

# **2010 International Conference on Microelectronics**

**(ICM 2010)**

**Cairo, Egypt  
19 – 22 December 2010**



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# Program

## Sunday, December 19

**09:30 - 12:30**

### **Embedded Memory Design in Nanometer Technologies**

Mohamed H. Abu-Rahma (Qualcomm, USA), Baker Mohammad (Qualcomm, USA)

### **Trends and Challenges in the Design Of Sigma-Delta Modulators: State-of-the- Art Survey and Application to Software Defined Radio**

Jose M. de la Rosa (Institute of Microelectronics of Seville, IMSE-CNM (CSIC/University of Seville))

### **Power-Aware Testing and Test Strategies for Low-Power Devices**

Patrick GIRARD (University of Montpellier, France), Nicola NICOLICI (McMaster University, Canada), Xiaoqing WEN (Kyushu Institute of Technology, Japan)

**14:30 - 17:30**

### **Power Management Systems on Chip (SoC) for Mobile Applications**

Gabriel A. Rincón-Mora (Georgia Institute of Technology, USA)

### **BioMEMS: An Enabling Technology**

Hisham Mohamed (Egyptian Nanotechnology Center, Egypt) and James N. Turner (Binghamton University, USA)

### **New Trends in Testing Analogue and RF Integrated Circuits: Is BIST an Option?**

José L. Huertas (University of Seville, Spain)

## Monday, December 20

**09:00 - 09:45**

### **Opening Ceremony**

**09:45 - 10:45**

### **Delivering 10X Design Improvements**

Walden C. Rhines - Chief Executive Officer and Chairman of the Board of Directors, Mentor Graphics

**11:15 - 13:00**

### **Analog-to-Digital Converters**

#### ***Least Mean Square Calibration Method for VCO Non-Linearity***

Hariprasath Venkatram (Oregon State University, USA); Rajesh Inti (Oregon State University, USA); Un-Ku Moon (Oregon State University, USA)  
pp. 1-4

#### ***ENOB Calculation for ADCs with Input-Correlated Quantization Error Using a Sine-Wave Test***

Skyler Weaver (Oregon State University, USA); Benjamin Hershberg (Oregon State University, USA); Un-Ku Moon (Oregon State University, USA)  
pp. 5-8

#### ***Measurement of Continuous-Time Sigma Delta Modulators: Implications of Using Spectrum Analyzer***

Ahmed Ashry (LIP6, France); Ahmed El-Shennawy (Si-ware, Egypt); Mohammad A. Elbadry (University of Minnesota, USA); Ayman Elsayed (Si-ware, Egypt); Hassan Aboushady (Paris 6, France)  
pp. 9-12

**An Energy Recovery Approach for a Charge Redistribution Successive Approximation ADC**  
Howard Tang (Nanyang Technological University, Singapore); Liter Siek (Nanyang Technological University, Singapore)  
pp. 13-16

**Two-Phase Correlated Level Shifting Switched-Capacitor Techniques**  
Amr Essam (Mentor Graphics Egypt, Egypt); Mohamed Dessouky (Mentor Graphics Egypt, Egypt)  
pp. 17-19

**Analog Digital Conversion Specifications for WiMAX**  
Jihene Mallek (ENIS, LETI, Tunisia); Hassene Mnif (National Engineering School of Sfax, University of Sfax, Tunisia); Mourad Loulou (National School of Engineering of Sfax, Tunisia)  
pp. 20-23

## Devices, Modeling and Characterization

**Compact Model for Short and Ultra Thin Symmetric Double Gate**  
Ahmed Abo-Elhadeed (Mentor Graphics, Egypt)  
pp. 24-27

**Physical Parametric Analysis of 16nm N-Channel Carbon-Nanotube Transistors for Manufacturability**  
Yanan Sun (The Hong Kong University of Science and Technology, Hong Kong); Volkan Kursun (The Hong Kong University of Science and Technology, Hong Kong)  
pp. 28-31

**Fabrication and Characterization of a Ferroelectric-Gate FET with a ITO/PZT/SRO/Pt Stacked Structure**  
Tue Trong Phan (Japan Advanced Institute of Science and Technology, Japan); Trinh Nguyen Quoc Bui (Japan Science and Technology Agency, ERATO, Shimoda Nano Liquid Process Project, Japan); Takaaki Miyasako (Japan Science and Technology Agency, ERATO, Shimoda Nano Liquid Process Project, Japan); Eisuke Tokumitsu (Tokyo Institute of Technology, Japan); Tatsuya Shimoda (Japan Advanced Institute of Science and Technology, Japan)  
pp. 32-35

**Improved Efficiency of CMOS Light Emitters in Punch Through with Field Oxide Manipulation**  
Petrus Venter (University of Pretoria, South Africa); Monuko du Plessis (University of Pretoria, South Africa); Marius Goosen (INSiAVA (Pty) Ltd, South Africa); Hanneljé Nell (University of Pretoria, South Africa); Alfons W Bogalecki (INSiAVA (Pty) Ltd, South Africa)  
pp. 36-39

**Magneto-thermopower Properties in Spin Field-Effect Transistors**  
George S. Kliros (Hellenic Air-Force Academy, Greece)  
pp. 40-43

**Unified Drain Current Model for Independently Driven Double Gate MOSFETs**  
Binit Syamal (Jadavpur University, India); Chandan K. Sarkar (Jadavpur University, India); Pradipta Dutta (KIIT University, India); N Mohankumar (SKP Engineering College, India)  
pp. 44-47

## Leakage and Energy Efficiency in High Performance Integrated Circuits

**Optimization of On-Chip Link Performance Under Area, Power and Variability Constraints**  
Faiz ul Hassan (University of Glasgow, United Kingdom); Wim Vanderbauwhede (University of Glasgow, United Kingdom); Fernando Rodriguez-Salazar (University of Glasgow, United Kingdom)  
pp. 48-51

**Design of a Robust, High Performance Standard Cell Threshold Logic Family for DSM Technology**  
Samuel Leshner (Arizona State University, USA); Krzysztof Berezowski (TIMA Laboratory, France); Niranjana Kulkarni (Arizona State University, USA); Sarma Vrudhula (Arizona State University, USA)  
pp. 52-55

***Reducing the Leakage of Memory Blocks Aggressively***

Dalia A.F. El-Dib (University of Victoria, Canada); Heba A. Shawkey (Electronic Research Institute, Egypt); Zine-Eddine Abid (University of Western Ontario, Canada)  
pp. 56-59

***Physical Design Aware Selection of Energy-Efficient and Low-Energy Nanometer Flip-Flops***

Massimo Alioto (University of Siena, Italy); Elio Consoli (University of Catania, Italy); Gaetano Palumbo (University of Catania, Italy)  
pp. 60-63

***A Transregional Model for Near-Threshold Circuits with Application to Minimum-Energy Operation***

David Harris (Harvey Mudd College, USA); Ben Keller (Harvey Mudd College, USA)  
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***VSECURE: Active & Standby Subthreshold Leakage Current Reduction Technique***

Vaibhav Neema (IET, Devi ahilya university, indore, India); Sanjiv Tokekar (Devi Ahilya University, India)  
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14:45 - 16:30

**Timing Circuits and Optical Links**

***Power-Aware Design for High Data Rate Free Space Optical Receivers***

Behrooz Nakhkoob (RPI, USA); Mona Hella (RPI, USA)  
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***An Integrated Optical Receiver for 2.5Gbit/s Using 4-PAM Signaling***

Mohamed Atef (Vienna University of Technology, Austria); Robert Swoboda (A3PICs Electronics Development GmbH, Austria); Horst Zimmermann (Vienna University of Technology, Austria)  
pp. 76-79

***A 0.8-6.3 GHz Spread Spectrum Clock Generator for SerDes Transmitter Clocking***

Rania Hassan Mekky (MEMS Vision, Egypt); Mohamed Dessouky (Mentor Graphics Egypt, Egypt)  
pp. 80-83

***A Technique for Robust Division Ratio Switching in Multi Modulus Dividers with Modulus Extension***

Mohamed Hussein Eissa (Silicon Vision LLC, Egypt); Mohammed El-Shennawy (Silicon Vision LLC, Egypt)  
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***Modeling of Spread-Spectrum Clock Generation System Using Simulink***

Walaa Ayoub (Mentor Graphics, Egypt); Mohamed Dessouky (Mentor Graphics Egypt, Egypt); Khaled Sharaf (Ain Shams University, Egypt)  
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***ESD Protection Circuits with Low Triggering Voltage, Low Leakage Current and Fast Turn-On***

Yong-Seo Koo (DanKook University, Korea); Kwang-Yeob Lee (SeoKyoung University, Korea); Hyun-Duck Lee (SeoKyoung University, Korea); Tae-Ryoung Park (SeoKyoung University, Korea); Jae-Chang Kwak (SeoKyoung University, Korea); Yil-Suk Yang (ETRI, Korea)  
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**System Design Methodologies I**

***A Hardware/Software Co-design Architecture for Packet Classification***

Omar F. Ahmed (University of Guelph, Canada); Karanvir Chattha (University of Guelph, Canada); Shawki Areibi (University of Guelph, Canada)  
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**Accelerated Exploration of Cost-Performance Tradeoffs for Multi Objective VLSI Designs**

Anirban Sengupta (Ryerson University, Canada); Reza Sedaghat (Ryerson University, Canada)  
pp. 100-103

**A Generic MP-SoC Design Methodology for the Fast Prototyping of Embedded Image Processing**

Loïc Siéler (University Blaise Pascal, France); Jean-Pierre Dérutin (University Blaise Pascal, France); Lionel Damez (Université Blaise Pascal, France); Alexis Landrault (University Blaise Pascal, France)  
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**Behavioral Modeling of the Static Transfer Function of ADCs Using INL Measurements**

Rafik Guindi (Nile University, Egypt); Nehal Saada (Mentor Graphics, Egypt)  
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**Raster-Scanned Wave-Digital Filter Architectures for Multi-Beam 2D IIR Broadband Beamforming**

Nilanka T. Rajapaksha (University of Akron, USA); Chamith Wijenayake (University of Moratuwa, Sri Lanka); Arjuna Madanayake (University of Akron, USA); Leonard T. Bruton (University of Calgary, Canada)  
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**Generalized Power Efficient Technique for Polyphase Comb Filter in Multi-Rate Digital Receivers**

Noha Younis Ahmed (Cairo University, Egypt)  
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**Improved Design Techniques for Arithmetic Circuits**

**The Interlaced Carry-Arrest Adder**

Adly T. Fam (The State University of New York at Buffalo, USA)  
pp. 120-123

**Design and Evaluation of High-Speed Energy-Aware Carry Skip Adders**

Raffaele De Rose (DEIS-University of Calabria, Italy); Marco Lanuzza (University Of Calabria, Italy); Fabio Frustaci (University of Calabria, Italy)  
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**MOS Current Mode Logic Realization of Digital Arithmetic Circuits**

Yassmeen El-Hariry (Eng., Egypt); Ahmed H. Madian (Egyptian atomic energy authority, NCRRT, Egypt)  
pp. 128-131

**Nanometer Flip-Flops Design in the E-D Space**

Massimo Alioto (University of Siena, Italy); Elio Consoli (University of Catania, Italy); Gaetano Palumbo (University of Catania, Italy)  
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**On the Modulo  $2n+1$  Subtract Units for Weighted Operands**

Costas Efstathiou (Technological Education Institute of Athens, Greece); Ioannis Voyiatzis (TEI of Athens, Greece)  
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**16:45 - 18:15**

**Challenges of Nano Electronics Industry Ecosystem in the Arab Region**

Panel

**Tuesday, December 21**

**09:30 - 10:30**

**Engineering Education for Enhanced Innovation**

Adel Sedra - Dean of Faculty of Engineering, University of Waterloo

**11:00 - 12:45**

## Multicore and Embedded Systems

### ***Investigating Cache Parameters and Locking in Predictable and Low Power Embedded Systems***

Abu S Asaduzzaman (Wichita State University, USA); Fadi Sibai (UAE University, UAE)  
pp. 140-143

### ***Evaluation of the Impact of Miss Table and Victim Caches in Parallel Embedded Systems***

Abu S Asaduzzaman (Wichita State University, USA); Imad Mahgoub (Florida Atlantic University, USA); Fadi Sibai (UAE University, UAE)  
pp. 144-147

### ***Adaptive Packet Sizing for OTAP of PSoC Based Interface Board in WSN***

Ihab Adly (Ain Shams University, Egypt); Hani Ragai (Einshams university, Egypt); Adel Elhennawy (University of Ain Shams, Egypt); Khaled Ali Shehata (Arab Academy for Science and Technology, Egypt)  
pp. 148-151

### ***Thermal, Power, and Performance Shaping of Multicore Floorplans***

Fadi Sibai (UAE University, UAE)  
pp. 152-155

### ***Parallel Programming and Speed Up Evaluation of a NoC 2-Ary 4-Fly***

Abir M'zah (Ecole Nationale Supérieure de Techniques Avancées, France); Omar Hammami (ENSTA, France)  
pp. 156-159

## Sensing Systems and MEMS

### ***The Phase Noise of an Oscillator Employing a Dual MEMS Resonator Temperature Compensation Scheme***

Seyed Ali Gorji Zadeh (McGill University, Canada); Mourad N. El-Gamal (McGill University, Canada); Frederic Nabki (Université du Québec à Montréal, Canada)  
pp. 160-163

### ***A Temperature Compensated Architecture for Integrated, Low Power, Frequency Domain Sensors***

Karim Allidina (McGill University, Canada); Tanmoy Saha (McGill University, Canada); Mourad N. El-Gamal (McGill University, Canada)  
pp. 164-167

### ***Integrated Optical Light Directing Structures in CMOS to Improve Light Extraction Efficiency***

Alfons W Bogalecki (INSiAVA (Pty) Ltd, South Africa); Monuko du Plessis (University of Pretoria, South Africa); Petrus Venter (University of Pretoria, South Africa); Marius Goosen (INSiAVA (Pty) Ltd, South Africa); Hanneljie Nell (University of Pretoria, South Africa)  
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### ***Design of a Low-Cost MEMS Monolithically-Integrated Relative Humidity Sensor***

Paul-Vahe Cicek (McGill University, Canada); Tanmoy Saha (McGill University, Canada); Bichoy Waguih (Ain Shams University, Egypt); Frederic Nabki (Université du Québec à Montréal, Canada); Mourad N. El-Gamal (McGill University, Canada)  
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### ***Blood Glucose Sensor Implant Using NIR Spectroscopy: Preliminary Design Study***

Abdelaziz Trabelsi (Université du Québec à Montréal, Canada); Mounir Boukadoum (Université du Québec à Montréal, Canada); Christian Jesus B Fayomi (Universite du Quebec A Montreal, Canada); El Mostapha Aboulhamid (University of Montreal, Canada)  
pp. 176-179

### ***The Implementation of 2-Bit Decoders Using Single Electron Linear Threshold Gates (LTGs)***

Sameh Ebrahim Rehan (Mansoura University, Egypt)  
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## RF Design, Analysis and Techniques

### ***LC-Oscillator Featuring Independent Gate Biasing Implemented in 32nm CMOS Technology***

Davide Ponton (Infineon Technologies AG, Austria)  
pp. 184-187

***A Fast Automatic Tuning Algorithm for Voltage Controlled Oscillators***

Mohammed El-Shennawy (Silicon Vision LLC, Egypt); Emad Hegazi (Ain Shams University, Egypt)  
pp. 188-191

***CMOS Ring Oscillators with Enhanced Frequency Operation***

Aimad El Mourabit (National School of Applied Sciences of Tangier, Morocco); Guo-Neng Lu (University of Lyon, France); Ming Zhang (IEF, University Paris, France); Patrick Pittet (University of Lyon, France); Birjali Youness (LabTic, National School of applied sciences of Tangier, Morocco); Fouad Lahjoumri (LabTic, National School of applied sciences of Tangier, Morocco)  
pp. 192-195

***A Continuous Analysis of the Oscillation Amplitude in MOS LC-VCOs***

Bassem Fahs (Université de Caen, France); Patrice Gamand (NXP Semiconductors, France); Berland Corinne (ESIEE Paris, Lamips NXP-CRISMAT Caen France, France)  
pp. 196-199

***A 2nd Derivative Gaussian UWB Pulse Transmitter Design Using a Cross Inductor***

Luiz Moreira (Catholic University of Santos, Brazil); Wilhelmus Van Noije (University of São Paulo, São Paulo, Brazil)  
pp. 200-203

***A Novel High-Speed Multi-phase Oscillator Using Self-Timed Rings***

Oussama Elissati (TIMA Lab., France); Eslam Yahya (Banha University, Egypt); Sébastien Rieubon (ST-Ericsson, France); Laurent Fesquet (TIMA, France)  
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14:30 - 16:15

**Voltage Regulators and Analog Techniques**

***A CMOS Low Drop Out Voltage Regulator***

Paulo Crepaldi (Universidade Federal de Itajuba, Brazil); Tales C Pimenta (Universidade Federal de Itajuba, Brazil); Robson Moreno (Universidade Federal de Itajuba, Brazil)  
pp. 208-211

***Practical Design Considerations on Adaptive Controllers for PWM DC/DC Converters***

Davide Della Giustina (Università degli Studi di Milano, Italy); Valentino Liberali (Università degli Studi di Milano, Italy)  
pp. 212-215

***An Ultra-Low Power Voltage Regulator for Wireless Sensor Nodes***

Stefan Gruber (Infineon Technologies Austria AG, Austria); Hannes Reinisch (Graz University of Technology, Austria); Hartwig Unterassinger (Graz University of Technology, Austria); Martin Wiessflecker (Infineon Technologies Austria AG, Austria); Günter Hofer (Infineon Technologies Austria AG, Austria); Wolfgang Pribyl (Graz University of Technology, Austria); Gerald Holweg (, Austria)  
pp. 216-219

***New  $\pm 0.75$  V Low Voltage Low Power CMOS Current Conveyor***

Ahmed Abolila (Minia university, Egypt); Hesham Hamed (ElMinia University, Egypt); El-Sayed Hasaneen (El-Minia University, Egypt)  
pp. 220-223

***Digitally-Controlled Variable-Gain-Amplifier Based on Current Conveyor with Opamp and Inverters Only***

Fathi Farag (Zagazig University, Egypt); Yaser Khalaf (Zagazig University, Egypt)  
pp. 224-227

***Novel High Efficiency Low Ripple Charge Pump Using Variable Frequency Modulation***

Chen Mingyang (Zhejiang University, P.R. China); Xiaobo Wu (Zhejiang University, P.R. China); Menglian Zhao (Zhejiang University, P.R. China)  
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## Advances in Graphene and Carbon Nanotube Device and Wire Technologies

### **Large Area CVD Monolayer Graphene for Nanoelectronics: Device Performance and Analysis**

Osama Nayfeh (United States Army Research Laboratory, USA); Madan Dubey (United States Army Research Laboratory, USA)  
pp. 232-235

### **Modeling of Carrier Density and Quantum Capacitance in Graphene Nanoribbon FETs**

George S. Kliros (Hellenic Air-Force Academy, Greece)  
pp. 236-239

### **Scaling Issues for P-I-N Carbon Nanotube FETs: A Computational Study**

Mahmoud Ossaimee (Ain Shams University, Egypt); Salah El-Din Gamal (Ain Shams University, Egypt)  
pp. 240-243

### **Modeling of Electronic Transport in Metallic Carbon Nanotube Interconnects**

Vidur Parkash (Michigan Tech, USA); Ashok K Goel (Michigan Tech University, USA)  
pp. 244-247

### **Semiconductor Nanostructures in Crystalline Rare Earth Oxide for Nanoelectronic Device Applications**

Apurba Laha (Group Leader, Germany)  
pp. 248-251

### **A Novel Partially Insulated Schottky Source/Drain MOSFET: Short Channel and Self Heating Effects**

Ganesh Patil (, India); Shafi Qureshi (IITK, India)  
pp. 252-255

## Networks-on-Chip/System-on-Chip Design, Optimization and Validation

### Special Session

### **Asynchronous Switching for Low-Power Octagon Network-On-Chip**

Magdy A. El-Moursy (Mentor Graphics Corporation, Egypt); Heba A. Shawkey (Electronic Research Institute, Egypt)  
pp. 256-259

### **A Design Space Exploration Methodology for Allocating Task Precedence Graphs to Multi-core System Architectures**

Hassan Youness (Minia University, Egypt); Mohamed Hassan (Mentor, Egypt); Ashraf M Salem (Mentor Graphics Egypt, Egypt)  
pp. 260-263

### **Ecosystems for the Development of Multi-Core and Many-Core SoC Models**

Amr Wassal (Nile University, Egypt); Moataz A Abdelfattah (Nile University, USA); Yehea Ismail (Nile University, Egypt)  
pp. 264-267

### **3D/TSV Enabling Technologies for SOC/NOC: Modeling and Design Challenges**

Khaled Salah Mohamed (Mentor Graphics, Egypt); Alaa El Rouby (Cairo University, Egypt); Hani Ragai (Einshams university, Egypt); Yehea Ismail (Nile University, Egypt)  
pp. 268-271

### **SSMC: An On-Chip Source-Synchronous Multi-Cycle Interconnect Scheme**

Maged Ghoneima (Mobile R&D Group, USA); Yehea Ismail (Northwestern University, USA); Vivek De (Intel Corporation, USA); Muhammad Khellah (Intel Corporation, USA)  
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16:30 - 18:15

## Addressing Fault-Tolerance, Reliability and Robustness in Integrated Circuits

### **Built-In-Current-Sensor for Testing Short and Open Faults in CMOS Digital Circuits**

Rania Ahmed (Eng., Egypt); Ahmed G. Radwan (Cairo University, Egypt); Ahmed H. Madian



(Egyptian atomic energy authority, NCRRT, Egypt); Ahmed M Soliman (Cairo University, Egypt)  
pp. 276-279

***An Analysis of SEU Robustness of C-Element Structures Implemented in Bulk CMOS and SOI Technologies***

Ziyad AL Tarawneh (Newcastle University, United Kingdom); Gordon Russell (Newcastle University, United Kingdom); Alex Yakovlev (Newcastle University, United Kingdom)  
pp. 280-283

***On the Mathematical Modeling of Memristors***

Ahmed G. Radwan (Cairo University, Egypt); Mohammed Affan Zidan (KAUST, Saudi Arabia); Khaled N Salama (KAUST, Saudi Arabia)  
pp. 284-287

***Time Domain Oscillating Poles: Stability Redefined in Memristor Based Wien-oscillators***

Abdul Talukdar (King Abdullah University of Science and Technology, Saudi Arabia); Ahmed G. Radwan (Cairo University, Egypt); Khaled N Salama (KAUST, Saudi Arabia)  
pp. 288-291

## Modeling and Design with Emerging Devices

***Memristor Based STDP Learning Network for Position Detection***

Pinaki Mazumder (University of Michigan, USA)  
pp. 292-295

***Low-Standby Current 4T FinFET Buffers: Analysis and Evaluation Below 45 nm***

Davide Baccarin (University of Udine, Italy); David Esseni (University of Udine, Italy); Massimo Alioto (University of Siena, Italy)  
pp. 296-299

***Electron Mobility in Gate All Around Cylindrical Silicon Nanowires: A Monte Carlo Study***

Mahmoud Ossamee (Ain Shams University, Egypt); Mona El-Sabagh (Ain Shams University, Egypt); Dalia Selim (Faculty of Engineering, Ain Shams University, Egypt); Salah El-Din Gamal (Ain Shams University, Egypt)  
pp. 300-302

***Partial-Coupled Mode Space for Quantum Transport Simulation in Nanoscale Double-Gate MOSFETs***

Mohammed El-Banna (Ain-shams university, Egypt); Yasser Sabry (Ain-shams university, Egypt); Wael Fikry (Mentor Graphics, Egypt); Omar Omar (Ain-shams university, Egypt)  
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***A Single Electron Artificial Neural Network (ANN) Majority Logic Gate (MLG)***

Sameh Ebrahim Rehan (Mansoura University, Egypt)  
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## Crypto-Biometric Hardware

### Special Session

***An Improved Differential Pull-down Network Logic Configuration for DPA Resistant Circuits***

Javier Castro (University of Seville - CSIC, Spain); Pilar Parra (University of Seville - CSIC, Spain); Antonio Acosta (University of Seville - CSIC, Spain)  
pp. 311-314

***High Radix Implementation of Montgomery Multipliers with CSA***

Gashaw Teshome (Instituto de Microelectrónica de Sevilla, Spain); Carlos Jesús Jiménez (University of Seville / Instituto de Microelectrónica de Sevilla, Spain); Manuel Valencia (University of Seville / Instituto de Microelectrónica de Sevilla, Spain)  
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***Hardware Authentication Based on PUFs and SHA-3 2nd Round Candidates***

Susana Eiroa (National Center of Microelectronics IMSE-CNM-CSIC, Spain); Iluminada Baturone (University of Seville, Spain)  
pp. 319-322

***Microelectronics Implementation of Directional Image-based Fuzzy Templates for Fingerprints***

Rosario Arjona (University of Seville, Spain); Iluminada Baturone (University of Seville, Spain);

Santiago Sánchez-Solano (CNM-CSIC, Spain)  
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Wednesday, December 22

09:30 - 10:30

### Millimeter Scale Sensor Node Design using Low Voltage Operation

David Blaauw - Professor, University of Michigan - Ann Arbor

11:00 - 12:45

### Analog Techniques I

#### ***A Comparative Study of Low-Noise Amplifiers for Neural Applications***

Jesus Ruiz-Amaya (Institute of Microelectronics of Seville (IMSE-CNM-CSIC), Spain)  
pp. 327-330

#### ***Design Considerations for Analog Blocks in Mixed-Signal CMOS ICs***

Valentino Liberali (Università degli Studi di Milano, Italy); Gabriella Trucco (Università degli Studi di Milano, Italy)  
pp. 331-334

#### ***Impact of Technology Shrink on Audio CODEC Performance***

Amir Owzar (Test Engineer, Switzerland)  
pp. 335-338

#### ***Built-In Current Sensor for Testing Current Feedback Operational Amplifier***

Rania Ahmed (Eng., Egypt); Ahmed H. Madian (Egyptian atomic energy authority, NCRRT, Egypt);  
Ahmed G. Radwan (Cairo University, Egypt); Ahmed M Soliman (Cairo University, Egypt)  
pp. 339-342

#### ***A Low-Voltage CMOS Bandgap Reference Circuit with Improved Power Supply Rejection***

Ahmed Mohieldin (Cairo University, Egypt); Haidi Elbahr (Sysdsoft Inc., Egypt); Emad Hegazi (Ain Shams University, Egypt); Marwa Mostafa (Sysdsoft Inc., Egypt)  
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### CAD Tools

#### ***SplitPro: A Tool to Overcome SystemC Scheduling Inefficiencies***

Rafik Guindi (Nile University, Egypt); Youssef Naguib (Cairo University, Egypt)  
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#### ***Spicedim - A CAD Tool for Supporting Circuit Sizing of Analog CMOS Circuits***

Daniel Batas (Technische Universitaet Dortmund, Germany); Stefan Knaak (Integrated Systems Institute, Technische Universitaet Dortmund, Germany); Horst Fiedler (Technische Universitaet Dortmund, Germany)  
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#### ***Rapid Exploration of Power-Delay Tradeoffs Using Hybrid Priority Factor and Fuzzy Search***

Anirban Sengupta (Ruerson University, Canada); Reza Sedaghat (Ryerson University, Canada)  
pp. 355-358

#### ***Parallel TLM Simulation of MPSoC on SMP Workstations: Influence of Communication Locality***

Isaac Pessoa (Université Pierre et Marie Curie, France)  
pp. 359-362

#### ***A Hashing Mechanism for Rule-Based Decomposition in Double Patterning Photolithography***

Hoda Darwish (Cairo University, Egypt); Hoda Shagar (Cairo University, Egypt); Yasmine Badr (Cairo University, Egypt); Yasmine Arafa (Cairo University, Egypt); Amr Wassal (Nile University, Egypt)  
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## Advanced Memory Design

### **Comparison of Two SRAM Matrix Leakage Reduction Techniques in 45nm Technology**

Khawar Sarfraz (Lahore University of Management Sciences (LUMS), Pakistan)  
pp. 367-370

### **Process Variations in Sub-Threshold SRAM Cells in 65nm CMOS**

Farshad Moradi (University of Oslo, Norway); Dag Wisland (University of Oslo, Norway); Yngvar Berg (University of Oslo Norway, Norway); Snorre Aunet (University of Oslo Norway, Norway); Tuan Vu Cao (University of Oslo, Norway)  
pp. 371-374

### **A Multi-Megarad, Radiation Hardened by Design 512 Kbit SRAM in CMOS Technology**

Cristiano Calligaro (RedCat Devices srl, Italy); Valentino Liberali (Università degli Studi di Milano, Italy); Alberto Stabile (Università degli Studi di Milano, Italy); Marta Bagatin (Università degli Studi di Padova, Italy); Simone Gerardin (Università degli Studi di Padova, Italy); Alessandro Paccagnella (Università degli Studi di Padova, Italy)  
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### **A 1.5 GHz Robust SRAM Array Optimized for Cell Area**

Saeed Kharouf (American University of Beirut, USA); Lama Chatila (American University of Beirut, Lebanon); Mohammad M. Mansour (American University of Beirut, Lebanon); Ali Chehab (American University of Beirut, Lebanon)  
pp. 379-382

### **Effective Screening for NBTI Effect on SRAM-based Memory**

Baker Mohammad (Qualcomm Incorporated, USA); Percy Dadabhoy (Qualcomm Incorporated, USA)  
pp. 383-386

### **On the Design of Low-Power Cache Memories for Homogeneous Multi-Core Processors**

Abu S Asaduzzaman (Wichita State University, USA); Manira Rani (Florida Atlantic University, USA); Fadi Sibai (UAE University, UAE)  
pp. 387-390

14:30 - 16:15

## VLSI Systems Design

### **Systolic-Array Based Regularized QR-Decomposition for IEEE 802.11n Compliant Soft-MMSE Detection**

Christian Senning (ETH Zurich, Switzerland); Andreas Burg (ETHZ, Switzerland)  
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### **Implementation of Optimized Triple-Mode Digital Down Converter for WCDMA, CDMA2000 and GSM of SDR**

Emad Samuel Malki (Russian University, Egypt); Khaled Ali Shehata (Arab Academy for Science and Technology, Egypt)  
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### **A Novel SAR Fast-Locking Digital PLL: Behavioral Modeling and Simulations Using VHDL-AMS**

Mahmoud Wagdy (CSULB, USA); Anurag Nannaka (California State university, Long Beach, USA)  
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### **A New Datapath-oriented Tree-based FPGA Architecture**

Umer Farooq (LIP6, France)  
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### **Experimental Implementation of 2ODPA Attacks on AES Design with Flash-Based FPGA Technology**

Najeh Masmoudi Kamoun (High school of telecom in Tunis SUP'COM, Tunisia); Lilian Bossuet (University of Bordeaux, France); Adel Ghazel (SUPCOM, Tunisia)  
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## Innovative Design and Analysis Techniques for DSM Technology II

### **Implementation of a Colorimetric Algorithm for Portable Blood Gas Analysis**

Jaideep Chandran (Victoria University, Australia); Alex Stojcevski (Swinburne University of Technology, Australia); Aladin Zayegh (Victoria University, Australia); Thinh Nguyen (Victoria University, Australia)  
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### **A Synchronizer Design Based on Wagging**

Mohammed Alshaikh (Newcastle University, United Kingdom); David Kinniment (Newcastle University, United Kingdom); Alex Yakovlev (Newcastle University, United Kingdom)  
pp. 415-418

### **An Automated SAT Encoding-Verification Approach for Efficient Model Checking**

Khaza Anuarul Hoque (Concordia University, Canada); Otmame Mohamed (Concordia University, Canada); Sa'ed Abed (The Hashemite University, Jordan); Mounir Boukadoum (Université du Québec à Montréal, Canada)  
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### **Hardware Implementation of DES Using Pipelining Concept with Time-Variable Key**

Karim Moussa Ali (Minia university, Egypt); Hesham Hamed (ElMinia University, Egypt)  
pp. 423-426

### **A Novel N-bit SAR Implementation for All-Digital DLL Circuits**

Al-Hussein El-Shafie (/ Cairo University, Egypt); Serag E. -D Habib (Cairo University, Egypt)  
pp. 427-430

### **Towards Design of a Bridge to Enable High Speed Image Sensors for Random Access**

Tareq Hasan Khan (University of Saskatchewan, Canada); Khan A Wahid (University of Saskatchewan, Canada)  
pp. 431-434

## Processor Design

### Special Session

### **CUSPARC IP Processor: Design, Characterization and Applications**

Ezz El-Din O. Hussein (Cairo University, Egypt); Shoukry I. Shams (German University in Cairo, Egypt); Mohammed I Ali (Cairo University, Egypt); Amr Suleiman (Cairo University, Egypt); Khaled ElWazeer (University of Maryland College Park, Egypt); Ehab A. Sobhy (Cairo University, Egypt); Ahmad Atef Ibrahim (Cairo University, Egypt); Ahmed Gamal Ibrahim (Cairo University, Egypt); Muhammad S Khairy (University of California, Irvine, USA); Mohamed F. Fouda (Cairo University, Egypt); Al-Hussein El-Shafie (/ Cairo University, Egypt); Ahmed H. Hareedy (Cairo University, Egypt); ElSayed A. Ahmed (University of California, Irvine, USA); Ahmed Ragab Zakaria (Cairo University, Egypt); Khalid El-Galaïnd (Cairo University, Egypt); Amr El Sherief (Cairo University, Egypt); Serag E. -D Habib (Cairo University, Egypt)  
pp. 435-438

### **ASIC Implementation of Cairo University SPARC "CUSPARC" Embedded Processor**

Amr Suleiman (Cairo University, Egypt); Alhassan F. Khedr (Cairo University, Egypt); Serag E. -D Habib (Cairo University, Egypt)  
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### **Decimal Floating Point for Future Processors**

Hossam A. H. Fahmy (Cairo University, Egypt); Tarek Eldeeb (SilMinds, LLC, Egypt); Mahmoud Hassan (Ain Shams University, Egypt); Yasmin Farouk (SilMinds, Egypt); Ramy Eissa (Cairo University, Egypt)  
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### **Scalability Investigation of Mat-Core Processor**

Mostafa Soliman (Aswan South Valley University, Egypt); Abdulmajid Al-Junaid (Assiut university, Egypt)  
pp. 447-450

## VLSI Systems and Applications

### **Scanned-Array Audio Beamforming Using 2nd- and 3rd-Order 2D IIR Beam Filters on FPGA**

Nuwan Ganganath (University of Moratuwa, Sri Lanka); Gayan Attanayake (University of Moratuwa, Sri Lanka); Thilina Yapa Bandara (University of Moratuwa, Sri Lanka); Prabhath Ilankoon (University of Moratuwa, Sri Lanka); Ranga Rodrigo (University of Moratuwa, Sri Lanka); Arjuna Madanayake (University of Akron, USA); Leonard T. Bruton (University of Calgary, Canada)  
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### **A Reconfigurable Architecture for Real-Time Vision Systems on FPGA**

Ahmed Elhossini (University of Guelph, Canada); Medhat Moussa (University of Guelph, Canada)  
pp. 455-458

### **Pipelined Architecture for Discrete Wavelet Transform Implementation on FPGA**

Mohammed Bahoura (University of Quebec at Rimouski, Canada); Ezzadi Hassan (Université du Québec à Chicoutimi, Canada)  
pp. 459-462

### **Hardware Realization of DC Embedding Video Watermarking Technique Based on FPGA**

Wessam Elaraby (Eng., Egypt); Ahmed H. Madian (Egyptian atomic energy authority, NCRRT, Egypt); Mahmoud Ashour (, Egypt); Abdel M. Wahdan (, Egypt)  
pp. 463-466

### **OpenCV Compatible Real Time Processor for Background Foreground Identification**

Mariangela Genovese (University of Naples "Federico II", Italy); Ettore Napodi (University of Naples "Federico II", Italy); Nicola Petra (University of Naples "Federico II", Italy)  
pp. 467-470

### **Optimization of Recursive Sorting Algorithms for Implementation in Hardware**

Dmitri Mihhailov (Tallinn University of Technology, Estonia); Valery Sklyarov (University of Aveiro, Portugal); Iouliia Skliarova (University of Aveiro, Portugal); Alexander Sudnitson (, Estonia)  
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## System Design Methodologies II

### **An Efficient Scheduling Methodology for Heterogeneous Multi-core Processor Systems**

Ahmed Elhossini (University of Guelph, Canada); John Huissman (University of Guelph, Canada); Basil Debowski (School of Engineering University of Guelph Canada, Canada); Shawki Areibi (University of Guelph, Canada); Robert D. Dony (University of Guelph, Canada)  
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### **Towards an Automated Framework for Task Scheduling**

Martin Dubois (Université du Québec à Montréal, Canada); Mounir Boukadoum (Université du Québec à Montréal, Canada)  
pp. 479-482

### **SystemC-AMS Modeling of a PCR-CE Lab-on-Chip for Multithreaded DNA Analysis**

Amr Habib (UPMC/LIP6, France); Francois Pecheux (University of Pierre and Marie Curie, France); Marie-Minerve Louerat (UPMC/LIP6, France)  
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### **Multi-objective Network-on-Chip Synthesis with Transaction Level Simulation**

Xinyu Li (ENSTA ParisTech, France); Omar Hammami (ENSTA, France)  
pp. 487-490

### **Voltage-Mode Balanced-Outputs Quadrature Oscillator Using FB-VDBAs**

Josef Bajer (University of Defence Brno, Czech Republic); Dalibor Bielek (Brno University of Technology, Czech Republic); Viera Bidkova (Brno University of Technology, Czech Republic); Zdenek Kolka (Brno University of Technology, Czech Republic)  
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## Device Modeling

### **Analytical Modeling and Simulation Studies of High Voltage Super-junction Drift Layer for Power MOSFET**

Pravin Kondekar (PDPM IIIT DM Jabalpur, India)

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***A Modified PSPICE Model for the Power PIN Diode***

Ahmed Shaker (Ain Shams University, Cairo, Egypt); Abdelhaliem Zekry (Ain Shams University, Egypt)

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***Parametric Reduction of Jacobian Matrix for Fault Analysis***

Zdenek Kolka (Brno University of Technology, Czech Republic); Dalibor Bielek (Brno University of Technology, Czech Republic); Viera Biolkova (Brno University of Technology, Czech Republic); Zdenek Kincl (Brno University of Technology, Czech Republic)

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***An Accurate Large-signal SPICE Model for Resonant Tunneling Diode***

Sherif Fathi Nafea (Suez Canal University, Egypt); Ahmed Dessouki (, Egypt)

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***Modeling of GaN MESFETs At High Temperature***

B. N. Shashikala (Visvesvaraya Technological University, India); B. S. Nagabhushana (SAN Lab, Info Tech Pvt. Ltd., India)

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**18:15 - 18:30**

**Closing Remarks**