2013 IEEE 11th International New Circuits and Systems Conference

(NEWCAS 2013)

Paris, France
16-19 June 2013
Technical Program

Monday, June 17th

Analog Circuits & Systems Design I Session

Analytical Comparison Between Passive Loop Filter Topologies for Frequency Synthesizer PLLs 1
O. Abdelfattah, I. Shih, G. Roberts
McGill University, Canada

Nested Hysteretic Current-Mode Single-Inductor Multiple-Output (SIMO) Boosting Buck Converter 5
C. Solis, G. Rincón-Mora
Georgia Institute of Technology, United States

R. Grezaud, J. Willemin
CEA-Leti, France

Analog Encoded Neural Network for Power Management in MPSoC 13
B. Larras[2], B. Boguslawski[1], C. Lahuec[2], M. Arzel[2], F. Seguin[2], F. Heitzmann[1]
{1}CEA-Leti, France; {2}Télécom Bretagne, France

Tunable CMOS Delay Gate with Reduced Impact of Fabrication Mismatch on Timing Parameters 17
P. Mroszczyk, P. Dudek
University of Manchester, United Kingdom

Digital Circuits I Session

Standard CMOS Voltage-Mode QLUT Using a Clock Boosting Technique 21
D. Brito, J. Fernandes, P. Flores, J. Monteiro
INESC-ID / Instituto Superior Técnico - TU Lisbon, Portugal

Synchronous Full-Adder Based on Complementary Resistive Switching Memory Cells 25
Y. Zhang[2], E. Deng[2], J. Klein[2], D. Querlioz[2], D. Ravelosona[2], C. Chappert[2], W. Zhao[2], M. Moreau[1], J. Portal[1], M. Bocquet[1], H. Aziza[1], D. Deleruyelle[1], C. Muller[1]
{1}Aix Marseille Université, France; {2}Université Paris-Sud, France

Design Methodology of an ASIC TRNG Based on an Open-Loop Delay Chain 29
M. Ben-Romdhane, T. Graba, J. Danger, Y. Mathieu
Télécom ParisTech, France
Evaluation of Fault-Tolerant Composite Field AES S-Boxes Under Multiple Transient Faults 33
T. An, L. Alves de Barros Naviner, P. Matherat
Télécom ParisTech, France

Selective Hardening Against Multiple Faults Employing a Net-Based Reliability Analysis 37
S. Pagliarini, L. de B. Naviner, J. Naviner
Télécom ParisTech, France

SPECIAL SESSION: Biomedical Circuits & Systems Session

Short Range Remote Powering of Implanted Electronics for Freely Moving Animals 41
E. Kilinc[1], M. Ghanad[1], F. Maloberti[2], C. Dehollain[1]
{1}École Polytechnique Fédérale de Lausanne, Switzerland; {2}Università degli Studi di Pavia, Italy

Wireless Telemetry System for Implantable Cardiac Monitoring in Small Animal Subjects Using Pressure- Volume Sensors 45
K. Fricke, A. Dounavis, R. Sobot
University of Western Ontario, Canada

Challenges in Recording and Stimulation of Living Neural Network Based on Original Micro-Electrode Array (MEA) Developments 49
M. Cottance[1], S. Nazeer[1], L. Rousseau[1], G. Lissorgues[1], S. Joucla[2], B. Yvert[2], N. Lewis[2], Y. Bornat[2], S. Renaud[2]
{1}ESIEE Paris, France; {2}University of Bordeaux, France

A 0.084 nJ/B FSK Transmitter and 4.8 μW OOK Receiver for ISM-Band Medical Sensor Networks 53
A. Moradi, M. Zgaren, M. Sawan
École Polytechnique de Montréal, Canada

SPECIAL SESSION: Design Methods for Emerging Technologies Session

Efficient Arithmetic Logic Gates Using Double-Gate Silicon Nanowire FETs 57
L. Amarù, P. Gaillardon, G. De Micheli
École Polytechnique Fédérale de Lausanne, Switzerland

All-Magnetic Analog Associative Memory 61
V. Calayir, L. Pileggi
Carnegie Mellon University, United States

Worst-Case Power Supply Noise and Temperature Distribution Analysis for 3D PDNs with Multiple Clock Domains 65
Programmable Neuromorphic Circuits for Spike-Based Neural Dynamics 69
M. Azghadi{1}, S. Moradi{2}, G. Indiveri{2}
{1}University of Adelaide, Australia; {2}University of Zurich and ETH Zürich, Switzerland

Digital Circuits II Session

A Fault Tolerant NoC Architecture Based Upon External Router Backup Paths 73
H. Castro{1}, O. Alcantara de Lima Junior{2}
{1}Universidade Federal do Ceará, Brazil; {2}Université de Saint-Étienne, France

Two-Level Hierarchical Fill-Buffer for Graphics Rendering Systems 77
Y. Chang
National Sun Yat-Sen University, Taiwan

Protecting FPGA Bitstreams Using Authenticated Encryption 81
K. Abdellatif, R. Chotin-Avot, H. Mehrez
Université Pierre-et-Marie-Curie, LIP6, France

FPGA Implementation of SVPWM 85
S. Boukaka, H. Chaoui, P. Sicard
Université du Québec à Trois-Rivières, Canada

DSP Hardware and Applications Session

Controlled Start-Up Stochastic Decoding of LDPC Codes 89
M. Maamoun{3}, R. Bradai{3}, A. Naderi{1}, R. Beguenane{2}, M. Sawan{1}
{1}École Polytechnique de Montréal, Canada; {2}Royal Military College of Canada, Canada;
{3}University of Blida, Algeria

An Efficient Multispectral Palmprint Identification System Using Radial Basis Function 93
A. Meraoumia{2}, S. Chitroub{3}, A. Bouridane{1}
{1}Northumbria University, United Kingdom; {2}Université Kasdi Merbah de Ouargla, Algeria;
{3}University of Science and Technology Houari Boumediene, Algeria

A Gaze Tracking Scheme with Low Resolution Image 97
Y. Fu{1}, W. Zhu{1}, D. Massicotte{2}
{1}Concordia University, Canada; {2}Université du Québec à Trois-Rivières, Canada
RF and Microwave Circuits & Systems II Session

Study and Analysis of a New Implementation of a Mixed-Signal Cartesian Feedback for a Low Power Zero-IF WCDMA Transmitter  101
A. Auley\textsuperscript{2}, D. Dallet\textsuperscript{2}, B. Le Gal\textsuperscript{2}, N. Deltimple\textsuperscript{2}, D. Belot\textsuperscript{1}, E. Kerherve\textsuperscript{2}
\{1\}STMicroelectronics, France; \{2\}University of Bordeaux, France

Data Converters III Session

A DAC Mismatch Calibration Technique for Multibit ΣΔ Modulators  105
S. Ali, S. Tanner, P. Farine
École Polytechnique Fédérale de Lausanne, Switzerland

Design of Low Power 4-Bit Flash ADC Based on Standard Cells  109
M. Siadjine Njinowa\textsuperscript{2}, H. Bui\textsuperscript{2}, F. Boyer\textsuperscript{1}
\{1\}École Polytechnique de Montréal, Canada; \{2\}Université du Québec à Chicoutimi, Canada

A 0.9 V Low-Power Reconfigurable Successive Approximation ADC for Integrated Sensors  113
E. Zhang, R. Mvika Mawelo, C. Fayomi, F. Nabki
Université du Québec à Montréal, Canada

TI-ADCs SFDR Requirement Analysis  117
S. Paquelet\textsuperscript{1}, G. Kamdem De Teyou\textsuperscript{2}, Y. Le Guillou\textsuperscript{1}
\{1\}Renesas Mobile Corporation, France; \{2\}Télécom ParisTech, France

Analog Circuits & Systems Design III

A 4.1 - 5.2 GHz LC VCO Using a Vertical Solenoid Inductor in 0.13 μm Digital CMOS  121
C. Yu, D. Lee, H. Kim, H. Park, K. Lee
Sungkyunkwan University, Korea, South

An Ultra Low Power Maximum Voltage Detector for Piezoelectric and Electrostatic Energy Harvesters  125
P. Gasnier\textsuperscript{2}, M. Andraud\textsuperscript{1}, J. Willem\textsuperscript{1}, S. Bruilais\textsuperscript{1}, S. Boisseau\textsuperscript{1}, G. Despesse\textsuperscript{1}, C. Condemine\textsuperscript{1}, J. Chaillout\textsuperscript{1}
\{1\}CEA-Leti, France; \{2\}GEONAUTE Research, France

Exploiting the Transient Response of a Pirani Gauge Sensor for Beyond Atmospheric Pressure Measurement  129
M. Zhang, N. Llaser, Y. Wang, M. Zeloufi, X. Wang
Université Paris-Sud, France
Design of a TID-Tolerant Low-Level Offset Operational Amplifier  133
Y. Piccin{3}, H. Lapuyade{3}, Y. Deval{3}, C. Morche{2}, J. Seyler{1}, F. Goutti{2}, T. Taris{3}
{1}Centre National d'Études Spatiales, France; {2}STMicroelectronics, France; {3}University of Bordeaux, France

Sensors & Microsystems Session

Optimized Integrated Micro-Hotplates in CMOS Technology  137
M. Siegele{3}, C. Gamauf{4}, A. Nemecek{4}, G. Mutinati{1}, S. Steinhauer{1}, A. Köck{1}, J. Kraft{2}, J. Siegert{2}, F. Schrank{2}
{1}AIT Austrian Institute of Technology GmbH, Austria; {2}ams AG, Austria; {3}FOTEC Forschungs- und Technologietransfer GmbH, Austria; {4}University of Applied Sciences Wiener Neustadt, Austria

An Improved Compact Model of the Electrical Behaviour of the 5-Contact Vertical Hall-Effect Device  141
M. Madec, J. Schell, J. Kammerer, C. Lallement, L. Hebrard
Université de Strasbourg, France

A Self-Regulating Oscillator for Sensor Operation of Nanoelectromechanical Systems  145
C. Kauth, M. Pastre, M. Kayal
École Polytechnique Fédérale de Lausanne, Switzerland

A 0.18 μm CMOS Multilayer and Low Resistive Load Architecture Dedicated for LoC Applications  149
M. Miled, M. Sawan
École Polytechnique de Montréal, Canada

Proximity Distance Estimation Based on Capacitive Coupling Between 1mm³ Sensor Nodes  153
T. Shinada, M. Hashimoto, T. Onoye
Osaka University, Japan

Low-Power Design Techniques I Session

Temperature Compensation Using Least Mean Squares for Fast Settling All-Digital Phase-Locked Loop  157
K. Okuno, S. Izumi, T. Konishi, S. Dae-Woo, M. Yoshimoto, H. Kawaguchi
Kobe University, Japan

A 0.8-11GHz 0.15μm pHEMT Reconfigurable Low Power Consumption Distributed Low Noise Amplifier for Wireless Home Networks  161
L. Zhou, C. Duperrier, S. Quintanel, S. Aloui, E. Bourdel
ENSEA - University Cergy-Pontoise, France
A Fixed Frequency Sampling Method for Wireless Sensors Power Consumption Estimation 165
W. Dron, K. Hachicha, P. Garda
Université Pierre-et-Marie-Curie, LIP6, France

A Real-Time Power Distribution Based on Load/Generation Forecasting for Peak-Shaving 169
H. Nishihara, I. Taniguchi, S. Kato, M. Fukui
Ritsumeikan University, Japan

A ReRAM-Based Non-Volatile Flip-Flop with Sub-V_T Read and CMOS Voltage-Compatible Write 173
I. Kazi, P. Meinerzhagen, P. Gaillardon, D. Sacchetto, A. Burg, G. De Micheli
École Polytechnique Fédérale de Lausanne, Switzerland

Tuesday, June 18th

Low-power Design Techniques II Session

User Experience-Based Mechanism for Preserving Energy in Graphics-Intensive Applications 177
F. Hamady, A. Chehab, I. Elhajj, A. Kayssi
American University of Beirut, Lebanon

Low Power Magnetic Flip-Flop Based on checkpointing and Self-Enable Mechanism 181
D. Chabi, W. Zhao, Y. Zhang, J. Klein, C. Chappert
Université Paris-Sud, France

CAD & Design Tools II Session

Designing Globally-Asynchronous-Locally-Synchronous System from Multi-Rate Simulink Model 185
Y. Shi, B. Gwee
Nanyang Technological University, Singapore

Designing 3D Tree-Based FPGA: Interconnect Optimization and Thermal Analysis 189
V. Pangracious[3], H. Mehrez[2], Z. Marakchi[1]
{1}FlexRas Technologies, France; {2}Université Pierre-et-Marie-Curie, LIP6, France; {3}University of Pierre and Marie Curie Paris Sorbonne University, France

A Fast Reliability-Aware Approach for Analogue Integrated Circuits Based on Pareto Fronts 193
Télécom ParisTech, France

A Hybrid Method to Detecting Failures in Mobile Sensor Networks Using Localization Algorithms 197
L. Martins, R. Nunes, J. Martins, L. de Oliveira
Analog Circuits & Systems Design III Session

Transconductance/Drain Current Based Sensitivity Analysis for Analog CMOS Integrated Circuits 201
J. Ou{2}, P. Ferreira{1}
{1}ISEN, France; {2}Sonoma State University, United States

A Novel Formulation of the Nodal Admittance Matrix for Linear Active Circuits with nullors via the Component Stamps Method 205
M. Pierzchala{2}, M. Fakhfakh{1}
{1}Université de Sfax, Tunisia; {2}Wroclaw University of Technology, Poland

A High-Resolution Time Interval Measurement Chip in Underground Positioning System 209
Y. Huang, C. Zhang, Z. Li, Z. Wang
Tsinghua University, China

RF and Wireless Communication Systems Session

Demodulation of Aggregated RF Signals with a Unique Rx Chain 217
A. Kaissoine{3}, B. Huyart{3}, A. Mbaye{2}, K. Mabrouk{1}
{1}École Supérieure d'Ingenieurs en Informatique et Génie des Télécommunications, France; {2}ESIEE Paris, France; {3}Télécom ParisTech, France

A Parallelized Layered QC-LDPC Decoder for IEEE 802.11ad 221
A. Balatsoukas-Stimming{1}, N. Preyss{1}, A. Cevrero{1}, A. Burg{1}, C. Roth{2}
{1}École Polytechnique Fédérale de Lausanne, Switzerland; {2}ETH Zürich, Switzerland

An Evaluation of PAPR Reduction Effects in OFDM Systems Using Several Power Amplifier Models 225
B. Koussa, C. Perrine, S. Bachir, R. Vauzelle, C. Duvanaud
Université de Poitiers, France

2.5GHz Digital BPSK Modulator Built with CMOS Inverters 229
{1}Aix-Marseille Université, France; {2}Institut Supérieur d’Électronique et du Numérique, France; {3}Université du SUD Toulon VAR, France

Acoustic Signal & Image Processing Session
ANC System with Random Noise Injection Control for online Feedback Path Modeling 233
J. Seo, T. Jung, J. Kim, S. Nam
Hanyang University, Korea, South

Recognition of Blowing Sound Types for Real-Time Implementation in Mobile Devices 237
M. Carbonneau{1}, G. Gagnon{1}, R. Sabourin{1}, J. Dubois{2}
{1}École de Technologie Supérieure, Canada; {2}Université du Québec à Montréal, Canada

A 2D Gaussian Smoothing Kernel Mapped to Heterogeneous Platforms 241
A. Trabelsi, Y. Savaria
École Polytechnique de Montréal, Canada

Embedded Hyperchaotic Lorenz Generator for Secure Communications 245
S. Sadoudi{1}, C. Tanougast{2}, M. Azzaz{1}, A. Dandache{2}
{1}École Militaire Polytechnique, France; {2}Université de Lorraine, France

Evaluation of Advanced Pixel-Level Snakes on Cellular Hardware Platform 249
T. Matsui{2}, T. Fujita{2}, Y. Tsuji{2}, T. Kumaki{2}, M. Nakanishi{1}, T. Ogura{2}
{1}Nippon Telegraph and Telephone Corporation, Japan; {2}Ritsumeikan University, Japan

Data Converters I Session

A 12-bit 200KS/s SAR ADC with a Mixed Switching Scheme and Integer-Based Split Capacitor Array 253
L. Deng, C. Yang, M. Zhao, Y. Liu, X. Wu
Zhejiang University, China

A 1ps-Resolution Integrator-Based Time-to-Digital Converter Using a SAR-ADC in 90nm CMOS 257
Z. Xu, M. Miyahara, A. Matsuzawa
Tokyo Institute of Technology, Japan

DAC Waveform Effects in CT Incremental $\Sigma\Delta$ ADCs for Biosensor Applications 261
S. Tao, S. Rodriguez, A. Rusu
Royal Institute of Technology, Sweden

Background Calibration of Integrator Leakage in Discrete-Time Delta-Sigma Modulators 265
S. Wu, J. Wu
National Chiao Tung University, Taiwan

A Novel Dynamic Element Matching Technique Suited for High Pass $\Delta\Sigma$ ADCs 269
C. Jabbour, H. Fakhoury, V. Nguyen, P. Loumeau
Télécom ParisTech, France
SPECIAL SESSION: Digital Predistortion for RF Power Amplifiers

Digital Predistortion for RF Power Amplifiers: State of the Art and Advanced Approaches  273
M. Abi Hussein{1}, O. Venard{1}, B. Feuvrie{2}, Y. Wang{2}
{1}ESIEE Paris, France; {2}Polytech'Nantes, France

Digital Predistortion Expressed As an Adding Signal Technique in OFDM Context  277
A. Gouba, Y. Louët
École Supérieure d’Electricité, France

Power Amplifier Conception Challenges in UHF and VHF Transmitters  281
A. Badarou{2}, S. Reed{2}, D. Ndong{2}, M. Pastore{2}, J. Diouris{1}
{1}Lunam Université, France; {2}Telerad, France

From Narrowband to Wideband Modeling of Radio Frequency Power Amplifiers  285
N. Calinoiu{1}, S. Bachir{2}, C. Duvanaud{2}
{1}Business Park Iride, Romania; {2}Université de Poitiers, France

Compensation of I/Q Impairments and Nonlinear Distortion in MIMO Wireless Transmitters  289
D. Saffar{1}, N. Bouleffen{1}, F. Ghannouchi{2}, M. Helou{2}, A. Gharsallah{1}
{1}Faculté des Sciences de Tunis, Tunisia; {2}University of Calgary, Canada

SPECIAL SESSION: Magnetic-Memory-Based Computing

Emerging Hybrid Logic Circuits Based on Non-Volatile Magnetic Memories  293
W. Zhao{2}, G. Prenat{1}, J. Klein{2}, B. Dieny{1}, C. Chappert{2}, D. Ravelosona{2}
{1}Spintec, France; {2}Université Paris-Sud, France

Scalability and Logic Functionalities of TA-MRAMs  297
I. Prejbeanu{2}, R. Sousa{2}, B. Dieny{2}, J. Nozières{2}, S. Bandiera{1}, J. Alvarez-Hérault{1}, Q. Stainer{1}, L. Lombard{1}, C. Ducruet{1}, Y. Conraux{1}, K. Mackay{1}
{1}CROCUS Technology, France; {2}Spintec, France

Evaluation of hybrid MRAM/CMOS cells for reconfigurable computing  301
L. Torres, R. Martins Brum, Y. Guillemenet, G. Sassatelli, L. Cargnini
LIRMM - Université Montpellier II / CNRS, France

Nano-Patterned Coupled Spin Torque Nano Oscillator (STNO) Arrays – a Potentially Disruptive Multipurpose Nanotechnology  307
M. Stan, M. Kabir, J. Lu, S. Wolf
University of Virginia, United States
Non-Magnetic Control of Domain-Walls in Ferromagnetic Nano-Wires with Perpendicular Magnetic Anisotropy  311
B. Koopmans, J. Franken, P. Haazen, A. Schellekens, A. van den Brink, E. Murè, R. Lavrijsen, H. Swagten
Eindhoven University of Technology, Netherlands

RF Circuits & Systems Session

COTS-Based Modules for Far-Field Radio Frequency Energy Harvesting at 900MHz and 2.4GHz  317
T. Taris, L. Fadel, L. Oyhenart, V. Vigneras
University of Bordeaux, France

A Low-Power 2.4-GHz Combined LNA-VCO Structure in 0.13-μm CMOS  321
T. Taris[1], H. Rashtian[2], A. Shirazi[2], S. Mirabbasi[2]
{1}University of Bordeaux, France; {2}University of British Columbia, Canada

A 2.4-GHz Low Power Polar Transmitter for Wireless Body Area Network Applications  325
V. Kopta, F. Pengg, E. Le Roux, C. Enz
Centre Suisse d'Electronique et de Microtechnique, Switzerland

A Dual-Level and Dual-Band Class-D CMOS Power Amplifier for IoT Applications  329
J. Cui, K. Zhang, T. Tian
Shanghai Institute of Microsystem and Information Technology / Chinese Academy of Sciences, China

Fully Integrated Doherty Power Amplifier Electromagnetically Optimized in CMOS 65nm with Constant PAE in Backoff  333
M. Carneiro[4], N. Deltimple[3], D. Belot[1], P. de Carvalho[2], E. Kerherve[3]
{1}STMicroelectronics, France; {2}Universidade de Brasilia, Brazil; {3}University of Bordeaux, France;
{4}University of Bordeaux / Universidade de Brasilia, Brazil

CAD & Design Tools I Session

Fast Partitioning of Parameterized 45-Degree Polygons into Parameterized Trapezoids  337
Y. Tseng[2], I. Tseng[2], T. Huang[2], A. Postula[1]
{1}University of Queensland, Australia; {2}Yuan Ze University, Taiwan

An Implementation and Evaluation of Backward Euler Algorithm to GPGPU Power Grid Circuit Simulation  341
L. Lin[2], M. Fukui[2], S. Tsukiyama[1]
{1}Chuo University, Japan; {2}Ritsumeikan University, Japan

A Floorplan Method for ASIC Designs of Asynchronous Circuits with Bundled-Data Implementation  345
M. Iizuka, H. Saito
University of Aizu, Japan

Identifying Signal Correlations Using Discrete Event Simulation
P. Bazargan Sabet, D. Ledû
Université Pierre-et-Marie-Curie, LIP6, France

A Netlist Pruning Tool for an Electronic System Prototyping Platform
K. Baratli{3}, A. Lakhssassi{3}, Y. Blaquière{2}, Y. Savaria{1}
{1}École polytechnique de Montréal, Canada; {2}Université du Québec à Montréal, Canada;
{3}Université du Québec en Outaouais, Canada

Wednesday, June 19th

Test & Verification Session

A 3D IC BIST for Pre-Bond Test of TSVs Using Ring Oscillators
Y. Fkih{1}, P. Vivet{1}, B. Rouzeyre{2}, M. Flottes{2}, G. Di Natale{2}
{1}CEA-Leti, France; {2}LIRMM - Université Montpellier II / CNRS, France

Design of an embedded RF signal generator for BIST application
I. Lahbib{2}, M. Doukkali{1}, P. Descamps{1}, C. Kelma{2}, O. Tesson{2}
{1}LaMIPS, France; {2}NXP Semiconductors, France

A Methodology for System-Level Fault Injection Based on Gate-Level Faulty Behavior
R. Robache{1}, J. Boland{1}, C. Thibeault{1}, Y. Savaria{2}
{1}École de Technologie Supérieure, Canada; {2}École Polytechnique de Montréal, Canada

RF and Microwave Circuits & Systems I Session

A Low Power Wideband Differential Transimpedance Amplifier for Optical Receivers in 0.18-μm CMOS
W. Chong, Y. Tan, K. Yeo
Nanyang Technological University, Singapore

Ultra-Low-Power, Ultra-Low-Voltage 2.12 GHz Colpitts Oscillator Using Inductive Gate Degeneration
R. Rottava{2}, C. Câmara S. Jr.{2}, F. Rangel de Sousa{2}, R. Nunes de Lima{1}
{1}Universidade Federal da Bahia, Brazil; {2}Universidade Federal de Santa Catarina, Brazil
Effect and Adaptive Correction of Impedance Mismatch Between Antenna and Power Amplifier on Digital Predistortion

A. Mbaye, G. Baudoin, M. Villegas, T. Gotthans
ESIEE Paris, France

FM-UWB Transmitter Using RC Oscillators

L. Almeida{1}, M. Martins{2}, J. Fernandes{1}

Accurate and Efficient Analytical Electrical Model of Antenna for NFC Applications

M. Dieng{2}, M. Comte{1}, S. Bernard{1}, V. Kerzéro{1}, F. Azaïs{1}, M. Renovell{1}, T. Kervao{3}, P. Pugliesi-Conti{3}
{1]LIRMM - Université Montpellier II / CNRS, France; {2]LIRMM - Université Montpellier II / CNRS / NXP Semiconductors Caen, France; {3]NXP Semiconductors, France

Imaging & Sensors Session

A CMOS Image Sensor with Low-Complexity Video Compression for Wireless Sensor Networks

A. Chefi{2}, A. Soudani{1}, G. Sicard{2}
{1]Faculté des Sciences de Monastir, Tunisia; {2]Laboratoire TIMA, France

Benefits of Three-Dimensional Circuit Stacking for Image Sensors

F. Guezzi-Messaoud{1}, A. Dupret{1}, A. Peizerat{1}, Y. Blanchard{2}
{1]CEA-Leti, France; {2]ESIEE Paris, France

A Novel 0.5GHz Real Time Asynchronous Photon Detection and Counting Technique: ROIC Design for Cooled SWIR HgCdTe Infrared Detector

H. Amhaz, K. Foubert, F. Guellec, J. Rothman
CEA-Leti, France

Column-Separated Compressive Sampling Scheme for Low Power CMOS Image Sensors

N. Katic, M. Hosseini Kamal, M. Klic, A. Schmid, P. Vanderghynst, Y. Leblebici
École Polytechnique Fédérale de Lausanne, Switzerland

Autonomous Sensor System for Deep-Sea Pipeline Monitoring

S. Amara-Madi{2}, A. Price{2}, A. Bensaoula{2}, M. Boukadoum{1}
{1]Université du Québec à Montréal, Canada; {2]University of Houston, United States

Data Converters II Session

A CMOS Cyclic Folding A/D Converter with a New Compact Layout Technique
A Design Methodology for Delta-Sigma Converters Based on Solid-State Passive Filters

P. Benabes
Supélec, France

A 12-Bit Interpolated Pipeline ADC Using Body Voltage Controlled Amplifier

H. Lee, M. Miyahara, A. Matsuzawa
Tokyo Institute of Technology, Japan

Design and FPGA-Based Multi-Channel, Low Phase-Jitter ADPLL for Audio Data Converter

N. Ben Ameur, N. Masmoudi, M. Loulou
École Nationale d’ingénieurs de Sfax, Tunisia

A VCO Linearization System for ADC Applications

J. Michaelsen, D. Wisland
University of Oslo, Norway

Wireless Communication Session

Adaptive Zero-Crossing Digital Phase-Locked Loop for Packet Synchronization

S. Al-Araji, E. Salahat, D. Kilani, S. Abu Yasin, H. Alkhoja, J. Aweya
Khalifa University, U.A.E.

Demonstration of 300 Mbit/S Free Space Optical Link with Commercial Visible Led

P. Binh{2}, V. Trong{2}, D. Hung{2}, P. Renucci{1}, A. Balocchi{1}, X. Marie{1}
{1}Université de Toulouse, France; {2}Vietnam Academy of Science and Technology, Vietnam

A Programmable DSP Front-End for All-Digital 4G Transmitters

E. Roverato{1}, M. Kosunen{1}, J. Lemberg{1}, K. Stadius{1}, J. Rynänen{1}, P. Eloranta{2}, R. Kaunisto{2}, A. Pärssinen{2}
{1}Aalto University School of Electrical Engineering, Finland; {2}Renesas Mobile Corporation, Finland

Low Complexity Maximum Likelihood Estimation of Time and Frequency Offset for DVB-T2

S. Saad, H. Hamed, A. Shalash
Cairo University, Egypt

Biomedical Circuits & Systems Session

A 4000 Hz CMOS Image Sensor with In-Pixel Processing for Light Measurement and Modulation
Lifetime Tracing of Cardiopulmonary Sounds with Ultra-Low-Power Sound Sensor Stick Connected to Wireless Mobile Network


(1)Research Institute of Tsinghua University in Shenzhen, China; (2)Tsinghua University, China

A 38μA Wearable Biosignal Monitoring System with Near Field Communication


(1)Kobe University, Japan; (2)Omron Corp., Japan; (3)Omron Healthcare Inc., Japan; (4)Rohm Co. Ltd., Japan

Far-Field UHF Remotely Powered Front-End for Patient Monitoring with Wearable Antenna

O. Kazanc(1), J. Rodríguez-Rodríguez(2), M. Delgado-Restituto(2), F. Maloberti(3), C. Dehollain(1)

(1)École Polytechnique Fédérale de Lausanne, Switzerland; (2)Universidad de Sevilla, Spain; (3)Università degli Studi di Pavia, Italy

A Sigma Delta ISFET Readout Circuit for Lab-on-Chip Applications

G. Nabovati{}, E. Ghafarzadeh{1}, F. Awwad(2), M. Sawan(1)

{}, Canada; (1)École Polytechnique de Montréal, Canada; (2)United Arab Emirates University, Canada