Recent Advances in Circuits

Proceedings of the 13th WSEAS International Conference on
CIRCUITS
(part of the 13th WSEAS CSCC Multiconference)

Rodos, Greece
July 22-24, 2009
# Table of Contents

**Keynote Lecture 1: Embedded Systems Design – Scientific Challenges and Work Directions**  
*Joseph Sifakis*  
Page 15

**Keynote Lecture 2: Quantum Cryptography and Chaos Functions: The Ultimate for Network Security**  
*Stamatios Kartalopoulos*  
Page 16

**Keynote Lecture 3: Content-Adaptive Efficient Resource Allocation for Packet-Based Video Transmission**  
*Aggelos K. Katsaggelos*  
Page 17

**Keynote Lecture 4: Computer Aided-Visual Perception : Challenges and Perspectives**  
*Nikos Paragios*  
Page 18

**Keynote Lecture 5: Control and Estimation Theory: Current Trends, New Challenges, & Directions for the Future**  
*Lena Valavani*  
Page 19

**Plenary Lecture 1: Towards 2D Electronic Circuits in the Spatial Domain**  
*Nicolas Ratier*  
Page 20

**Plenary Lecture 2: Electronic Circuits for Switching-Time Reduction of Bipolar Semiconductor Devices**  
*N. Y. A. Shammas*  
Page 21

**On Implementation of Online Testable State Machines**  
*P. K. Lala, A. Mathews, J. P. Parkerson*  
Page 23

**Electronic Circuits for Switching-Time Reduction of Bipolar Semiconductor Devices**  
*N. Y. A. Shammas, S. Eio, D. Chamund*  
Page 27

**On Stability of Electronic Circuits**  
*Hassan Fathabadi, Nikos E. Mastorakis*  
Page 43

**On Optoelectronic Nanodevice Functional Eigenstate Photodynamics**  
*E. A. Anagnostakis*  
Page 52

**GSM Based Solution for Monitoring and Diagnostic of Electrical Equipment**  
*Catalin Pancu, Adrian Baraboi, Maricel Adam, Adrian Plesca*  
Page 58

**Study of Capacitive and Inductive Characteristics of Nanoellipsoidal**  
*Soodabeh Nowb Jouybari, Hamid Latifi*  
Page 64

**Optimized Design of Three-Level NPC Inverters**  
*Ahmad Radan, Hengameh Kajooyan Jafarri*  
Page 68

**The Analyse and EMTP Simulation of an AC Tuned Filter**  
*Adrian Baraboi, Maricel Adam, Catalin Pancu*  
Page 75

**Optimization of Area under a Delay Constraint in Multiple Constant Multiplications**  
*Levent Aksoy, Ece Olcay Gunes, Paulo Flores*  
Page 81
About Some FACTS Devices from the Power Systems
Maricel Adam, Adrian Baraboi, Catalin Pancu

Systolic Stack Control Units
Hoda B. Abugharsa, Ali H. Maamar

A CMOS Radio Frequency Receiver for Bluetooth Applications
Jenn-Tzer Yang, De-Wei Shen, Ping-Jung Tsai, Ming-Jeui Wu

Development of a Wireless Embedded System to Reduce the Influence of Gaussian Noise and 50 Hz Power Line Noise in Electromyography (EMG)
Konstantinos Kalovrektis, Theodore Ganetsos, Evangelos Fountas, N. Y. A. Shammas, I. Taylor, John Andonopoulos, Nikolaos Laskaris, Antonios Gkotsinas

A Simplified Steady-State Analysis of the PWM Zeta Converter
Elena Niculescu, Dorina Mioara-Purcaru, Marius-Cristian Niculescu, Ion Purcaru, Marian Maria

Generation of the Head Related Transfer Functions Using Artificial Neural Networks
Zoltan Haraszy, Daniel Ianchis, Virgil Tiponut

Rotation Detector Using FM Principles
Ioan Lie, Virgil Tiponut, Catalin Caleanu

A RF CMOS Low Noise Amplifier for WiMAX Applications
Jenn-Tzer Yang, Hsiao-Ping Fan, Ming-Jeui Wu, Ping-Jung Tsai

Modelling of Ambient Temperature Profiles in Transformer
Marius-Constantin Popescu, Gheorghe Manolea, Cornelia Aida Bulucea, Liliana Perescu-Popescu, Adrian Drighiciu

High-Efficient Three-Way Doherty Amplifier with Improved Linearity
Natasa Males-Ilic, Aleksandar Atanaskovic, Bratislav Milovanovic

Acoustic Source Localization Based on Time-delay Estimation Method
Petr Dostalek, Vladimir Vasek, Jan Dolinay

Basic Concepts of Design for Recycling Induction Motors
Rafael Hernandez-Millan, Jesus Rafael Pacheco-Pimentel, Jaimito Salinas

Co-Design of Quantum and Electronic Integrations by Available Circuit Simulators
Guennadi Kouzaev

LDI Matrix for Discrete-Time Filter Design
Dalibor Biolek, Viera Biolkova

A Fault Tolerant Threshold Logic Gate Design
Ashok Kumar Palaniswamy, Manoj Kumar Goparaju, Spyros Tragoudas

Portable Gamma-Ray Tomography Instrumentation for Investigating Corrosion under Insulation of Pipelines
Yvette Shaan-Li Susiapan, Ruzairi Abdul Rahim, Jaysuman Pusppanathan, Rasif Mohd. Zain

New Design of Aluminum Bolted Busbar Connections
Raina Tzeneva, Yanko Slavtchev, Nikos Mastorakis, Valeri Mladenov
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate Semisymbolic Analysis of Circuits with Multiple Roots</td>
<td>178</td>
</tr>
<tr>
<td>Zdenek Kolka, Martin Horak, Dalibor Biolek, Viera Biolkova</td>
<td></td>
</tr>
<tr>
<td>Designing a Very High Output Resistance Current Source</td>
<td>182</td>
</tr>
<tr>
<td>K. Hayatleh, N. Terzopoulos, B. Hart</td>
<td></td>
</tr>
<tr>
<td>Data Acquisition in Photovoltaic Systems</td>
<td>191</td>
</tr>
<tr>
<td>Valentin Dogaru Ulieru, Costin Cepisca, Traian Daniel Ivanovici</td>
<td></td>
</tr>
<tr>
<td>Simulation of Shunt Active Filter</td>
<td>197</td>
</tr>
<tr>
<td>P. Kalaivani</td>
<td></td>
</tr>
<tr>
<td>Characteristics of InSbTe Phase-change Random Access Memory</td>
<td>203</td>
</tr>
<tr>
<td>Yong Tae Kim, Eun Tae Kim, Jeong Yong Lee</td>
<td></td>
</tr>
<tr>
<td>Simulation of Series Active Filter for Unbalanced Loads</td>
<td>206</td>
</tr>
<tr>
<td>P. Kalaivani</td>
<td></td>
</tr>
<tr>
<td>Towards 2D Electronic Circuits in the Spatial Domain</td>
<td>212</td>
</tr>
<tr>
<td>Nicolas Ratier</td>
<td></td>
</tr>
<tr>
<td>Artificial Neural Network Model of Traffic Operations at Signalized Junction in Johor Bahru, Malaysia</td>
<td>219</td>
</tr>
<tr>
<td>Arash Moradkhani Roshandeh, Othman Che Puan, Majid Joshani</td>
<td></td>
</tr>
<tr>
<td>Authors Index</td>
<td>224</td>
</tr>
</tbody>
</table>