

2015 IEEE International Conference on Electronics, Circuits, and Systems (ICECS 2015)

**Cairo, Egypt
6-9 December 2015**



**IEEE Catalog Number: CFP15773-POD
ISBN: 978-1-5090-0247-4**

**Copyright © 2015 by the Institute of Electrical and Electronic Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

******This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP15773-POD
ISBN (Print-On-Demand):	978-1-5090-0247-4
ISBN (Online):	978-1-5090-0246-7

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Session A1L-A: Analog Circuit Techniques I

Chair: Mohamed Watheq Ali Kamel El-Kharashi, *AinShams University*

Time: December 7, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 1

A Fast Analytical Approach for Static Power-Down Mode Analysis	1
<i>Michael Zwerger (Technische Universität München), Pantelis-Rafail Vlachas (Technische Universität München), Helmut Graeb (Technische Universität München)</i>	
Design of a High-Voltage Driver based on Low-Voltage CMOS with an Adapted Level Shifter Optimized for a Wide Range of Supply Voltage	5
<i>Sara Pashmineh (Brandenburgische Technische Universität), Dirk Killat (Brandenburgische Technische Universität)</i>	
Low Pass Filter Design based on Fractional Power Chebyshev Polynomial	9
<i>Amr M. AbdelAty (Fayoum University), Ahmed Soltan (Newcastle University), Waleed A. Ahmed (Fayoum University), Ahmed G. Radwan (Cairo University, Nile University)</i>	

Session A1L-B: Bioengineering Circuits and Systems I

Chair: Amir. M. Sodagar, *K.N. Toosi University of Technology, Tehran, Iran*

Co-Chair: Ricardo Reis, *Universidade Federal do Rio Grande do Sul, Brazil*

Time: December 7, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 2

Towards Real-Time Neuronal Connectivity Assessment: A Scalable Pipelined Parallel Generalized Partial Directed Coherence Engine	13
<i>Georgios Georgis (National and Kapodistrian University of Athens), Georgios Menoutis (National and Kapodistrian University of Athens), Dionysios Reisis (National and Kapodistrian University of Athens), Konstantinos Tsakalis (Arizona State University), Ashfaque Bin Shafique (Arizona State University)</i>	
A New Biometric Authentication System using Heart Sounds Based on Wavelet Packet Features	17
<i>M. Abo-Zahhad (Assiut University), Sabah M. Ahmed (Assiut University), Sherif N. Abbas (Assiut University)</i>	
Multi-Lead ECG using Two ZigBee Nodes	21
<i>Ismail Abdelwahab (Arab Academy for Science and Technology), Hanady H. Issa (Arab Academy for Science and Technology), Mostafa Farghaly (El shorouq Academy), Hani F. Ragai (Ain Shams University)</i>	
A Novel HV-Switch Scheme with Gate-Source Overvoltage Protection for Bidirectional Neural Interfaces	25
<i>Dmitry Osipov (Universität Bremen), Steffen Paul (Universität Bremen)</i>	

Session A1L-C: Applications of DSP and Security Techniques

Chair: Gamal Fahmy, *German University of Cairo*

Co-Chair: Sergio Bampi, *Federal University of Rio Grande do Sul*

Time: December 7, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 3

Rule based Classification of Sputum Images for Early Lung Cancer Detection	29
<i>Farma Taher (Khalifa University), Naoufel Werghi (Khalifa University), Hussain Al-Ahmad (Khalifa University)</i>	
Skin-Based Adaptive Background Subtraction for Hand Gesture Segmentation	33
<i>Rania A. Elsayed (Zagazig University), Mohammed S. Sayed (Zagazig University, and Egypt-Japan University of Science and Technology), Mahmoud I. Abdalla (Zagazig University)</i>	
Phase based Detection of JPEG Counter Forensics	37
<i>Gamal Fahmy (Assiut University), Abdullah Alqallaf (Kuwait University), Rolf Wurtz (Ruhr-Universität-Bochum)</i>	
DWT-Based Watermarking Technique for Video Authentication	41
<i>Farhan Alenizi (University of California, Irvine), Fadi Kurdahi (University of California, Irvine), Ahmed Eltawil (University of California, Irvine), Abdullah Aljumah (Prince Sattam bin Abdulaziz University)</i>	

Session A1L-D: Ultra-Low Voltage Digital Circuits

Chair: Fernando Gehm Moraes, *Pontificia Universidade Católica do Rio Grande do Sul*

Time: December 7, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 4

Subthreshold Passive RFID Tag's Baseband Processor Core Design with Custom Modules and Cells	45
<i>Weiwei Shi (Shenzhen University & Chinese University of Hong Kong), Linqing Fu (Shenzhen University), Chiu-Sing Choy (Chinese University of Hong Kong)</i>	
XOR Gates for Low-Energy and Near-V^{th} Operation	49
<i>Azam Beg (United Arab Emirates University), Ajmal Beg (Cortex Business Solutions), Amr Elchouemi (Abu Dhabi Education Council)</i>	
Novel High-Speed Dynamic Differential Ultra Low Voltage Logic for Supply-Voltage Below 300 mV	53
<i>O. Mirmotahari (University of Oslo), A. Dadashi (University of Oslo), M. Azadmehr (Buskerud and Vestfold University College), Y. Berg (Buskerud and Vestfold University College)</i>	
Low-Voltage and High-Speed CMOS Circuit Design with Low-Power Mode	57
<i>Yngvar Berg (Buskerud and Vestfold University College), Omid Mirmotahari (University of Oslo)</i>	
An Ultra-Low-Voltage, Semi-Floating-Gate, Domino, Dual-Rail, NOR Gate	61
<i>Ali Dadashi (University of Oslo), Omid Mirmotahari (University of Oslo), Yngvar Berg (University of Oslo)</i>	

Session A2L-A: Low-Power Analog Circuits

Chair: Sameh A. Ibrahim, *Ain Shams University*

Time: December 7, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 1

195-nW 120-dB Subthreshold CMOS OTA Driving up to 200 pF and Occupying Only $4.4 \cdot 10^{-3} \text{ mm}^2$	65
<i>Alfio Dario Grasso (Università degli Studi di Catania), Davide Marano (Istituto Nazionale di Astrofisica), Gaetano Palumbo (Università degli Studi di Catania), Salvatore Pennisi (Università degli Studi di Catania)</i>	
A High Gain and Low-Offset Current-Mode Instrumentation Amplifier using Differential Difference Current Conveyors	69
<i>Ugur Cini (Trakya University), Emre Arslan (Marmara University)</i>	

A Rail-to-Rail-Input Chopper Instrumentation Amplifier in 28nm CMOS	73
<i>A. Pipino (Università degli Studi di Milano-Bicocca), A. Pezzotta (Università degli Studi di Milano-Bicocca), F. Resta (Università degli Studi di Milano-Bicocca), M. De Matteis (Università degli Studi di Milano-Bicocca), A. Baschirotto (Università degli Studi di Milano-Bicocca)</i>	
Ultra-Low Power CMOS Voltage Reference for High Temperature Applications up to 300°C	77
<i>Ahmad Hassan (École Polytechnique de Montréal), Benoit Gosselin (Laval University), Mohamad Sawan (École Polytechnique de Montréal)</i>	
Output Stage of a Dynamic Current Steering Deep Brain Stimulator	81
<i>Ameer Mohammed (University College London), Virgilio Valente (University College London), Richard Bayford (Middlesex University), Andreas Demosthenous (University College London)</i>	

Session A2L-B: RF Circuits and Systems

Chair: Nicholas Preyss, EPFL

Time: December 7, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 2

A 4 and 8GHz CMOS130nm Duty-Cycled Front-End for Ultra Low Power IR-UWB Receivers	N/A
<i>G. Masson (CEA-Leti), L. Ouvry (CEA-Leti), F. Hameau (CEA-Leti), B. Caillat (Dolphin Integration)</i>	
A SAW-Less Receiver Front-End with Low Power Active Self-Interference Canceler	89
<i>Saheed Tijani (Università degli Studi di Pavia), Danilo Manstretta (Università degli Studi di Pavia)</i>	
A Novel Low-Power High-Efficiency 3-State Filterless Bang- Bang Class D Amplifier	93
<i>Huiqiao He (Nanyang Technological University), Yang Kang (Nanyang Technological University), Jia Yu (Nanyang Technological University), Linfei Guo (Nanyang Technological University), Tong Ge (Nanyang Technological University), Joseph Chang (Nanyang Technological University)</i>	
A Power Controlled RF CMOS Class-E PA with 43% Maximum Efficiency in 2.2 GHz	97
<i>Diogo B. Santana (Universidade Federal do Rio Grande do Sul), Hamilton Klimach (Universidade Federal do Rio Grande do Sul), Eric Fabris (Universidade Federal do Rio Grande do Sul), Sergio Bampi (Universidade Federal do Rio Grande do Sul)</i>	
Compact Highly Selective Passive Notch Filter for 3.1-5 GHz UWB Receiver System	101
<i>R. Lababidi (École Nationale Supérieure de Techniques Avancées de Bretagne), M. Le Roy (Université de Bretagne Occidentale), D. Le Jeune (École Nationale Supérieure de Techniques Avancées de Bretagne), A. Perennec (Université de Bretagne Occidentale), R. Vauche (Université d'Aix Marseille), S. Bourdel (Université de Grenoble Alpes), J. Gaubert (Université d'Aix Marseille)</i>	

Session A2L-C: Logic Circuits and Memories

Chair: Sergio Bampi, Federal University of Rio Grande do Sul

Time: December 7, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 3

A Novel Self-Referenced Ferroelectric-Memory Readout Scheme	105
<i>Sherif M. Sharroush (Port Said University)</i>	
An Alternative to CMOS Stacks based on a Floating-Gate Transistor	109
<i>Sherif M. Sharroush (Port Said University)</i>	
Low Power Differential Three Transistors Two Memristors based RRAM Cell	113
<i>Ahmad Alsayyid Daoud (Port Said University), Ahmed Shaaban Dessouki (Port Said University), Sherif Mohamed Abuelenin (Port Said University)</i>	
Comparative Analysis of the Robustness of Master-Slave Flip-Flops against Variations	117
<i>Massimo Alioto (National University of Singapore), Elio Consoli (Maxim Integrated Products), Gaetano Palumbo (Università degli Studi di Catania)</i>	

Process Variability in FinFET Standard Cells with Different Transistor Sizing Techniques	121
<i>Alexandra L. Zimpeck (Universidade Federal do Rio Grande do Sul), Cristina Meinhardt (Universidade Federal do Rio Grande), Gracieli Posser (Universidade Federal do Rio Grande do Sul), Ricardo Reis (Universidade Federal do Rio Grande do Sul)</i>	

Session A2L-D: Resiliency and Reliability

Chair: Fernando Moraes, *PUCRS*

Time: December 7, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 4

A Tool for Transient Fault Analysis in Combinational Circuits	125
<i>Mariem Slimani (Télécom ParisTech), Lirida Naviner (Télécom ParisTech)</i>	

Impact on Performance, Power, Area and Wirelength using Electromigration-Aware Cells	129
<i>Gracieli Posser (Universidade Federal do Rio Grande do Sul), Vivek Mishra (University of Minnesota), Palkesh Jain (Qualcomm India), Ricardo Reis (Universidade Federal do Rio Grande do Sul), Sachin S. Sapatnekar (University of Minnesota)</i>	

Bulk and FDSOI Sub-Micron CMOS Transistors Resilience to Single-Event Transients	133
<i>Walter Calienes Bartra (Universidade Federal do Rio Grande do Sul), Andrei Vladimirescu (Institut Supérieur d'Electronique de Paris), Ricardo Reis (Universidade Federal do Rio Grande do Sul)</i>	

Impact of Dynamic Voltage Scaling and Thermal Factors on FinFET-Based SRAM Reliability	137
<i>F.R. Rosa (Universidade Federal do Rio Grande do Sul), R.M. Brum (Universidade Federal do Rio Grande do Sul), G. Wirth (Universidade Federal do Rio Grande do Sul), L. Ost (University of Leicester), R. Reis (Universidade Federal do Rio Grande do Sul)</i>	

Automatic Circuit Generation for Sequential Logic Debug	141
<i>Helder H. Avelar (Universidade Federal do Rio Grande), Paulo F. Butzen (Universidade Federal do Rio Grande), Renato P. Ribas (Universidade Federal do Rio Grande do Sul)</i>	

Session A3P-F: Analog Circuit Techniques II

Chair: Sameh A. Ibrahim, *Ain Shams University*

Time: December 7, 2015, 16:50 - 17:50

Location: Nefertiti Room

Combination of Inductive Feedback and Shunt Peaking (IF+SHP) for Bandwidth Extension of Transimpedance Amplifiers	145
<i>Omidreza Ghasemi (Concordia University)</i>	

A Low Loss, Low Voltage and High Q Active Inductor with Multi-Regulated Cascade Stage for RF Applications	149
<i>Hadi Ghasemzadeh Momen (Istanbul Technical University), Metin Yazgi (Istanbul Technical University), Ramazan Kopru (Isik University)</i>	

A Four Bit Low Power 165MS/s Flash-SAR ADC for Sigma-Delta ADC Application	153
<i>Hasan Molaei (Sharif University of Technology), Ata Khorami (Sharif University of Technology), M.S. Eslampanah Sendi (Sharif University of Technology), K. Hajsadeghi (Sharif University of Technology)</i>	

A CMOS based Operational Floating Current Conveyor	157
<i>Nermine M. Edward (American Univ. in Cairo, Zewail City of Science and Technology), Yehya H. Ghallab (Zewail City of Science and Technology, Helwan Univ.), Hassan M. Hassan (Zewail City of Science and Technology, Cairo Univ.), Yehea I. Ismail (American Univ. in Cairo, Zewail City of Science and Technology)</i>	

A 150MHz 3rd-Order Single Opamp Continuous-Time Analog Filter in 28nm CMOS Technology	161
<i>Andrea Donno (Università del Salento), Stefano D'Amico (Università del Salento), Marcello de Matteis (Università degli Studi di Milano-Bicocca), Andrea Baschirotto (Università degli Studi di Milano-Bicocca)</i>	

Session A3P-G: Digital Signal Processing for Communication

Chair: Alexios Balatsoukas-Stimming, *EPFL*

Time: December 7, 2015, 16:50 - 17:50

Location: Nefertiti Room

Prefilter Bandwidth Effects in Asynchronous Sequential Symbol Synchronizers based on Pulse Comparison by Hybrid Transitions at Half Bit Rate	165
<i>António D. Reis (Universidade da Beira Interior Covilhã, Universidade de Aveiro), José P. Carvalho (Universidade da Beira Interior Covilhã), José F. Rocha (Universidade de Aveiro), Atilio S. Gameiro (Universidade de Aveiro)</i>	
Design and Performance Comparison of a Superregenerative MPSK Transceiver	169
<i>Jordi Bonet-Dalmau (Universitat Politècnica de Catalunya), Alexis López-Riera (Universitat Politècnica de Catalunya), Pere Palà-Schönwälder (Universitat Politècnica de Catalunya), F. Xavier Moncunill-Geniz (Universitat Politècnica de Catalunya), Albert Babí-Oller (Universitat Politècnica de Catalunya)</i>	
Multi-Taper and MIMO Techniques for Spectrum Sensing in Cognitive Radio	173
<i>Ahmed O. Abdul Salam (University of Bradford), Ray E. Sheriff (University of Bradford), Saleh R. Al-Araji (Khalifa University), Kahtan Mezher (Khalifa University), Qassim Nasir (University of Sharjah)</i>	
LZ4 Compression Algorithm on FPGA	179
<i>Matěj Bartík (Czech Technical University in Prague, CESNET), Sven Ubik (CESNET), Pavel Kubalík (Czech Technical University in Prague)</i>	
Performance Evaluation of Dynamic Partial Reconfiguration Techniques for Software Defined Radio Implementation on FPGA	183
<i>Amr Hassan (Mentor Graphics Corporation, Cairo University), Ramy Ahmed (Mentor Graphics Corporation, Cairo University), Hassan Mostafa (Cairo University, American University in Cairo, Zewail City of Science and Technology), Hossam A.H. Fahmy (Cairo University), Ahmed Hussien (Cairo University)</i>	

Session A3P-H: Nonlinear and Neural Systems

Chair: Elena Blokhina, *University College of Dublin, Ireland*

Co-Chair: Mohammed Fouda, *Cairo University*

Time: December 7, 2015, 16:50 - 17:50

Location: Nefertiti Room

Design and Analysis of Memristor-based Min-Max Circuit	187
<i>S.H. Amer (American University in Cairo), A.H. Madian (Egyptian Atomic Energy Authority), A.S. Emara (American University in Cairo)</i>	
A Comparative Study of Nadir Attitude Pointing Satellite Solutions	191
<i>M.A. Si Mohammed (Algerian Space Agency), A. Bellar (Algerian Space Agency), Y. Bentoutou (Algerian Space Agency), A. Boudjemai (Algerian Space Agency), R. Roubache (Algerian Space Agency)</i>	
Evaluation of a Couple of True Random Number Generators with Liberally Licensed Hardware, Firmware, and Drivers	197
<i>Sergio Callegari (Università di Bologna)</i>	
Review of the Missing Mechanical Element: Memdamper	201
<i>M.E. Fouda (Cairo University), A.G. Radwan (Cairo University, Nile University), A.S. Elwakil (University of Sharjah), N.K. Nawayseh (University of Sharjah)</i>	
Decentralized Clustering in VANET using Adaptive Resonance Theory	205
<i>Zaher Merhi (Lebanese International University), Oussama Tahan (Lebanese International University), Samih Abdul-Nabi (Lebanese International University), Amin Haj-Ali (Lebanese International University), Magdy Bayoumi (University of Louisiana at Lafayette)</i>	

Session A3P-J: Bioengineering Circuits and Systems II

Chair: Mohamed Abd El Ghany, *German University in Cairo*

Co-Chair: Mohamad Sawan, *École Polytechnique de Montréal, Montréal, Canada*

Time: December 7, 2015, 16:50 - 17:50

Location: Nefertiti Room

Fuzzy C-Means Algorithm Incorporating Local Data and Membership Information for Noisy Medical Image Segmentation	209
<i>R.R. Gharieb (Assiut University), G. Gendy (Assiut University), H. Selim (Assiut University)</i>	
Automated Electrode Array for In-Channel Electrochemical Detection	213
<i>Adnane Kara (Laval University), Amine Miled (Laval University), Jesse Greener (Laval University)</i>	
Efficient Wearable Real-Time Vital Signs Monitoring System	217
<i>Mohamed A. Abd El Ghany (German University in Cairo, Technische Universität Darmstadt), Michael S. Saleab (German University in Cairo), Ramez M. Toma (German University in Cairo), Klaus Hofmann (Technische Universität Darmstadt)</i>	
Wireless Interfacing to Cortical Neural Recording Implants using 4-FSK Modulation Scheme	221
<i>Mohammad S. Eslampanah Sendi (Sharif University of Technology, K.N. Toosi University of Technology), Mohsen Judy (University of Tennessee), Hasan Molaei (Sharif University of Technology), Amir M. Sodagar (K.N. Toosi University of Technology), Mohammad Sharifkhani (Sharif University of Technology)</i>	

Session A3P-K: Circuits and Systems for Communications

Chair: Raafat Lababidi, *National Institute of Advanced Technology, ENSTA Bretagne, France*

Time: December 7, 2015, 16:50 - 17:50

Location: Nefertiti Room

Low Power 2.5-Gb/s CMOS Burst-Mode Transimpedance Amplifier with Fast Response Time using a Novel Peak Detection Circuit	225
<i>Young-Ho Kim (Electronics and Telecommunications Research Institute), Eun-Ok Kim (Electronics and Telecommunications Research Institute), Wonjong Kim (Electronics and Telecommunications Research Institute)</i>	
Timing Recovery in DVB-T2 using Multi-Rate Farrow Structure	229
<i>Sherif M. Saad (Cairo University), Hisham M. Hamed (Cairo University), Ahmed F. Shalash (Cairo University)</i>	
Novel Compact Tunable Bandpass Filter using Capacitively Loaded H-Shaped Resonator	233
<i>Hany A. Atallah (Egypt-Japan University of Science and Technology, South Valley University), Adel B. Abdel-Rahman (Egypt-Japan University of Science and Technology, South Valley University), Kuniaki Yoshitomi (Kyushu University), Ramesh K. Pokharel (Kyushu University)</i>	
Study of SiO₂ Thickness Effect on Insertion Loss of CMOS 60 GHz Band Pass Filter	237
<i>Nessim Mahmoud (Egypt-Japan University of Science and Technology), Adel Barakat (Electronics Research Institute), Anwer S. Abd El-Hameed (Egypt-Japan University of Science and Technology, Electronics Research Institute), Adel B. Abdel-Rahman (Egypt-Japan University of Science and Technology, South Valley University), Ahmed Allam (Egypt-Japan University of Science and Technology), Ramesh K. Pokharel (Kyushu University)</i>	
An 8-PSK Digital Phase Detection Technique for Super-Regenerative Receivers	240
<i>Ghada H. Ibrahim (Electronics Research Institute), Amr N. Hafez (Cairo University)</i>	
Low Power Transimpedance Amplifier using Current Reuse with Dual Feedback	244
<i>Diaa Abd-Elrahman (Assiut University), Mohamed Atef (Assiut University), Mohamed Abbas (Assiut University), Mohamed Abdelgawad (Assiut University)</i>	

Session B1L-A: Communication Systems

Chair: Nicholas Preyss, *EPFL*

Time: December 8, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 1

Asynchronous DC-Free Serial Protocol for Event-Based AER Systems	248
<i>Paolo Motto Ros (Istituto Italiano di Tecnologia), Marco Crepaldi (Istituto Italiano di Tecnologia), Chiara Bartolozzi (Istituto Italiano di Tecnologia), Danilo Demarchi (Politecnico di Torino)</i>	
Modulated Waveform Measurement and Engineering System	252
<i>Muhammad Akmal Chaudhary (Ajman University of Science and Technology), Jonathan Lees (Cardiff University), Johannes Benedikt (Cardiff University), Paul Tasker (Cardiff University)</i>	
A Novel Impedance Characterization Method and its Application to Contactless Smart Cards	N/A
<i>Benoit Couraud (ISEN-Toulon, Aix-Marseille University, IM2NP, and CNRS), Thibaut Deleruyelle (ISEN-Toulon, Aix-Marseille University, IM2NP, and CNRS), Edith Kussener (ISEN-Toulon, Aix-Marseille University, IM2NP, and CNRS), Remy Vauche (ISEN-Toulon, Université d'Aix Marseille, IM2NP, and CNRS)</i>	
Experimental Evaluation of Opportunistic Access in Shared Contention-Based Channels	260
<i>Nada Elgaml (Cairo University), Heba Raafat (Cairo University), Aya Halim (Cairo University), Aya Abdeldayem (Cairo University), Nourhan Mahmoud (Cairo University), Ahmed Khattab (Cairo University), Ahmed H. Zahran (Cairo University)</i>	
Impulsive Noise Mitigation for μ-Law Companded OFDM-Based Communication System	264
<i>Rola Almahainy (Khalifa University), Nazar Ali (Khalifa University), Saleh Al-Araji (Khalifa University), Mohammad Ismail (Khalifa University)</i>	

Session B1L-B: Data Converters

Chair: Mohamed Abbas, *Assiut University*

Time: December 8, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 2

Design of a 10Gsp/s TI-Flash ADC with Modified Clocking Scheme	268
<i>Khaled A. El-Gammal (Ain Shams University), Sameh A. Ibrahim (Ain Shams University)</i>	
A VCO-Based Spatial Averaging Stochastic ADC	272
<i>Hyuk Sun (Oregon State University), Jason Muhlestein (Oregon State University), Un-Ku Moon (Oregon State University)</i>	
Redundancy Effect on the Performance of Digitally-Assisted SAR ADCs	276
<i>Juan-Carlos Pena-Ramos (Katholieke Universiteit Leuven), Marian Verhelst (Katholieke Universiteit Leuven)</i>	
A Low Voltage Low Power and High Speed Binary Search Analog to Digital Converter	280
<i>Ahmed Badawy (Ain Shams University), Emad Hegazi (Ain Shams University)</i>	
Design and Linearity Analysis of a M-2M DAC for Very Low Supply Voltage	284
<i>Israel Sperotto (Universidade Federal do Rio Grande do Sul), Hamilton Klimach (Universidade Federal do Rio Grande do Sul), Sergio Bampi (Universidade Federal do Rio Grande do Sul)</i>	

Session B1L-C: Nonlinear Circuits and Systems

Chair: Sergio Callegari, *University of Bologna, Italy*

Co-Chair: Sherif Amer, *The American University in Cairo*

Time: December 8, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 3

A New Simple Emulator Circuit for Current Controlled Memristor	288
<i>Abdullah G. Alharbi (University of Missouri-Kansas City), Zainulabideen J. Khalifa (King Fahad University of Petroleum and Minerals), Mohammed E. Fouda (Cairo University), Masud H. Chowdhury (University of Missouri-Kansas City)</i>	
Series and Parallel Circuit Models Containing Memristors and Inverse Memristors	292
<i>Mohammed E. Fouda (Cairo University), Ahmed G. Radwan (Cairo University, Nile University), Ahmed S. Elwakil (University of Sharjah)</i>	
Offset Reduction on Memristor Emulator Circuits	296
<i>C. Sánchez-López (Universidad Autónoma de Tlaxcala), M.A. Carrasco-Aguilar (Universidad Autónoma de Tlaxcala), F.E. Morales-López (Universidad Autónoma de Tlaxcala)</i>	
Classical Electrical Circuitry to Support Modern Control Methods	300
<i>M. Papoutsidakis (Piraeus University of Applied Sciences), D. Tseles (Piraeus University of Applied Sciences), D. Piromalis (Piraeus University of Applied Sciences)</i>	
Hardware-Assisted Interrupt Delivery Optimization for Virtualized Embedded Platforms	304
<i>Carlos Moratelli (Pontifícia Universidade Católica do Rio Grande do Sul), Sergio Filho (Pontifícia Universidade Católica do Rio Grande do Sul), Fabiano Hessel (Pontifícia Universidade Católica do Rio Grande do Sul)</i>	

Session B1L-D: NoC and Multi-Core Design

Chair: Mohammed Morsy Naeem Farag, *Alexandria University*

Co-Chair: Mohamed Watheq Ali Kamel El-Kharashi, *AinShams University*

Time: December 8, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 4

A Hierarchical LST-Based Task Scheduler for NoC-Based MPSoCs with Slack-Time Monitoring Support	308
<i>Marcelo Ruaro (Pontifícia Universidade Católica do Rio Grande do Sul), Guilherme Madalozzo (Pontifícia Universidade Católica do Rio Grande do Sul), Fernando G. Moraes (Pontifícia Universidade Católica do Rio Grande do Sul)</i>	
Differentiation of MPSoCs Message Classes using Multiple NoCs	312
<i>Douglas R.G. Silva (Pontifícia Universidade Católica do Rio Grande do Sul), Fernando G. Moraes (Pontifícia Universidade Católica do Rio Grande do Sul)</i>	
A Non-Intrusive and Reconfigurable Access Control to Secure NoCs	316
<i>Ramon Fernandes (Pontifícia Universidade Católica do Rio Grande do Sul), Bruno Oliveira (Pontifícia Universidade Católica do Rio Grande do Sul), Johanna Sepúlveda (Technische Universität München), César Marcon (Pontifícia Universidade Católica do Rio Grande do Sul), Fernando G. Moraes (Pontifícia Universidade Católica do Rio Grande do Sul)</i>	
A Platform-Based Design Framework to Boost Many-Core Software Development	320
<i>Guilherme Madalozzo (Pontifícia Universidade Católica do Rio Grande do Sul), Marcelo Mandelli (Pontifícia Universidade Católica do Rio Grande do Sul), Luciano Ost (University of Leicester), Fernando G. Moraes (Pontifícia Universidade Católica do Rio Grande do Sul)</i>	
Online Bicast Allocation Algorithm for Contention-Free-Routing NoCs	324
<i>Ali Ahmed (German University in Cairo), Salma Hesham (German University in Cairo), Mohamed Abd El Ghany (German University in Cairo, Technische Universität Darmstadt), Diana Göhringer (Ruhr-Universität-Bochum), Klaus Hofmann (Technische Universität Darmstadt)</i>	

Session B2L-A: Analog Circuits and Systems for Wireless Communications

Chair: Ahmed Khattab, *Cairo University*

Time: December 8, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 1

A Wideband 5 GHz Digital PLL using a Low-Power Two-Step Time-to-Digital Converter	328
<i>A. Hamza (Ain Shams University), S. Ibrahim (Ain Shams University), M. El-Nozahi (Ain Shams University), M. Dessouky (Ain Shams University)</i>	
Adaptive Digital Pre-Distortion for Future Wireless Transmitters	332
<i>Mickael Dardaillon (Nokia USA Inc.), Chadi Jabbour (Nokia USA Inc.), Vason P. Srinani (Nokia USA Inc.)</i>	
A High-Sensitivity Battery-Less Wake-Up Receiver for 915 MHz ISM Band Applications	336
<i>Mohamed Zgaren (École Polytechnique de Montréal), Mohamad Sawan (École Polytechnique de Montréal)</i>	
A 6.1mW 7.5-10.6 GHz PLL-Based Frequency Synthesizer for IEEE 802.15.4a in 65nm CMOS	N/A
<i>Andrea Donno (Università del Salento), S. D'Amico (Università del Salento), M. Conta (Broadcom Corporation), A. Baschiroto (Università degli Studi di Milano-Bicocca)</i>	

Session B2L-B: Arithmetic and DSP

Chair: Dionysis Reisis, *University of Athens*

Time: December 8, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 2

Fast Signed-Digit Arithmetic Circuits for Residue Number Systems	344
<i>Shugang Wei (Gunma University)</i>	
Power Efficient 2-D Rounded Cosine Transform with Adder Compressors for Image Compression	348
<i>Guilherme Paim (Universidade Federal de Pelotas), Mateus Fonseca (Universidade Federal de Pelotas), Eduardo Costa (Universidade Católica de Pelotas), Sergio Almeida (Universidade Católica de Pelotas)</i>	
Optimal Combination of Dedicated Multiplication Blocks and Adder Trees Schemes for Optimized Radix-²m Array Multipliers Realization	352
<i>Anderson Martins (Instituto Federal de Educação, Ciência e Tecnologia Sul-Rio-Grandense), Mateus Fonseca (Universidade Federal de Pelotas), Eduardo Costa (Universidade Católica de Pelotas)</i>	
Analysis of ADMM-LP Algorithm for LDPC Decoding, a First Step to Hardware Implementation	356
<i>Imen Debbabi (Carthage University), Bertrand Le Gal (University of Bordeaux), Nadia Khouja (Carthage University), Fethi Tlili (Carthage University), Christophe Jeco (University of Bordeaux)</i>	

Session B2L-C: Energy Harvesting, Power Management and Memristor Techniques

Chair: Ibrahim Elfadel, *Masdar Institute of Science and Technology*

Co-Chair: Abdullah Alharbi, *University of Missouri*

Time: December 8, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 3

A Mathematical Model of an Ideally Threshold Compensated Rectifier for RF Energy Harvesting	360
<i>Doaa M. Elgabri (Nile University), Mohamed Aboudina (Cairo University), Emad Hegazi (Ain Shams University)</i>	
3D EM Simulations and Analysis of In-Package Metal Plate Interconnecting High-Side and Low-Side FETs of DC-DC Converter	364
<i>Josip Bačmaga (University of Zagreb), Raul Blečić (University of Zagreb), Renaud Gillon (ON Semiconductor), Adrijan Barić (University of Zagreb)</i>	

A Simple Hybrid 3-Level Buck-Boost DC-DC Converter with Efficient PWM Regulation Scheme 368
Abdullah Abdulslam (American University in Cairo, Zewail City of Science and Technology), Baker Mohammad (Khalifa University), Mohammad Ismail (Khalifa University), Yehea Ismail (American University in Cairo, Zewail City of Science and Technology)

A Verilog – A Compact Model for Solid-State Lithium-Ion Microbatteries N/A
Mohammed S. Nesro (Masdar Institute of Science and Technology), Lizhong Sun (Applied Materials, Inc.), Ibrahim M. Elfadel (Masdar Institute of Science and Technology)

A Novel Memristor Emulator based only on an Exponential Amplifier and CCII+ 376
Abdullah G. Alharbi (University of Missouri-Kansas City), Mohammed E. Fouda (Cairo University), Masud H. Chowdhury (University of Missouri-Kansas City)

Session B2L-D: CMOS Integrated Circuits for Physics Experiments

Chair: Marcello DeMatteis, *University of Milano-Bicocca, Italy*

Co-Chair: Stefano D'Amico, *University of Salento, Italy*

Time: December 8, 2015, 14:50 - 16:30

Location: Semiramis Pavilion 4

Recent ASICs Developments in 65nm CMOS Technology for High Energy Physics Experiments 380
Natale Demaria (Istituto Nazionale di Fisica Nucleare)

IC-PIX28: A 28nm Read-Out Channel for Pixel Detector 384
F. Resta (Università degli Studi di Milano-Bicocca), M. De Matteis (Università degli Studi di Milano-Bicocca), G. Rota (Università degli Studi di Milano-Bicocca), A. Pezzotta (Università degli Studi di Milano-Bicocca), A. Pipino (Università degli Studi di Milano-Bicocca), A. Baschirotto (Università degli Studi di Milano-Bicocca)

From StarX32 to VEGA: Low-Power and Low-Noise Mixed-Signal ASICs for X-Ray Detectors in Space and Medical Applications 388
M. Ahangarianabhari (Politecnico di Milano), G. Bertuccio (Politecnico di Milano), S. Caccia (Politecnico di Milano), M. Grassi (Università di Pavia), D. Macera (Politecnico di Milano), P. Malcovati (Università di Pavia)

A XOR-Based Associative Memory Block in 28 nm CMOS for Interdisciplinary Applications 392
Alberto Annovi (Istituto Nazionale di Fisica Nucleare), Andrea Baschirotto (Università degli Studi di Milano-Bicocca), Matteo M. Beretta (Istituto Nazionale di Fisica Nucleare), Nicolò Vladi Biesuz (Università degli Studi di Pisa), Saverio Citraro (Università degli Studi di Pisa), Francesco Crescioli (LPNHE / IN2P3 / CNRS), Marcello De Matteis (Università degli Studi di Milano-Bicocca), Federico Fary (Università degli Studi di Milano-Bicocca), Luca Frontini (Università degli Studi di Milano), Paola Giannetti (Istituto Nazionale di Fisica Nucleare), Valentino Liberali (Università degli Studi di Milano), Pierluigi Luciano (Istituto Nazionale di Fisica Nucleare), Fabrizio Palla (Istituto Nazionale di Fisica Nucleare), Alessandro Pezzotta (Università degli Studi di Milano-Bicocca), Seyed Ruhollah Shojaii (Università degli Studi di Milano), Calliope-Louisa Sotiropoulou (Istituto Nazionale di Fisica Nucleare, Università di Pisa), Alberto Stabile (Istituto Nazionale di Fisica Nucleare)

Double-Redundant Design Methodology to Improve Radiation Hardness in Pixel Detector Readout ICs 396
Luca Frontini (Università degli Studi di Milano), Valentino Liberali (Università degli Studi di Milano), Seyed Ruhollah Shojaii (Università degli Studi di Milano), Alberto Stabile (Istituto Nazionale di Fisica Nucleare)

Session B3P-F: Analog Circuit Techniques III

Chair: Mohamed Zgaren, *École Polytechnique de Montréal*

Time: December 8, 2015, 16:50 - 17:50

Location: Nefertiti Room

Efficiency Analysis of Importance Sampling in Deep Submicron STT-RAM Design using Uncontrollable Industry-Compatible Model Parameter 400
Taehui Na (Yonsei University), Hanwool Jeong (Yonsei University), Seong-Ook Jung (Yonsei University), Jung Pill Kim (Qualcomm Incorporated), Seung H. Kang (Qualcomm Incorporated)

An Intelligent Technique for Generating Equivalent KHN Circuits using Genetic Algorithm	404
<i>Nariman A. Khalil (Fayoum University), Rania F. Ahmed (Fayoum University), Rania A. Abulsoud (Fayoum University), Ahmed M. Soliman (Cairo University)</i>	
Two-Stage Optimization of CORDIC-Friendly FFT	408
<i>Ahmed M. El-Shafiey (Cairo University), Mohamed E. Farag (Cairo University), Mohammed A. El-Motaz (Cairo University), Omar A. Nasr (Cairo University), Hossam A.H. Fahmy (Cairo University)</i>	
Switch Selection and Sizing in CMOS Implementation of Variable Output Switched Capacitor Step-Down DC-DC Converter	412
<i>Mahesh Zanwar (International Institute of Information Technology, Bangalore), Subhajit Sen (International Institute of Information Technology, Bangalore)</i>	
An 8-PSK Receiver using an Integrated Low-Noise Amplifier and Super-Regenerative Oscillator with Digital Detection Technique	416
<i>Mahmoud Fawzy Wagdy (California State University, Long Beach), Sanjay Subba Rao (California State University, Long Beach), Krishna Kant Singh (California State University, Long Beach), Ghada Hamdy Ibrahim (Electronics Research Institute)</i>	
Bit-Error-Rate Analysis and Mixed Signal Triple Modular Redundancy Methods for Data Converters	421
<i>Jason Muhlestein (Oregon State University), Hariprasath Venkatram (Intel Corporation), Jon Guerber (Intel Corporation), Allen Waters (University of Washington), Un-Ku Moon (Oregon State University)</i>	
6-Gb/s Serial Link Transceiver for NoCs	425
<i>Safaa A. Mohammed (Cairo University), Sameh A. Ibrahim (Ain Shams University), S.E.-D. Habib (Cairo University)</i>	

Session B3P-G: Test and Verification

Chair: Ricardo Reis, *Universidade Federal do Rio Grande do Sul, Brazil*

Time: December 8, 2015, 16:50 - 17:50

Location: Nefertiti Room

High Coverage Test for the Second Generation Current Conveyor	429
<i>A.S. Emara (American University in Cairo), A.H. Madian (Egyptian Atomic Energy Authority), H.H. Amer (American University in Cairo), S.H. Amer (American University in Cairo)</i>	
Binary Floating Point Verification using Random Test Vector Generation based on SV Constraints	433
<i>Khaled Nouh (Mentor Graphics Corporation), Hossam A.H. Fahmy (Cairo University)</i>	
Signature Multi-Mode Hardware-Based Self-Test Architecture for Digital Integrated Circuits	437
<i>Mohamed H. El-Mahlawy (Egyptian Armed Forces)</i>	
Fault Tolerant Register File Design for MIPS AES-Crypto Microprocessor	442
<i>Buse Ustaoglu (Istanbul Technical University), Berna Ors Yalcin (Istanbul Technical University)</i>	

Session B3P-H: Digital Circuits

Chair: Ugur Cini, *Trakya University*

Time: December 8, 2015, 16:50 - 17:50

Location: Nefertiti Room

Implementation of Multiple PID Controllers on FPGA	446
<i>Mokhtar Aboelaze (York University), Mohamed Ghazy Shehata (Effat College)</i>	
Energy-Efficient Gaussian Filter for Image Processing using Approximate Adder Circuits	450
<i>Julio R. Oliveira (Universidade Católica de Pelotas), Leonardo B. Soares (Universidade Federal do Rio Grande do Sul), E.A.C. Costa (Universidade Católica de Pelotas), Sergio Bampi (Universidade Federal do Rio Grande do Sul)</i>	

Optimal Design of 6T SRAM Bitcells for Ultra Low-Voltage Operation	454
<i>Amgad A. Ghonem (Ain Shams University), Mostafa F. Farid (Ain Shams University), Mohamed Dessouky (Ain Shams University)</i>	
An 8kb SRAM Macro in 65nm for Ultra-Low Voltage Applications Operating from 1.2V to 0.5V	458
<i>Mostafa F. Farid (Ain Shams University), Amgad A. Ghonem (Ain Shams University), Mohamed Dessouky (Ain Shams University / Mentor Graphics)</i>	
Impact of Technology Scaling on the Minimum Energy Point for FinFET based Flip-Flops	462
<i>Osama Abdelkader (Mentor Graphics Corporation), Hassan Mostafa (Cairo University, American University in Cairo, Zewail City of Science and Technology), Hamdy Abdelhamid (American University in Cairo, Zewail City of Science and Technology), Ahmed Soliman (Cairo University)</i>	
A Highly Scalable Vector Oriented ASIP-Based Multi-Standard Digital Receiver	466
<i>Mohammed A. El-Motaz (Cairo University), M. Wagih Ismail (Cairo University), Mohsen Raafat (Cairo University), Ali S. Faried (Cairo University), Mohammed A. Raghieb (Cairo University), Nassr M. Ismail (Cairo University), Sherif A. Hafez (Cairo University), Ahmed H. El-Kady (Cairo University), Esmaail A. El-Sayed (Cairo University), Mohamed A. Sharaf (Cairo University), Ibrahim Shazly (Cairo University), Wael E. Abd EL-Kawi (Cairo University), Chadi M. Mohamed (Cairo University), Mohamed N. Elhidery (Cairo University), Karim Mohammed (Cairo University), Omar A. Nasr (Cairo University)</i>	

Session B3P-J: Analog Design Methodologies

Chair: Richard Shi, *University of Washington*

Co-Chair: Yehea Ismail, *American University of Cairo*

Time: December 8, 2015, 16:50 - 17:50

Location: Nefertiti Room

Coupling Capacitance Extraction in Through-Silicon via (TSV) Arrays	470
<i>Tarek Ramadan (Mentor Graphics Corporation, Ain Shams University), Eslam Yahya (American University in Cairo, Zewail University for Science and Technology, Benha University), Mohamed Dessouky (Mentor Graphics Corporation, Ain Shams University), Yehea Ismail (American University in Cairo, Zewail University for Science and Technology)</i>	
Procedural Analog Design Automation using Building Block Optimization	474
<i>Maged El-Sisi (Mentor Graphics Corporation), Mohamed Dessouky (Mentor Graphics Corporation)</i>	
Identifying DC Bias Conditions for Maximum DC Current in Digitally-Assisted Analog Design	478
<i>Chong Li (University of Washington), Suriyaprakash Natarajan (Intel Corporation), C.J. Richard Shi (University of Washington)</i>	
Automated Analog Circuit Design and Chip Layout Tool	482
<i>Fathi A. Farag (Zagazig University), Mohamed F. Ibrahim (Zagazig University), Mohammed A. Shehata (Zagazig University)</i>	
Incremental Layout-Aware Analog Design Methodology	486
<i>Mohannad Elshawy (Ain Shams University), Mohamed Dessouky (Ain Shams University)</i>	

Session B3P-K: Masters and PhD Forum

Chair: Ahmed Khattab, *Cairo University*

Time: December 8, 2015, 16:50 - 17:50

Location: Nefertiti Room

Enhancement of Mobile Development of Brain-Computer Platforms	490
<i>Amr S. Elsayy (Ain Shams University), Seif Eldawlatly (Ain Shams University), Mohamed Taher (Ain Shams University), Gamal M. Aly (Ain Shams University)</i>	

A New 16-Bit Low-Power PVT-Calibrated Time-Based Differential Analog-to-Digital Converter (ADC) Circuit in CMOS 65nm Technology	492
<i>Abdullah El-Bayoumi (Cairo University), Hassan Mostafa (Cairo University, American University in Cairo, Zewail City of Science and Technology), Ahmed M. Soliman (Cairo University)</i>	
A CMOS based Operational Floating Current Conveyor and its Applications	494
<i>Nermine M. Edward (American University in Cairo, Zewail City of Science and Technology), Yehya H. Ghallab (American University in Cairo, Zewail City of Science and Technology, Helwan University), Hassan Mostafa (American University in Cairo, Zewail City of Science and Technology, Cairo University), Yehea I. Ismail (American University in Cairo, Zewail City of Science and Technology)</i>	
Low-Power Implantable Seizure Detection Processor	496
<i>Sherif Omar (Cairo University), Hassan Mostafa (Cairo University, American University in Cairo, Zewail City of Science and Technology), Tawfik Ismail (Cairo University), Salam Gabran (Novela Inc.)</i>	
On the use of Dynamic Partial Reconfiguration for Multi-Band/Multi-Standard Software Defined Radio	498
<i>Ahmed Sadek (Cairo University), Hassan Mostafa (Cairo University, American University in Cairo, Zewail City of Science and Technology), Amin Nassar (Cairo University)</i>	
A Low-Power High-Speed Charge-Steering ADC-Based Equalizer for Serial Links	500
<i>Mostafa M. Ayes (Ain Shams University), Sameh A. Ibrahim (Ain Shams University), Hani F. Ragai (Ain Shams University), Mohamed M. Rizk (Alexandria University)</i>	
Solar Panel Receiver System Implementation for Visible Light Communication	502
<i>Bilal Malik (Institut Supérieur d'Electronique de Paris), Xun Zhang (Institut Supérieur d'Electronique de Paris)</i>	
Design of an Embedded Image Acquisition System	504
<i>Pavel Morozkin (Institut Supérieur d'Electronique de Paris), Marc Swynghedauw (SuriCog), Maria Trocan (Institut Supérieur d'Electronique de Paris)</i>	
Generalized Chaotic Maps and Elementary Functions between Analysis and Implementation	506
<i>Wafaa S. Sayed (Cairo University), Abdel-Latif E. Hussien (Cairo University), Hossam A.H. Fahmy (Cairo University), Ahmed G. Radwan (Cairo University)</i>	
Analysis and Design of Network on Chip Under High Process Variation	508
<i>Rabab Ezz-Eldin (Bani-Suef University), Magdy A. El-Moursy (Mentor Graphics Corporation and Electronics Research Institute), Hesham F.A. Hamed (Minia University)</i>	
Speeding-Up Fast Fourier Transform	510
<i>Mohammed A. El-Motaz (Cairo University), Ahmed M. El-Shafiey (Cairo University), Mohamed E. Farag (Cairo University), Omar A. Nasr (Cairo University), Hossam A.H. Fahmy (Cairo University)</i>	
 Session B3P-L: Emerging Technologies and Energy Harvesting	
Chair: Abdullah Alharbi, <i>University of Missouri</i>	
Co-Chair: Ibrahim Elfadel, <i>Masdar Institute of Science and Technology</i>	
Time: December 8, 2015, 16:50 - 17:50	
Location: Nefertiti Room	
A 1.6-Na Quiescent Current Bandgap Reference in 130-nm CMOS Technology	512
<i>Amr Kamel (Ain Shams University), Sameh Ibrahim (Ain Shams University)</i>	
Design of Withdrawal Weighted Transducer SAW Filter for RF Wireless Applications	516
<i>M.S. Saad (Electronics Research Institute), A. Zaki (Electronics Research Institute), T.E. Taha (Menofia University)</i>	
A Comparative Evaluation of Single-Walled Carbon Nanotubes and Copper in Interconnects and Through-Silicon Vias	519
<i>Bassem Safieldeen (German University in Cairo, American University in Cairo, Zewail City of Science and Technology), Hassan Mostafa (American University in Cairo, Zewail City of Science and Technology, Cairo University), Hamdy Abdelhamid (American University in Cairo, Zewail City of Science and Technology), Yehea Ismail (American University in Cairo, Zewail City of Science and Technology)</i>	

Yield Optimization of Spintronic Memristor-Based Memory Arrays 523
Marwa Abdallah (Cairo University), Hassan Mostafa (American University in Cairo, Zewail City of Science and Technology), Mohamed Fathy (Cairo University)

Structure Optimization for Efficient AlN Piezoelectric Energy Harvesters 527
Mostafa Shadoufa (Ain Shams University), Ahmed Emad (Ain Shams University), Maged Ghoneima (Ain Shams University), Mohamed A.E. Mahmoud (Ain Shams University), Mohamed Dessouky (Ain Shams University)

Session B3P-M: Sensors and Interfaces

Chair: Thanos Stouraitis, *University of Patras*

Co-Chair: Soliman Mahmoud, *Sharjah University*

Time: December 8, 2015, 16:50 - 17:50

Location: Nefertiti Room

Low-Complexity Energy-Efficient Security Approach for E-Health Applications based on Physically Unclonable Functions of Sensors 531
Chinmaya Mahapatra (University of British Columbia), Pouya Kamalinejad (University of British Columbia), Thanos Stouraitis (University of Patras, Khalifa University), Shahriar Mirabbasi (University of British Columbia), Victor C.M. Leung (University of British Columbia)

Context Awareness in UbiComp: An IoT Oriented Distributed Architecture 535
Rodrigo Souza (Universidade Federal do Rio Grande do Sul), João Lopes (Universidade Federal do Rio Grande do Sul), Cláudio Geyer (Universidade Federal do Rio Grande do Sul), Cleiton Garcia (Universidade Católica de Pelotas), Patrícia Davet (Universidade Católica de Pelotas), Adenauer Yamin (Universidade Católica de Pelotas)

A 1V Low-Power Low-Noise Biopotential Amplifier based on Flipped Voltage Follower 539
Tamer Farouk (Military Technical College), Mohamed Elkhatib (Military Technical College), Mohamed Dessouky (Ain Shams University)

A CMOS Digitally Programmable OTA based Instrumentation Amplifier for EEG Detection System 543
Soliman A. Mahmoud (University of Sharjah), Aisha A. Alhammadi (University of Sharjah)

Analysis of Metastability Errors in Asynchronous SAR ADCs 547
Allen Waters (University of Washington), Jason Muhlestein (Oregon State University), Un-Ku Moon (Oregon State University)

Session C1L-A: Analog and RF Circuits for Communications

Chair: Mohamed Abbas, *Assiut University*

Time: December 9, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 1

Wide Band LC VCO with Automatic Amplitude Controller for IEEE 802.22 Cognitive Radio Receiver 551
Mariam Kanoun (École Nationale d'Ingénieurs de Sfax), Houda Daoud (École Nationale d'Ingénieurs de Sfax), Hassen Mnif (École Nationale d'Ingénieurs de Sfax), Mourad Loulou (École Nationale d'Ingénieurs de Sfax)

A Scalable Synchronous Reload Technique for Wide Division Range Multi Modulus Dividers 555
Mohammed El-Shennawy (Technische Universität Dresden), Mohamed Eissa (IHP Microelectronics), Markus Schulz (Technische Universität Dresden), Niko Joram (Technische Universität Dresden), Frank Ellinger (Technische Universität Dresden)

Design and Implementation of an Inductorless Digitally Controlled Oscillator based on CMOS Inverters 559
I. Ghorbel (Aix Marseille Université, CNRS, Université de Toulon, IM2NP), F. Haddad (Aix Marseille Université, CNRS, Université de Toulon, IM2NP), H. Barthélemy (Université de Toulon), W. Rahajandraibe (Aix Marseille Université, CNRS, Université de Toulon, IM2NP), M. Loulou (École Nationale d'Ingénieurs de Sfax), H. Mnif (École Nationale d'Ingénieurs de Sfax)

A Variable Interval Enhanced Jitter Tolerant Programmable Bandwidth Blind-Oversampling CDR for Multi-Gigabit Rates 563
Sushrant Monga (Indian Institute of Technology Delhi), Shouri Chatterjee (Institute of Technology Delhi)

Design of a Wideband CMOS LNA for Low Frequency Band SKA Application 567
Eman O. Farhat (University of Malta), Kristian Zarb Adami (University of Malta), Owen Casha (University of Malta), Ivan Grech (University of Malta), Jan Geralt Bij de Vaate (Astron)

Session C1L-B: DSP Architectures for Multimedia and Communications

Chair: Sergio Bampi, *Federal University of Rio Grande do Sul*

Co-Chair: Gamal Fahmy, *German University of Cairo*

Time: December 9, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 2

Area Efficient and High Throughput CABAC Encoder Architecture for HEVC 572
Bruno Vizzotto (Universidade Federal do Pampa, Universidade Federal do Rio Grande do Sul), Volnei Mazui (Universidade Federal do Pampa), Sergio Bampi (Universidade Federal do Rio Grande do Sul)

SATD Hardware Architecture based on 8x8 Hadamard Transform for HEVC Encoder 576
Bianca Silveira (Universidade Católica de Pelotas), Cláudio Diniz (Universidade Católica de Pelotas), Mateus Beck Fonseca (Universidade Federal de Pelotas), Eduardo Costa (Universidade Católica de Pelotas)

A Novel Scheduling Algorithm for mmWave Mesh Networks using Packet Aggregation 580
Muhammad K. Ibrahim (Ain Shams University), Mahmoud H. Ismail (American University of Sharjah), M. Watheq El-Kharashi (Ain Shams University)

Massively Parallel Cellular Matrix Model for Self-Organizing Map Applications 584
Hongjian Wang (Université de Technologie Belfort Montbéliard), Abdelkhalak Mansouri (Université de Technologie Belfort Montbéliard), Jean-Charles Créput (Université de Technologie Belfort Montbéliard)

Session C1L-C: Reliable Systems: Modeling and Optimization

Chair: Mohamed Dessouky, *Mentor Graphics Corporation*

Time: December 9, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 3

Parameterized Test Patterns Methodology for Layout Design Rule Checking Verification 588
Mohamed Tantawy (Nile University), Rafik Guindi (Nile University), Mohamed Dessouky (Mentor Graphics), Mohamed Al-Imam (Mentor Graphics)

Accelerating Electromagnetic Simulations: A Hardware Emulation Approach 592
M. Tarek Ibn Ziad (Ain Shams University), Youssa Alkabani (Ain Shams University), M. Watheq El-Kharashi (Ain Shams University), Khaled Salah (Mentor Graphics), Mohamed AbdelSalam (Mentor Graphics)

Deadlock Detection in Conditional Asynchronous Circuits Under Mismatched Branch Selection 596
Eslam Yahya (Benha University / American University in Cairo), Hatem Zakaria (Benha University), Yehea Ismail (American University in Cairo)

Comparing the Steady-State Procedures based on Epsilon-Algorithm and Sensitivity Analysis 601
Josef Dobeš (Czech Technical University in Prague), David Černý (Czech Technical University in Prague), František Vejražka (Czech Technical University in Prague), Václav Navrátil (Czech Technical University in Prague)

Online Bearing Fault Detection using Linear Prediction and Nonlinear Energy Operator 605
M. Samy (Helwan University), A.M. Bassiuny (Helwan University)

Session C1L-D: FPGAs and Architectural Exploration

Chair: Ahmed Khattab, *Cairo University*

Co-Chair: Fernando Gehm Moraes, *Pontifícia Universidade Católica do Rio Grande do Sul*

Time: December 9, 2015, 11:20 - 13:00

Location: Semiramis Pavilion 4

- Floating-Point Adaptive Filter Architectures for the Cancelling of Harmonics Power Line Interference** 609
Vagner Guidotti (Catholic University of Pelotas), Eduardo Costa (Catholic University of Pelotas), Sergio Almeida (Catholic University of Pelotas), Mateus Fonseca (Federal University of Pelotas / Catholic University of Pelotas)
- Solving Constraints in FPGA Detailed Routing using SMT** 613
Mona Safar (Ain-Shams University), Ashraf Salem (Mentor Graphics)
- Hardware/Software Co-Design of a Dynamically Configurable SHA-3 System-on-Chip (SoC)** 617
Khaled E. Ahmed (Alexandria University), Mohammed M. Farag (Alexandria University)
- Parallel Overloaded CDMA Interconnect (OCI) Bus Architecture for On-Chip Communications** 621
Khaled E. Ahmed (Alexandria University), Mohammed M. Farag (Alexandria University)

Session C2L-A: VLSI Signal Processing for Communications

Chair: Mounir Boukadoum, *UQAM*

Time: December 9, 2015, 14:00 - 15:40

Location: Semiramis Pavilion 1

- Interference Alignment Techniques for Multi-User MIMO Systems at Millimeter-Wave** 625
Stefano Ciccotosto (University of Padova), Nevio Benvenuto (University of Padova)
- Gaussian Random Number Generator Design based on Double Non-Uniform Segmentation** 629
Souhail Haggui (Carthage University), Fatma Rouissi (Carthage University), Yosra Mlayeh (Carthage University), Fethi Tlili (Carthage University)
- An FPGA-Based Accelerator for Rapid Simulation of SC Decoding of Polar Codes** 633
Johannes Wüthrich (École Polytechnique Fédérale de Lausanne), Alexios Balatsoukas-Stimming (École Polytechnique Fédérale de Lausanne), Andreas Burg (École Polytechnique Fédérale de Lausanne)
- Digital Synchronization for Symbol-Spaced IEEE802.11ad Gigabit mmWave Systems** 637
Nicholas Preyss (École Polytechnique Fédérale de Lausanne), Andreas Burg (École Polytechnique Fédérale de Lausanne)
- Parallel Comba Multiplication in $GF(2^{163})$ using Homogenous Multicore Microcontroller** 641
M.S. Albahri (University of Sheffield), M. Benaissa (University of Sheffield)

Session C2L-B: Digital Circuits, Systems and Tools

Chair: Jorge Juan, *Universidad de Sevilla, Spain*

Time: December 9, 2015, 14:00 - 15:40

Location: Semiramis Pavilion 2

- Improved Low Power Scheduler for OSS-7: An Open Source DASH7 Stack** 645
Mohammad Hassan Shahid (Lahore University of Management Sciences), Shahid Masud (Lahore University of Management Sciences)
- A MAC Unit with Double Carry-Save Scheme Suitable for 6-Input LUT based Reconfigurable Systems** 649
Ugur Cini (Trakya University), Olcay Kurt (Trakya University)
- High Performance FIR Filter Design for 6-Input LUT based FPGAs** 653
Ugur Cini (Trakya University), Mustafa Aktan (TeraHz Microelectronics)

Hierarchical Energy Monitoring for Many-Core Systems 657
André L.M. Martins (Pontifícia Universidade Católica do Rio Grande do Sul), Marcelo Ruaro (Pontifícia Universidade Católica do Rio Grande do Sul), Fernando G. Moraes (Pontifícia Universidade Católica do Rio Grande do Sul)

An Evaluation of BTI Degradation of 32nm Standard Cells 661
Rafael B. Schivittz (Universidade Federal do Rio Grande), Cristina Meinhardt (Universidade Federal do Rio Grande), Paulo F. Butzen (Universidade Federal do Rio Grande)

Session C2L-C: NG-PON Network Elements and Photonic Components

Chair: Ricardo Reis, *Universidade Federal do Rio Grande do Sul, Brazil*

Time: December 9, 2015, 14:00 - 15:40

Location: Semiramis Pavilion 3

A High-Capacity Aggregation Solution for Fiber to the Curb and Building Over XG-PON 665
Thanasis Oikonomou (Intracom Telecom), Dimitrios Kritharidis (Intracom Telecom), Spyridon Spyridakis (Intracom Telecom), Konstantinos Stamatis (Intracom Telecom)

Design of Optical Network Unit (ONU) for Hybrid TDM/WDM NG-PON 669
Andreas Foteas (National and Kapodistrian University of Athens), Nikolaos Liakopoulos (National and Kapodistrian University of Athens), Georgios Menoutis (National and Kapodistrian University of Athens), Ioannis Patronas (National and Kapodistrian University of Athens), Christoforos Kachris (Athens Information Technology), Dimitrios Klonidis (Athens Information Technology)

A Configurable Transmitter Architecture and Organization for XG-PON OLT/ONU/ONT Network Elements 673
G. Menoutis (National and Kapodistrian University of Athens), A. Foteas (National and Kapodistrian University of Athens), N. Liakopoulos (National and Kapodistrian University of Athens), G. Georgis (National and Kapodistrian University of Athens), D. Reisis (National and Kapodistrian University of Athens), G. Synnefakis (InAccess Networks S.A.)

1.55- μ m Dilute Nitride SOAs with Low Temperature Sensitivity for Coolerless On-Chip Operation 677
Giannis Giannoulis (National Technical University of Athens), Nikos Iliadis (National Technical University of Athens), Dimitrios Apostolopoulos (National Technical University of Athens), Paraskevas Bakopoulos (National Technical University of Athens), Hercules Avramopoulos (National Technical University of Athens), Ville-Markus Korpijärvi (Tampere University of Technology), Jaakko Mäkelä (Tampere University of Technology), Jukka Viheriälä (Tampere University of Technology), Mircea Guina (Tampere University of Technology)

Performance Evaluation of Wavelength Exchanging in Optical Interconnect 681
Tawfik Ismail (Cairo University / AUC & Zewail City of Science and Technology), Hassan Mostafa (Cairo University / AUC & Zewail City of Science and Technology), Yehea Ismail (AUC & Zewail City of Science and Technology)

Session C2L-D: Sensing and Sensor Networks

Chair: Piero Malcovati, *University of Pavia*

Co-Chair: Ricardo Carmona-Galán, *CSIC-University of Seville*

Time: December 9, 2015, 14:00 - 15:40

Location: Semiramis Pavilion 4

Metal Oxide Films/Structures for Gamma Radiation Detection 685
Ahmed Omar (Military Technical College), Ahmad Baraka (Military Technical College), Ahmed H. Zaki (Military Technical College), Karam A. Sharshar (Egyptian Atomic Energy Authority)

On the Design of a Sparsifying Dictionary for Compressive Image Feature Extraction 689
Marco Trevisi (CSIC / Universidad de Sevilla), Ricardo Carmona-Galán (CSIC / Universidad de Sevilla), Jorge Fernández-Berni (CSIC / Universidad de Sevilla), Ángel Rodríguez-Vázquez (CSIC / Universidad de Sevilla)

Operational Deflection Shape of Rotating Object using Tracking Laser Doppler Vibrometer	693
<i>Hossam Khalil (Gwangju Institute of Science and Technology), Dongkyu Kim (Gwangju Institute of Science and Technology), Joonsik Nam (Gwangju Institute of Science and Technology), Kiyhwan Park (Gwangju Institute of Science and Technology)</i>	
Modeling and Minimization of Energy Consumption in Wireless Sensor Networks	697
<i>Mohammed Abo-Zahhad (Assiut University), Mohammed Farrag (Assiut University), Abdelhay Ali (Assiut University)</i>	
Modelling Extended-Lifetime Wireless Sensor Networks	701
<i>Ahmed El-Samman (University of Guelph), Omar Ahmed (University of Guelph), Stefano Gregori (University of Guelph)</i>	