup>University of Science and technology, Nanotechnology Engineering Program, Egypt

## Tuesday, May 14th

An RFID-Enabled Automated Storage and Retrieval System via Microcontroller Stepper Motor Control

George Sinodakis<sup>1</sup>, Vasilis Kostopoulos<sup>1</sup>, Maria Drakaki<sup>1</sup>, Yannis L. Karnavas<sup>2</sup>, Panagiotis Tzionas<sup>1</sup>

<sup>1</sup>Department of Automation Engineering, Alexander Technological Educational Inst. of Thessaloniki, Greece

<sup>2</sup>Electrical Machines Laboratory, Dept. of Electrical & Computer Engineering, Democritus Univ of Thrace, Greece

A Multiple Input-Multiple Output Visible Light Communication System Design Based on Optical Orthogonal Codes

Mohamed Shehata<sup>1</sup>, M. Sameh Saied<sup>1</sup>, Hassan Mostafa<sup>1,2</sup>

<sup>1</sup>Electronics and Electrical Communications Engineering Department, Cairo University, Egypt

<sup>2</sup>Nanotechnology Department at Zewail City of Science and Technology, Egypt.

Fractional Order Fuzzy Logic Position and Force Control of Experimental Electro-Hydraulic Servo System

Mohamed El-Sayed M. Essa<sup>1</sup>, Magdy A. S. Aboelela<sup>2</sup>, M. A. Moustafa Hassan<sup>2</sup>, S. M. Abdraboo<sup>3</sup>

<sup>1</sup>IAET, Imbaba Airport, Egypt

<sup>2</sup>Faculty of Engineering, Cairo University, Electric Power and Machines Dept., Egypt

<sup>3</sup>Faculty of Engineering (at shoubra), Benha University, Mechanical Dept., Egypt

Pipeline Leak Detection in Noisy Environment

Georgios-Panagiotis Kousiopoulos<sup>1</sup>, Georgios-Napoleon Papastavrou<sup>1</sup>, Nikolaos Karagiorgos<sup>1</sup>, Dimitrios Porlidas<sup>2</sup>, Spyridon Nikolaidis<sup>1</sup>.

<sup>1</sup>Physics Department, Aristotle University of Thessaloniki, Greece.

<sup>2</sup>Hellenic Petroleum SA, Thessaloniki, Greece.

Front-End Integrated Circuits For Readout of Large Area SiPMs at cryogenic temperature

Alejandro D. Martinez R.

Department of Electronics and Telecommunications, Politecnico di Torino, Istituto Nazionale di Fisica Nucleare, Sez. Torino, Italy

## Tuesday, May 14th

On the evaluation of low-cost PM sensors for air quality estimation

Theologos Migos, Ioannis Christakis, Konstantinos Moutzouris, Ilias Stavrakas.

Electronic Devices and Materials Laboratory, Department of Electrical and Electronic Engineering, University of West Attica, Greece

A Smart Indoor Navigation System over BLE

Abdelrahman M. Sawaby<sup>1</sup>, Hesham M. Noureldin<sup>1</sup>, Mayada S. Mohamed<sup>1</sup>, Maryam O. Omar<sup>1</sup>, Nahed S. Shaaban<sup>1</sup>, Noha N. Ahmed<sup>1</sup>, Samar M. ElHadidy<sup>1</sup>, Reham S. Hussein<sup>1</sup>, Ali H. Hassan<sup>1</sup>, and Hassan Mostafa<sup>1,2</sup>

<sup>1</sup>Electronics and Communications Engineering Department, Cairo University, Egypt

<sup>1,2</sup>Nanotechnology and Nanoelectronics Program, Zewail City of Science and Technology, Egypt

Hardware Acceleration of SHA-256 Algorithm using NIOS-II Processor

Argirios Sideris, Theodora Sanida, Minas Dasygenis

Department of Informatics & Telecommunications Engineering, University of Western Macedonia, Greece

Cole-Cole Bio-Impedance Parameters Extraction From a Single Time-Domain Measurement

S. Kapoulea<sup>1</sup>, A.M. AbdelAty<sup>2</sup>, A.S. Elwakil<sup>3,4,5</sup>, C. Psychalinos<sup>1</sup>, and A.G. Radwan<sup>6,7</sup>.

<sup>1</sup>University of Patras, Physics Department, Electronics Laboratory, Greece.

<sup>2</sup>Engineering Mathematics and Physics Dept. Fayoum University, Egypt

<sup>3</sup>Department of Electrical and Computer Engineering, University of Sharjah, Emirates

<sup>4</sup>Nanoelectronics Integrated Systems Center (NISC), Nile University, Cairo, Egypt

<sup>5</sup>Department of Electrical and Computer Engineering, University of Calgary, Canada

<sup>6</sup>Engineering Mathematics Department, Faculty of Engineering, Cairo University, Egypt

<sup>7</sup>School of Engineering and Applied Sciences, Nile University, Egypt

## Tuesday, May 14th

Radio Environment Maps for 5G Cognitive Radio Network

Ioanna Kakalou<sup>1</sup>, Kostas Psannis<sup>1</sup>, Sotirios K. Goudos<sup>2</sup>,  
Traianos V. Yioultsis<sup>3</sup>, Nikolaos V. Kantartzis<sup>3</sup>

<sup>1</sup>Dpt. of Applied Informatics, Univ. of Macedonia, Greece.

<sup>2</sup>Radiocommunications Laboratory, Physics Department,  
Aristotle University of Thessaloniki, Greece

<sup>3</sup>Department of Electrical and Computer Engineering  
Aristotle University of Thessaloniki, Greece

16:15-18:00

Tutorial

**The Memristor as Target Device Technology for in-Memory Computing and Learning.**

**Speaker: Prof. Ioannis Vourkas, Department of Electronic Engineering, Universidad Técnica Federico Santa María and Advanced Center for Electrical and Electronic Engineering (AC3E) Valparaíso, Chile**

21:00-

**Social Dinner (Registration Required)**



## Wednesday, May 15th

09:20-10:00

Registration

10:00-11:00

Keynote Speech 3:

**Advanced FIT Rate Mitigation Technique for Automotive SoCs**

**Keynote Speaker: Dr. Costas Argyrides, Advanced Micro Devices, USA.**

**Chair: Miss Apostolia Karabatea**

11:00-11:30

Coffee Break

11:30-13:00

**Session A6: Digital Circuits II**

**Session Chair: Prof. Christos Volos**

22 min

Design and Implementation of an APSoC-based robotic system with motion tracking teleoperation

C. Papparizos, N. Tsafas, M. Birbas

Electrical and Computer Engineering Dept, University of Patras, Greece

22 min

HLS Accelerated Noise Reduction approach using Image Stacking on Xilinx PYNQ.

Dimitris Tsiktsiris, Dimitris Ziouziros, Minas Dasygenis

Department of Informatics and Telecommunications Engineering, University of Western Macedonia, Greece

22 min

TF2FPGA: A Framework for Projecting and Accelerating Tensorflow CNNs on FPGA Platforms

Spyridon Mouselinos, Vasileios Leon, Sotirios Xydis, Dimitrios Soudris, Kiamal Pekmestzi

School of Electrical & Computer Engineering, National Technical University of Athens, Greece

22 min

Simplified Hardware Implementation of the Softmax Activation Function.

I. Kouretas and V. Paliouras

Electrical and Computer Engineering Dept., University of Patras, Greece.

11:30-13:00

**Session B6: Communication Systems II**

**Session Chair: Prof. Lazaros Nalpantidis**

22 min

Connection-based Bluetooth Mesh Network as a Low Energy Solution for Off-grid Data Networks.

Rasmus Thue Elkjær Dvinge, Adam Stalmach, Lazaros Nalpantidis

Robotics, Vision and Machine Intelligence Lab., Department of Materials and Production, Aalborg University Copenhagen, Denmark

## Wednesday, May 15th

22 min

Radiation measurements in office environment with Wi-Fi, 3G and 4G users.

Elisavet Koutsi, Sotiris Deligiannis, Ioannis Sarantopoulos, Dimitra Zarbouti, Georgia Athanasiadou, George Tsoulos

Wireless and Mobile Communications Lab, Department of Informatics and Telecommunications University of Peloponnese, Greece.

22 min

On the use of Diversity in Transdermal Optical Wireless Links with Nonzero Boresight Pointing Errors for Outage Performance Estimation

G.K. Varotsos<sup>1</sup>, H.E. Nistazakis<sup>1</sup>, G.S. Tombras<sup>1</sup>, K. Aidinis<sup>2</sup>, F. Jaber<sup>3</sup>, K. K. Mujeeb Rahman<sup>3</sup>.

<sup>1</sup>Dpt of Electronics, Computers, Telecommunications and Control, Faculty of Physics, National and Kapodistrian Univ. of Athens, Greece.

<sup>2</sup>Department of Electrical Engineering, Ajman University, United Arab Emirates.

<sup>3</sup>Department of Biomedical Engineering, Ajman University, United Arab Emirates.

22 min

A Stochastic FDTD Method for Rectangular Objects with Geometric Uncertainties.

Christos Salis<sup>1</sup>, Nikolaos Kantartzis<sup>2</sup>, and Theodoros Zygiridis<sup>1</sup>.

<sup>1</sup>University of Western Macedonia, Greece.

<sup>2</sup>Aristotle University of Thessaloniki, Greece.

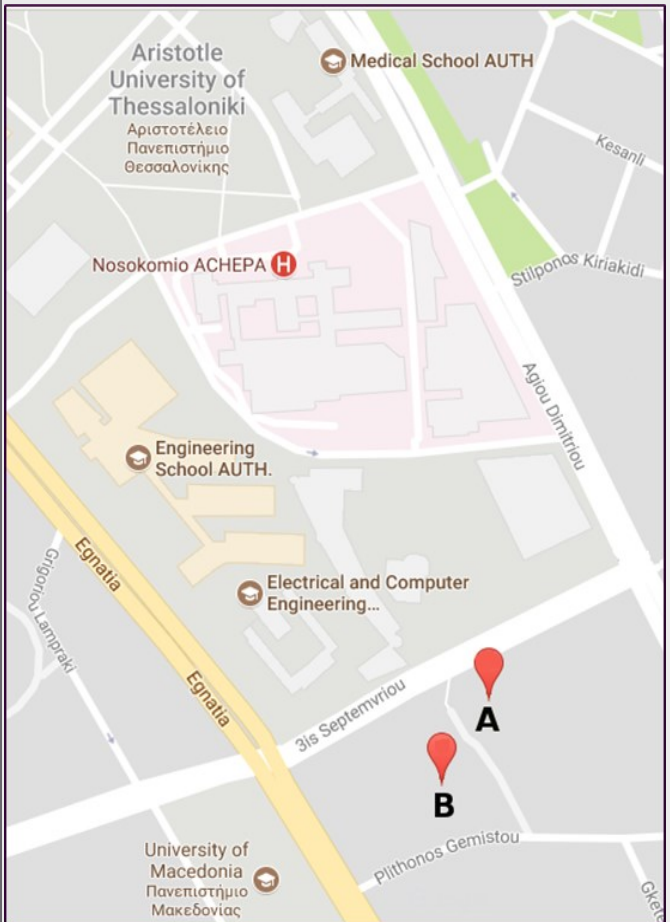
13:00-13:30

**Awards - Closing ceremony**

**Chairs: Prof. Spiros Nikolaidis and Prof. Alberto Garcia - Ortiz**



## Useful Information



**A: Conference Venue:** Aristotle University Research Dissemination Center (KEDEA – ΚΕΔΕΑ).

3is Septemvriou str, Aristotle University Campus, Thessaloniki

**B: Lunch Venue:** Café Roof Garden (Next to the Conference Venue).

**Access to the Wireless Internet:** Please ask at the Registration Desk, in order to provide to you a password and login details.

**The Certificates of Attendance** will be available from Tuesday, May 14th afternoon. Please, do not forget to collect your certificate from the Registration Desk.

**The Conference Dinner** will be offered at the restaurant: “Ta tria gourouniakia” - “Τα Τρία Γουρουνάκια” ([www.tatriagourounakia.gr](http://www.tatriagourounakia.gr)) on Tuesday 14th of May at 21:00’. Address: Kapodistriou 7 str/ Καποδιστρίου 7. Advanced registration is required.

## At a glance

### Monday, May 13th

08:30-09:00	Registration
09:00-09:30	Opening
09:30-10:30	Keynote Speech 1: Prof. George Karagiannidis
10:30-11:00	Coffee Break
11:00-12:30	Session A1: Digital Circuits I
	Session B1: Communication systems I
12:30-13:40	Light Lunch
13:45-15:15	Session A2: Sensors and Systems
	Session B2: Special Session
15:15-16:15	Poster Session & Coffee break
16:15-17:45	Session A3: Systems and Applications I
	Session B3: Device Modeling & Education in Circuits

### Tuesday, May 14th

08:45-09:30	Registration
09:30-10:30	Keynote Speech 2: Prof. John N. Sahalos
10:30-11:00	Coffee Break
11:00-12:30	Student Session A4 on Electronics
12:30-13:40	Light Lunch
13:45-15:15	Session A5: Analog/RF and Mixed Signal Circuits
	Session B5: Systems and Applications II
15:15-16:15	Poster Session & Coffee Break
16:15-18:00	Tutorial: Prof. Ioannis Vourkas
21:00 -	Social Dinner

### Wednesday, May 15th

09:20-10:00	Registration
10:00-11:00	Keynote Speech 3 : Dr. Costas Argyrides
11:00-11:30	Coffee Break
11:30-13:00	Session A6: Digital Circuits II
	Session B6 : Communication Systems II
13:00-13:30	Awards - Closing Ceremony