

Journal of Integrated Circuits and Systems

Volume 3 • Number 1 • **March 2008** • ISSN 1807-1953

New March Elements for Address Decoder Open and Resistive Open Fault Detection in SRAMs*

L. Dilillo, P. Girard, S. Pravossoudovitch, A. Virazel, S. Borri and M. Bastian

Model Driven Engineering for MPSoC Design Space Exploration

Marcio F. da S. Oliveira, Eduardo W. Brião, Francisco A. Nascimento and Flávio R. Wagner

A New Router Architecture for High-Performance Intrachip Networks

Everton Carara, Ney Calazans and Fernando Moraes

Design Space Exploration of High-Performance Parallel Architectures

Enric Musoll and Mario Nemirovsky

Parallelized Radix-4 Scalable Montgomery Multipliers

Nathaniel Pinckney and David Money Harris

Buffer Sizing for Multimedia Flows in Packet-Switching NoCs

Leonel P. Tedesco, Ney Calazans and Fernando Moraes



www.sbc.org.br/jics
www.sbmicro.org.br/jics



J ournal of
I ntegrated
C ircuits and
S ystems

Volume 3 • Number 1 • March 2008 • ISSN 1807-1953

The **Journal of Integrated Circuits and Systems (JICS)** is a publication from SBMicro – Brazilian Microelectronics Society and SBC – Brazilian Computer Society whose are non-profit scientific societies aiming to foster the microelectronics and computer science teaching, research and development.

Editor-in-chief:

João Antonio Martino, University of Sao Paulo, Brazil

Co-Editor:

Luigi Carro, Federal University of Rio Grande do Sul, Brazil

Associate Editors:

Process and Materials

Jacobus Swart, State University of Campinas, Brazil

Magali Estrada, CINVESTAV, Mexico

Olivier Bonnaud, University of Rennes, France

Devices and Characterization

Marcelo Antonio Pavanello, FEI University, Brazil

Cor Claeys, IMEC, Belgium

Sponsored by:

Brazilian Computer Society
Av. Bento Gonçalves, 9500
Porto Alegre, Brazil
Caixa Postal 15012 – CEP 91501-970

Brazilian Microelectronics Society
Av. Prof. Luciano Gualberto, trav. 3 n. 158
CEP 05508-900, Sao Paulo, Brazil

CONTENTS

Foreword	5
New March Elements for Address Decoder Open and Resistive Open Fault Detection in SRAMs* L. Dilillo, P. Girard, S. Pravossoudovitch, A. Virazel, S. Borri and M. Bastian	7
Model Driven Engineering for MPSoC Design Space Exploration Marcio F. da S. Oliveira, Eduardo W. Brião, Francisco A. Nascimento and Flávio R. Wagner	13
A New Router Architecture for High-Performance Intrachip Networks Everton Carara, Ney Calazans and Fernando Moraes	23
Design Space Exploration of High-Performance Parallel Architectures Enric Musoll and Mario Nemirovsky	32
Parallelized Radix-4 Scalable Montgomery Multipliers Nathaniel Pinckney and David Money Harris	39
Buffer Sizing for Multimedia Flows in Packet-Switching NoCs Leonel P. Tedesco, Ney Calazans and Fernando Moraes	46

FOREWORD

This issue of Journal of Integrated Circuits and Systems (JICS) includes 6 papers on design, test and CAD. Some of them have been selected from the presentations given at SBCCI2007 (21st Symposium on Integrated Circuits and Systems Design), which has been held in Rio de Janeiro, Brazil in 2007. Among the contributions presented at SBCCI2007 conference, only a few best rated by the reviewers were selected by the JICS Editorial Board and have been invited to submit an extended version. These papers have been submitted to usual reviewing process with the help of external experts.

We would like to thank the authors for their effort in preparing these high quality papers, as well as the reviewers for their help on paper selection, which guarantees the scientific level of this issue. We sincerely hope that JICS readers will enjoy these contributions, as we have enjoyed listening to them at the SBCCI2007 conference.

This year the JICS journal will restart the spontaneous submission of papers additionally to the invitation of best papers of Symposium on Microelectronics Technology and Devices and Symposium on Integrated Circuits and Systems Design. We hope the community will support our decision submitting high quality papers that will contribute to the excellence of JICS Journal.

João Antonio Martino
JICS Editor-in-chief

Luigi Carro
JICS Co-Editor