

The 23rd International Conference on Microelectronics

19 – 22 December , 2011

Yasmine Hammamet, Tunisia

General Co-Chairs

Mohamed Abid (CES/ENIS, Tunisia) **Mohamad Sawan** (EPM, Montreal, Canada)

Tech. Prog. co-Chairs

Mourad Loulou (Tunisia)
Sofiene Tahar (Canada)

Special Sessions co-Chairs

Mohamed Masmoudi (Tunisia)
Mohammad Mansour (Lebanon)
Maher Kayal (Switzerland)

Panels co-Chairs

Kamel Besbes (Tunisia)
Hichem Belhaj (USA)

Publicity co-Chairs

Abdellatif Mtibaa (Tunisia)
Nasser Masoumi (Iran)
Jamal Habibullah (Pakistan)

Web Chair

Yessine Hadj Kacem (Tunisia)

Finance Chair

Mouna Baklouti (Tunisia)

Honorary chair

Mohamed Elmasry
(University of Waterloo, Canada)

Plenary Talk co-Chairs

Ahmed Amiri (Tunisia)
Smail Niar (France)

Tutorials co-Chairs

Nouri Masmoudi (Tunisia)
Fadhel Ghannouchi (Canada)
Mohab Anis (Egypt)

Industry Liaison co-Chairs

Adel Ghazal (Tunisia)
Abdelfattah Obeid (KSA)

Publication co-Chairs

Yassine Aydi (Tunisia)
Ali Assi (UAE)

International Coordinators

Rached Tourki (Tunisia)
Zhihua Wang (China)
Angel Rodrigues Vazquez (Spain)
Mohammed Ismail (USA)
Ricardo Reis (Brazil)

Local arrangement Chair

Adel Mahfoudhi (Tunisia)



The 23rd International Conference on Microelectronics

Conference Program

Monday 19th of December

09:00 -	Registration	
13:30 - 18:00	Tutorial 1: RFID Technology: A methodology of evaluating its impact through modelling and simulation	
	Speakers: Habib Hamam Professor - Univ. of Moncton, Canada	Abderrazak Hachani Professor - ESPRIT, Tunisia
13:30 - 18:00	Tutorial 2: Current-Mode Analog Processing: Circuits Design and Applications	
	Speakers: Hervé Barthélemy Professor - IM2NP, Univ. of Sud Toulon Var, France	Stéphane Meilleire Professor - IM2NP, Ecole Polytechnique Universitaire de Marseille, France
13:30 - 18:00	Tutorial 3: HEVC/H.265	
	Speakers: Mohamed Ali Ben Ayed Associate Professor - Sfax High Institute of Electronics and Communication, Univ. of Sfax, Tunisia	Faouzi Kossentini President & CEO of eBrisk Video Inc, Tunisia

Tuesday, 20th of December

08:00 - 09:00	Registration
09:00 - 09:30	Conference Opening
09:30 - 10:30	Keynote 1
	Chair: Sofiène Tahar - Univ. of Concordia, Montreal, Canada Title: The Growth of the Microelectronics Industry and its Contribution to Economic and Intellectual Transformation – The Case of Malaysia and Far-East Countries Keynote speaker: Machkuri Yaacob University: President - Univ. of UNITEN, Malaysia
10:30 - 11:00	Coffee Break
11:00 - 13:00	A1 – B1 – C1

A1: Analog Circuits	B1: NoC & SoC Architectures	C1: Devices Modeling and Characterization I
Chair: Hervé Barthélemy - IM2NP, Univ. of Sud Toulon Var, France <ul style="list-style-type: none"> An analytical model of the oscillation period for tri-state inverter based DCO Mehdi Terosiet, Sylvain Feruglio, Patrick Garda UPMC Univ. of Paris 06, LIP6, France A PWM Controller with Table Look-up for DC-DC Class E Buck/Boost Conversion Steve Hung-Lung Tu, Hsin-Wei Yeh, Fu Jen Univ. of Catholic, Taiwan A Phase-Locked Loop with Multi-State PFD and Phase Compensation Techniques Feng-Lin Chiu, Steve Hung-Lung Tu, Fu Jen Univ. of Catholic, Taiwan Butterworth Passive Filter in the Fractional - Order Soltan, A. G. Radwan, A. M. Soliman, Univ. of Fayoum / Univ. of Cairo, Egypt Tunable Second Order Bi-quad Filter using Current Conveyor based FPAA Eman A. Soliman, Soliman A. Mahmoud, Ahmed Soliman Univ. of Sharjah, UAE / Cairo Univ., Egypt Fourth Order Filter Structures Using Operational Trans-resistance Amplifiers Nabil I. Khachab, Sara M. Naeim Univ. of Kuwait, Kuwait 	Chair: Zied Marrakchi - FlexRAS, LIP6, France <ul style="list-style-type: none"> A New Pipelined Network Interface for Network on Chip with latency and jitter optimization B. Attia, W. Chouchene, N. Abidd, A. Zitouni, K. Torki, R. Tourki FSM, Tunisia / CMP-Grenoble, France Toward all optical interconnections in chip multiprocessor M.Channoufi, P.Lecoy, R.Attia, B.Delacressonniere EPT, Tunisia / ENSEA-Paris, CRISMATNXP Semiconductors, France Design and Performance evaluation of on chip network with Transaction Level Modeling Nourddine Abid, Chouchene Wissem, Brahim Attia, Abdelrim Zitouni, Rached Tourki FSM, Tunisia Area/Delay Driven NoC Synthesis Abir M'zah, Omar Hammami Ensta ParisTech, France Towards Dynamic Cache Block Placement for Multi-processor NUCA Mohamed Salah Souahi, Smail Niar, Mohamed Zahran, Mohamed Ben Mohamed Univ. of Tebessa, Algeria / Univ. of Valenciennes, France / Poytechnic Institute of NewYork, USA / Univ. of Constantine, Algeria Online First Fit Algorithm for Modeling the Problem of Configurable Cache Architecture Asmaa Bengueddach, Smail Niar Univ. of Oran, EsSenia Algeria / Univ. of Valenciennes, France Hardware Task Placement in Operating Systems for Dynamically Reconfigurable SoC Adnen Albouchi, Bouraoui Ouni, Abdellatif Mtibaa FSM, National Engineering School of Sousse, Tunisia 	Chair: Stéphane Meilleire - IM2NP, Ecole Polytechnique Univ. Of Marseille, France <ul style="list-style-type: none"> Extrinsic Extraction Procedure for a Small-Signal GAN-HEMT Model M. Laredj, L. Degachi, A. Birafane, T. Wu, A.B. Kouki, D. Gratton, F.M. Ghannouchi ETS Montreal / Canadian Space Agency / Univ. of Calgary, Canada A scheme for measuring and extracting Level-1 parameters of FET Device applied toward POSFET sensors array Arun Kumar Sinha, Maurizio Valle Univ. of Genova, Italia Interest of surface treatment at gate oxide level for power MOSFETs quality and reliability Emilie Pomès, Jean-Michel Reynès, Patrick Tounsi, Jean-Marie Dorkel CNRS ; LAAS, Freescale Semiconductor SAS, France Synchronization of Two RCL Shunted Josephson junctions Mohamed Zribi, Nabil Khachab, Moneera Boufarsan Univ. of Kuwait, Kuwait Retargetable Multi-level Debugging in HW/SW Codesign Jakub Křoustek, Zdeněk Příkryl, Dušan Kolář, Tomáš Hruška Univ. of Brno Technology, Czech Republic TSV Model Linearization Khaled Mohamed, Alaa El-Rouby, Yehea Ismail, Hani Ragai

13:00 - 14:30	Lunch	
14:30 - 16:30	A2 – B2 – C2	
A2: RF Circuits and MEMS	B2: Digital Circuits	C2: Nanoelectronics
Chair: Brahim Mezghani - ENIS, Tunisia <ul style="list-style-type: none"> From 2D to 3D FEM simulations of a CMOS MEMS convective accelerometer B. Mezghani, A. Brahim, F. Tounsi, M. Masmoudi, A.A. Rekik, P. Nouet ENIS, Tunisia / Univ. of Montpellier 2, France 	Chair: Smail Niar - Univ. of Valenciennes, France <ul style="list-style-type: none"> The Effect of Numerical Techniques on Differential Equation Based Chaotic Generators M. Affan Zidan, A. G. Radwan, K. N. Salama Univ. of Cairo, Egypt / KAUST, KSA 	Chair: Hassene Mnif – ISECS, Tunisia <ul style="list-style-type: none"> An Approach to realize High Value Resistance using PMOS Device at Weak Inversion for POSFET sensor Arun Kumar Sinha, Maurizio Valle Univ. of Genova, Italy

- **A 5 V MEMS Gyroscope with 3 aF/deg/s Sensitivity, 0.6 deg/(hr^{0.5}) Mechanical Noise and Drive-Sense Crosstalk Minimization**

Mohannad Elsayed, Frederic Nabki, Mohamad Sawan, Mourad El-Gamal
Univ. of McGill, EPM, Canada

- **Power Gating of VLSI Circuits Using MEMS Switches in Low Power Applications**

Hosam Shobak, Mohamed Ghoneim, Nawal El Boghdady, Sarah Halawa, Sophinese Iskander, Mohab Anis
AUC, Cairo, Egypt

- **Design of a Low-Power 1.5-Stage Current Reuse RF Front-End for GPS Band**

Hossein Jalili, Ali Fotowat-Ahmady
Univ. of Sharif, Iran

- **Calibration of Output-Match and its Center Frequency for an Inductively Degenerated Low Noise Amplifier**

Sami Mahersi, Hassene Mnif, Mourad Loulou
LETI-ENIS, Univ. of Sfax, Tunisia

- **A Dual Band Wireless Power and DPSK Data Telemetry for Biomedical Implants**

Aymen Ghenim, Dhouha Daoud, Mohamed Ghorbel, Ahmed Ben Hamida, Jean Tomas
LETI-ENIS, Tunisia / IMS, Univ. of Bordeaux , France

16:30 - 17:00

Coffee Break

17:00 - 18:40

A3 - B3

A3: Special Session 1 > Reliability of System on Chip

Chairs: Bertrand Granado - Univ. of Cergy Pointoise, France
Fakhreddine Ghaffari - Univ. of Cergy Pointoise, France

- **Low Cost Test for Catastrophic Faults in CMOS Operational Transconductor**

Mahmoud M. Fouad, Hassanein H. Amer, Ahmed H. Madian, M. B. AbdelHalim
Univ. of Cairo / AUC / EAEA / AASTMT, Egypt

- **Error Flatten Logarithm Approximation for 3D Graphics**

Mengyao Zhu
Univ. of Shanghai, China

- **A New Efficient Self-Checking Hsiao SECDED Memory Error Correcting Code**

Fradi Aymen, Belgacem Hamdi, Chiraz Khedhiri
ISSAT, Sousse / EML, Monastir, Tunisia

- **Analog Fault Diagnosis by Inverse Problem Technique**

R. F. Ahmed, A. G. Radwan, A. H. Madian, A. M. Soliman
Univ. of Fayoum / Univ. of Cairo / EAEA, Egypt

B3: Devices Modeling and characterization II

Chair: Ahmed Fakhfakh - ISECS, Tunisia

- **A Genetic Neural Network Modeling of GaN HEMTs for RF Power Amplifiers Design**

Anwar Jarndal, Swaroop Pillai, Hussein Abdulqader, Fadhel M. Ghannouchi
Univ. of Nizwa, Oman / Univ. of Calgary, Canada

- **State Space Modeling of Memristor-Based Wien Oscillator**

Talukdar, A. G. Radwan, K. N. Salama
Univ. of KAUST, KSA / Univ. of Cairo, Egypt

- **Two Port Network Analysis for three impedance based Oscillators**

Lobna A. Said, A. G. Radwan , A. H. Madian, A. M. Soliman
Univ. of German in Cairo, Univ. of Cairo / Egyptian Atomic Energy Authority, Egypt

- **Performance Improvement of Global Interconnects Using Combined Techniques of Low Swing Transceiver and Buffer Insertion in Nano Technologies**

Zohreh Farjad, Nasser Masoumi
Univ. of Kerman Graduated Technology / Univ. of Tehran, Iran

- **Memristor: Modeling Read and Write Operations**

Dirar Homouz, Baker Mohammad, Hazem Elgabra, Ilyas Farahat
Univ. of Khalifa,UAE

Wednesday, 21st of December

08:00 - 08:30

Registration

08:30 - 09:30

Keynote 2

Chair: Mohamed Sawan - Polytechnique Montréal, Canada

Title: "Self-Healing" Design of RF and mm-Wave ICs

Keynote speaker: Mohammed Ismail El-Naggar

University: The Analog VLSI Lab-The Ohio State University, USA

09:30 - 11:10

A4 - B4 - C4

A4: Special Session 2 > RFID Technology and Applications

Chairs: Habib Hamam - Univ. of Moncton, Canada

Abderazek Hachani - ESPRIT, Tunisia

- **A Parking Management System Using Wireless Sensor Networks**

Rachid Souissi, Omar Cheikhrouhou, Ines Kammoun, Mohamed Abid
CES-ENIS, Tunisia

- **An intelligent RFID Checkout for Stores**

M.A. Besbes, H. Hamam,
Univ. of Moncton, NB, Canada

- **RFID Estimation Functions overview**

A. Hachani
ESPRIT, Tunisia

- **RFID overview**

Fennani, H. Hamam, and A.O. Dahmane
Univ. of Québec à Trois Rivières / Univ. of Moncton, Canada

- **A Microstrip Tag Antenna for RFID Applications in Health Care**

Mehdi Si Moussa, and Ammar B. kouki
LACIME, ETS, Montreal, Canada

B4: VLSI Architectures for Multimedia Applications

Chair: Bertrand Granado - Univ. of Cergy Pointoise, France

- **Hardware compression solution based on HWT for low power image transmission in WSN**

Ahmed Chefi, Adel oudani, Gilles Sicard
FSM, Tunisia / College of Info. Tech., Sultanate of Oman / TIMA, France

- **Software Application for Interactive Video Multi-Screen**

Mhamed Frad, Asma Chaouch, Lamjed Touil, Abdellatif Mtibaa
FSM, Tunisia

- **Hardware Realization of Chaos Based Block Cipher for Image Encryption**

Mohamed L. Barakat, Ahmed G. Radwan, Khaled N. Salama
Univ. of King Abdullah, KSA

- **An Efficient Hardware Implementation of Diamond Search Motion Estimation Based on CAL Dataflow Language**

Wajdi Elhamzi, Julien Dubois, Mohamed Atri, Richard Thavot, Jérôme Gorin, Johel Miteran, Rached Tourki
FSM, Tunisia / LE2I, Univ. of Burgundy, IT SudParis, France / EPFL, Switzerland

- **Improved Masek approach for iris localization**

Walid Aydi, Nouri Masmoudi, Lotfi kamoun
ENIS, Tunisia

- **Performance analysis and evaluation of Xenomai with H.264/AVC decoder**

M. Kthiri, P. Kadionik, A. Ben Atitallah, B. Le Gal, H. Lévi
IMS lab.- ENSEIRB-MATMECA, Univ. of Bordeaux I / Univ. of Sfax, High Institute of Electronics and Communication, Tunisia

- **Straightforward Approximation of Bandstop Transmission Function Synthesized as the Reflection Function of Bandpass Wave Digital Ladder Structure**

M. Yaseen
Univ. of Assiut, Egypt

C4: IEEE TN CEDA's ENG-OPTIM'Contest 2011

Chairs: Mourad Fakhfakh - LETI-ENIS, Tunisia
Mourad Loulou - LETI-ENIS, Tunisia

- **Coupling PZMI, Neural Network and Genetic Algorithms to solve EMC problems**

J. Ben Hadj Slama, S. Saidi
SAGE-ENISo, University of Sousse, Tunisia

- **Comparison between PSO and ACO Techniques for Analog Circuit Performance Optimization**

M. Kotti, B. Benhala, M. Fakhfakh, A. Ahaitouf, B. Benlahbib, M. Loulou, A. Mecheqrane

LETI-ENIS, Univ. of Sfax, Tunisia / FST, Univ. of Sidi Mohamed Ben Abdellah, Fes, Morocco

- **A model driven based CAD tool for mppSoC design**

M.Ammar, M.Baklouti, M.Abid
CES-ENIS, Univ. of Sfax, Tunisia

- **Multi-Objective Simulation-Based Optimization for the Optimal Design of Analog Circuits**

Sallem, M. Fakhfakh, E. Tlelo-Cuautle, M. Loulou
LETI-ENIS, Univ. of Sfax, Tunisia / INAOE, Mexico

11:10 - 11:30

Coffee Break

A5: Wireless Systems and RF Circuits

Chair: Habib Hamam - Univ. of Moncton, Canada

- **Towards Time-Quantized Random Sampling for Multistandard Receiver Baseband Stage**
A. Maalej, M. Ben-Romdhane, C. Rebai, A. Ghazel, P. Desgreys, P. Loumeau
SUP'COM, Tunisia / TELECOM ParisTech, France
- **Fast and Accurate Behavioural Simulation of Fractional-N Frequency Synthesizer for the Optimization of the Lock time**
S. Sahnoun, A. Fakhfakh, N. Masmoudi, H. Levi
LETI-ENIS, Tunisia / IMS, Univ. Bordeaux, France
- **Frequency Planning For Multi-frequency Sub-sampling Receiver and Its Application for UMTS/WLAN and GNSS Receivers**
Amr Attaby, Khaled M. Sharaf, M.Marzouk Ibrahim
Univ. of Ain Shams, Egypt
- **The Fourth Generation 3GPP LTE Identification for Cognitive Radio**
Nouha Alyaoui, Abdennaceur Kachouri, Mounir -Samet
LETI-ENIS, Tunisia
- **Fuzzy Logic Control for Automatic Impedance Matching**
Arroyo Huerta José E., Diaz Méndez A., Ramirez Cortés J. M., Magana Mario E.
National Institute of Astrophysics, Optics and Electronics, Mexico / School of Electrical Engineering and Computer Science, USA
- **RF Subsampling GNSS Receiver: Potential Advantages and Feasibility Study**
Rim Barrak, Imen Labidi, Adel Ghazel, Muriel Muller, Nel Samama
SUP'COM, Univ of Carthage, Tunisia / Telecom SudParis, France

13:30 - 15:00

Lunch

15:00 - 22:00

Social events & Dinner

B5: CAD for VLSI

Chair: Omar Hammami - Ensta ParisTech, France

- **A New Hardware Abstraction-Based Framework to Cope with Analog Design Challenges**
Sabeur Lafi, Ammar Kouki, Jean Belzile
ETS-Montreal, Canada
- **Congestion driven placement for mesh-based FPGA architecture with local interconnect**
Zied Marrakchi, Mariem Turki, Habib Mehrez, Mohamed Abid
FlexRAS, LIP6, CEA, France / CES, Tunisia
- **Power Gradient Based Design Space Exploration in High Level Synthesis for DSP Kernels**
Pallabi Sarkar, Reza Sedaghat, Anirban Sengupta
Ryerson Univ., Toronto, Canada
- **A Methodology for Modeling Embedded Processors for Architecture Exploration**
Ahmed Elhossini, Shawki Areibi, Robert Dony
Univ. of Guelph, School of Engineering, Canada
- **Formal Verification of Time-Triggered Ethernet Protocol using PRISM Model Checker**
Marwan Ammar, Otmame Ait Mohamed
Univ. of Concordia, Canada
- **Performance Analysis of Constraint Solvers for Coverage Directed Test Generation**
M.P Jomu George, O. Ait Mohamed
Univ. of Concordia, Canada

C5: TN-CAS Chapter student contestChairs: Hassene Mnif - ISECS, Tunisia
Mourad Loulou - LETI-ENIS, Tunisia

- **Wavelet Transform based strategy for Cochlear Implant in Real Time Implementation**
Amira Derbel, Mohamed Ghorbel, Mounir Samet and Ahmed Ben Hamida
ATMS, Univ. of Sfax, Tunisia
- **An Improved MOS Charge Pump circuit for Low Voltage Operations and wireless sensor applications**
Rahma Aloulou, Hassene Mnif, Frederic Alicalapa, Mourad Loulou
LETI, Univ. of Sfax, Tunisia/ Univ. of La Reunion
- **A CMOS 0.35µm, 1.5V Multi-band RF Q-enhanced LC Band-pass filter**
Ayman Ben Hammadi, Mongia Mhiri, Kamel Besbes
FSM, Tunisia
- **Architectural Design of Multi-Mode ΣΔ ADC Based on Pole Placement Method for WiMAX Receiver**
Jihene Mallek, Hassene Mnif, Mourad Loulou
LETI-ENIS, Univ. of Sfax, Tunisia
- **A Wireless Data and Power Recovery for Biomedical Microsystems Implants**
Dhouha Daoud, Mohamed Ghorbel, Jean Tomas and Ahmed Ben Hamida
ATMS, Univ. of Sfax, Tunisia / IMS, Univ. of Bordeaux 1, France
- **Design and Implementation of an active inductor based LC oscillator**
Imen Ghorbel, Wenseslas Rahajandraibe, Hassene Mnif, Mourad Loulou and Hervé Barthelemy
LETI, Univ. of Sfax, Tunisia / IM2NP, Marseille, France

Thursday, 22nd of December

08:00 - 08:30

Registration

08:30 - 09:30

Keynote 3

Chair: Smail Niar - Univ. of Valenciennes, France

Title: The Cross-Layer Multi-Dimensional Design Space of Power, Reliability, Temperature and Voltage in Highly Scaled Geometries

Keynote speaker: Fadi J Kurdahi

University: Univ. of California Irvine, USA

09:30 - 11:10

A6 - B6

A6: Special Session 3 > Distributed Information Processing in WSNs

Chair: Hichem Snoussi - Univ. of technology of Troyes, France

- **Energy conservation for image transmission scheme in wireless sensor networks**
Mohsen Nasri, Abdelhamid Helali, Halim Sghaier, Hassen Maaref
FSM / ISIMM, Tunisia
- **Experimental study of compressed images transmission through WSN**
Oussama Ghorbel, Issam Jabri, Walid Ayedi, Mohamed Abid
CES-ENIS, Tunisia
- **An ID-based User Authentication Scheme for Wireless Sensor Networks using ECC**
Amira Mnif, Omar Cheikhrouhou, Maher Ben Jemaa
CES-ENIS / REDCAD-ENIS, Tunisia
- **Multi-objective optimization in wireless sensors networks**
Matthieu Le Berre, Faicel Hnaïen, Hichem Snoussi
Univ. of technology of Troyes, France
- **Diverse Synchronization issues in Wireless Sensor Networks**
Salim el khediri, Abdennaceur Kachouri
ENIS, Univ. of Sfax, Tunisia

11:10 - 11:30

Coffee Break

11:30 - 13:00

Round Table

13:00 - 13:10

Conference Closing

13:10 - 14:30

Lunch

B6: VLSI Architectures

Chair: Abdellatif Mtibaa - ENIM, Tunisia

- **A Masked Correlated Power Noise Generator use as a Second Order DPA Countermeasure to Secure Hardware AES Cipher**
Najeh Kamoun, Lilian Bossuet, Adel Ghazel
SUP'COM, Univ. of Carthage, Tunisia / Univ. of Lyon, France
- **Design and implementation of Direct Torque Control of Induction Machine on FPGA**
Soufien Gdaim, Abdellatif Mtibaa, Mohamed Faouzi Mimouni
FSM, Tunisia
- **A Quality of Service Network on Chip based on a New Priority Arbitration mechanism**
Chouchene wissem, Brahim Attia, Abid Nouredine, Abdelkrim Zitouni, Rached Tourki
FSM, Tunisia / France
- **ASIP Design of a Reconfigurable Channel Estimator for OFDM systems**
Medhat Hamdy, Omar A. Nasr, Ahmed F. Shalash
Univ. of Cairo, Egypt
- **Transistor Level Optimization of Sub-Pipelined AES Design in CMOS 65nm**
Abdallah Alma'aitah, Zine-Eddine Abid
Univ. of Queen's Kingston, Canada / HCT-ADMC, UAE

