

# **2016 29th Symposium on Integrated Circuits and Systems Design (SBCCI 2016)**

**Belo Horizonte, Brazil  
29 August – 3 September 2016**



IEEE Catalog Number: CFP16237-POD  
ISBN: 978-1-5090-2737-8

**Copyright © 2016 by the Institute of Electrical and Electronics 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:	CFP16237-POD
ISBN (Print-On-Demand):	978-1-5090-2737-8
ISBN (Online):	978-1-5090-2736-1

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# **SBCCI 2016 List of Papers**

**Development Process for MEMS Pressure Sensors for Standardized CMOS Read-Out Circuitry.....1**  
Wolfgang Schreiber-Prillwitz, and Reinhart Job

**Energy-Aware Light-Weight DMM-1 Patterns Decoders with Efficiently Storage in 3D-HEVC.....7**  
Gustavo Sanchez, Luciano Agostini, and César Marcon

**A Mutual Rectification-Interference Avoidance Technique with Cascade Filters for Both Downward-Direction Tailed-RDF Deconvolution.....13**  
Hiroyuki Yamauchi, and Worawit Somha

**A Lightweight Software-based Runtime Temperature Monitoring Model for Multiprocessor Embedded Systems.....19**  
Guilherme Castilhos, Fernando Gehm Moraes, and Luciano Ost

**Evaluating the Impact of Circuit Legalization on Incremental Optimization Techniques.....25**  
Renan Netto, Vinicius Livramento, Chrystian Guth, Luiz C.V. dos Santos, and José Luís Güntzel

**Modeling and Design of High-Efficiency Power Amplifiers Fed by Limited Power Sources.....31**  
Arturo Fajardo Jaimes, and Fernando Rangel de Sousa

**Integrated CMOS Class-E Power Amplifier for Self-Sustaining Wireless Power Transfer system.....37**  
Arturo Fajardo Jaimes and Fernando Rangel de Sousa

**Low-Power Hardware Design for the HEVC Binary Arithmetic Encoder Targeting 8K Videos.....43**  
Fábio Luís Livi Ramos, Jones Goebel, Bruno Zatt, Marcelo Porto, and Sergio Bampi

**A 0.3 V, High-PSRR, Picowatt NMOS-Only Voltage Reference using zero-V T Active Loads.....49**  
David Cordova, Arthur C. de Oliveira, Pedro Toledo, Hamilton Klimach, Sergio Bampi, and Eric Fabris

**A Standard Cell Characterization Flow for Non-Standard Voltage Supplies.....55**  
Matheus Gibiluka, Matheus Trevisan Moreira, Walter Lau Neto, and Ney Laert Vilar Calazans

**Design and Analysis of the HF-RISC Processor Targeting Voltage Scaling Applications.....61**  
Felipe Todeschini Bortolon, Sergio Johann Filho, Matheus Gibiluka, Sergio Bampi, Ney Laert Vilar Calazans, Fabiano Passuelo Hessel, and Matheus Trevisan Moreira

**A Placement and Routing Algorithm for Quantum-dot Cellular Automata.....67**  
Alyson Trindade, Ricardo Ferreira, José Augusto M. Nacif, Douglas Sales and Omar P. Vilela Neto

**A Novel Pruned-Based Algorithm for Energy-Efficient SATD Operation in the HEVC Coding.....73**  
Leonardo Bandeira Soares, Cláudio Machado Diniz, Eduardo Antonio César da Costa, and Sergio Bampi

**Architectural Exploration of Last-Level Caches targeting Homogeneous Multicore Systems.....79**  
Rodrigo Cataldo, Guilherme Korol, Ramon Fernandes, Debora Matos, and César Marcon

**Side Channel Attack on NoC-based MPSoCs are practical: NoC Prime+Probe Attack.....85**  
Cezar Reinbrecht, Altamiro Susin, Lilian Bossuet, Georg Sigl, and Johanna Sepúlveda

**Cache Sizing for Low-Energy Elliptic Curve Cryptography.....91**  
Felipe Piovezan, Tarçísio E. M. Crocomo, Luiz C. V. dos Santos

**Cluster-based Architecture Relying on Optical Integrated Networks with the Provision Of a Low-latency Arbiter.....97**

Felipe Göhring de Magalhães, Fabiano Hessel, Odile Liboiron-Ladouceur, and Gabriela Nicolescu

**A Security Aware Routing Approach for NoC-based MPSoCs.....103**

Ramon Fernandes, César Marcon, Rodrigo Cataldo, Jarbas Silveira, Georg Sigl, and Johanna Sepúlveda

**MagPDK: an Open-Source Process Design Kit for Circuit Design with Magnetic Tunnel Junctions.....109**

Raphael M. Brum, and Gilson I. Wirth

**Efficient Hardware Implementation of the Richardson-Lucy Algorithm for Restoring Motion-Blurred Image on Reconfigurable Digital System.....115**

Oscar Anacona-Mosquera, Janier Arias-García, Daniel M. Muñoz, and Carlos H. Llanos

**A systematic design approach for nanoscale inductor-less regulated cascode stages.....121**

C. Talarico, G. D'Amato, G. Avitabile, G. Piccinni, and G. Coviello

**Characterization and Nonlinear Modeling of MASMOS® Transistor in Order to Design Power Amplifiers for LTE applications.....126**

Frédérique Simbélé, Sylvain Laurent, Pierre Medrel, Michel Prigent, Raymond Quere, Myrianne Regis, and Yann Creveuil

**Focal-Plane Image Encoder with Cascode Current Mirrors and Increased Vector Quantization Bit Rate.....132**

Fernanda D. V. R. Oliveira, Tiago M. de F. Lopes, José Gabriel R. C. Gomes, Fernando A. P. Barúqui and Antonio Petraglia

**An Ultra Wide Band Analog-to-Digital Converter based on a Delta-Riemann architecture.....138**

François Rivet, Elina Fiawoo, Richard Montigny, Patrick Garrec, and Yann Deval

**A balanced logic routing block for Factorial-DLL based frequency generation.....142**

Yann Deval and François Rivet

**Energy-aware Scheduling in Transactional Memory Systems.....146**

Ademir Marques Junior and Alexandre Baldassin

**A Parallel Motion Estimation Solution for Heterogeneous System on Chip.....152**

Mateus Melo, Gustavo Smaniotto, Henrique Maich, Luciano Agostini, Bruno Zatt, Leomar Rosa Jr, and Marcelo Porto

**A Digitally Tunable 4th-order Gm-C Low-Pass Filter for Multi-Standards Receivers.....158**

Mateus S. Oliveira, Paulo C. de Aguirre, Lucas C. Severo, Alessandro G. Girardi, and Altamiro A. Susin

**A new two-step  $\Sigma\Delta$  architecture column-parallel ADC for CMOS image sensor.....164**

Pierre Bisiaux, Caroline Lelandais-Perrault, Anthony Kolar, Filipe Vinci Dos Santos, and Philippe Benabes

**New Asynchronous Protocols for Enhancing Area and Throughput in Bundled-Data Pipelines.....170**

Jean Simatic, Abdelkarim Cherkaoui, Rodrigo Possamai Bastos, and Laurent Fesquet

**A Design Methodology for Low-Noise CMOS Transimpedance Amplifiers Based on Shunt-Shunt Feedback Topology.....176**

A. F. Ponchet, J. W. Swart, E. M. Bastida, C. A. Finardi, R. R. Panepucci, S. Tenenbaum and S. Finco

**A 450 mV Supply Self-biased Wideband Inductorless Balun LNA for sub-GHz Applications.....182**

Arthur Liraneto Torres Costa, Hamilton Klimach, and Sergio Bampi

**A Hardware Accelerator for the Alignment of Multiple DNA Sequences.....188**

Antonyus P. A. Ferreira, Joao G. M. Silva, Jefferson R. L. Anjos, Luiz H. A. Figueiroa, Victor W. C. Medeiros, Edna N. S. Barros, and Manoel E. Lima

**Inserting permanent fault input dependence on PTM to improve robustness evaluation.....194**

Rafael B. Schivittz, Rafaél Fritz, Denis T. Franco, Lirida Naviner, Cristina Meinhardt, and Paulo F. Butzen

**An FPGA-based accelerator for multiple real-time template matching.....200**

Erika S. Albuquerque, Antonyus P. A. Ferreira, João G. M. Silva, João P. F. Barbosa, Renato L. M. Carlos, Djeeffther S. Albuquerque, and Edna N. S. Barros

**Successful Prototyping of Complex Integrated Circuits with Focused Ion Beam.....206**

E. Petitprez, D. M. Colombo, F. M. Henes, L. Courcelle, R. Tararam, S. Jacobsen, R. Soares, C. Krug, and M. Lubaszewski

**Automatic Layout Integration of Bulk Built-In Current Sensors for Detection of Soft Errors.....211**

Mário Vinícius Guimarães and Frank Sill Torres

**Analytic Boundaries for 6T-SRAM Design in Standby Mode.....217**

Fabián Olivera and Antonio Petraglia

**A 0.7V Fully Differential First Order GZTC-C Filter.....223**

Pedro Toledo, Renê Timbo, David Cordova, Hamilton Klimach, Sergio Bampi, and Eric Fabris

**Software-Defined Radio Design based on GALS Architecture for FPGAs.....229**

Eduardo Lussari, Duarte L. Oliveira, Lester A. Faria, and Orlando Verducci

**A Digital Offset Correction Method for High Speed Analog Front-Ends.....235**

Andres Amaya, Hector Gomez, and Elkim Roa