# Final Program

# IEEJ (The Institute of Electrical Engineers of Japan)

# The 1st International Analog VLSI Workshop

May 6,7,8, 1997

Dreese Laboratories 260, The Ohio State University, Columbus, OH, USA

Cooperation: The Ohio State University

IEEE Circuits and Systems Society Tokyo Chapter

Time Table of the 1st Analog VLSI Workshop Sessions

| | May 6(Tue.) | | 7(Wen.) | | 8(Thu.) |
|---|---|---|---|---|---|
| AM | 10:00 | TU-1 | 9:00 | WE-1 | TH-1 |
| | \| Opening Ceremony | | \| | 4 papers | 4 papers |
| | 10:30 | | 10:20 | | |
| | 11:00 | TU-2 | 10:40 | WE-2 | TH-2 |
| | \| | 3 papers | \| | 4 papers | 4 papers |
| | 12:00 | | 12:00 | | |
| PM | 14:00 | TU-3 | 14:00 | WE-3 | |
| | \| | 4 papers | \| | Special Talk | Sightseeing |
| | 15:20 | | 15:10 | | at OSU etc. |
| | 15:40 | TU-4 | 15:40 | WE-4 | |
| | \| | 4 papers | \| | Special Talk | |
| | 17:00 | | 16:50 | | |
| | | | 18:30 | Banquet | |
| | | | | at The River Club | |

## MAY, 6th, Tuesday

(AM)

__TU-1 (10:00-10:30)_____

Opening Ceremony :

Mohammed Ismail (The Ohio State University, U.S.A.)

Nobuo Fujii (Chairman of The Committee,Tokyo Institute of Technology, Japan)

Yuan Zheng (Chairman of Department of Electrical Engneering, The Ohio State University, U.S.A.)

Edward J. Ray (Senior vice provost, The Ohio State University, U.S.A.)

Thomas C. Heaphey(Department of Trade, City of Columbus, U.S.A.)

__TU-2 (11:00-12:00)__Chair: Shigetaka Takagi (Tokyo Institute of Technology, Japan)

11:00-11:20

(1) ECT-97-32

Low Power Dissipation Technique for OTA

Eitake Ibaragi, Akira Hyogo and Keitaro Sekine (Science University of Tokyo, Japan)

11:20-11:40

(2) ECT-97-33

Reduction in Element Value Spreads on Integrator-Based Filters

Kazuyuki Wada, Shigetaka Takagi and Nobuo Fujii (Tokyo Institute of Technology, Japan)

11:40-12:00

(3) ECT-97-34

A Single-Ended-Input Fully-Balanced-Output CMOS Circuit

Changku Hwang(Micrys, Inc., U.S.A.), Akira Hyogo (Science University of Tokyo, Japan)
and Mohammed Ismail (The Ohio State University, U.S.A.)

(PM)

__TU-3 (14:00-15:20)__Chair: Changku Hwang(Micrys, Inc., The Ohio State University, U.S.A.)

14:00-14:20

(4) ECT-97-35

A Robust Low Voltage CMOS Rail to Rail OpAmp Architecture

Chi-Hung Lin, Hong-Wu Chi (The Ohio State University, U.S.A.),
Changku Hwang (Micrys, Inc., U.S.A.) and Mohammed Ismail (The Ohio State University, U.S.A.)

14:20-14:40

(5) ECT-97-36

Design Aspects of a Rail-to-Rail CMOS Op Amp

Sander L. J. Gierkink, Peter J. Holzmann, Remco J. Wiegerink and Roelof F. Wassenaar
(University of Twente, The Netherlands)

14:40-15:00
(6) ECT-97-37
Class AB output stages of the integrated operational and power amplifiers
Vadim Ivanov (Burr-Brown Corp., U.S.A.)

15:00-15:20
(7) ECT-97-38
High-Performance CMOS Building blocks for Hearing Aid Devices
José Silva-Martínez, Guillermo Espinosa Flores-Verdad, Jorge Salcedo Suñer, Rogelio Rojas Hernández, Sergio Solis Bustos and Zahira Pérez Rivera
(National Institute of Astrophysics Optics and Electronics, Mexico)

__TU-4 (15:40-17:00)__Chair: Yutaka Fukui (Tottori University, Japan)
15:40-16:00
(8) ECT-97-39
A 3V CMOS Continuous-Time Fully-balanced Current-Mode Integrator with Complementary Transconductance
Jun-Ho Bang, Geun-Ho Lee (Chonbuk National University, Korea),
Joung-Chul Ahn (Electronics and Telecommunications Research Institute, Korea)
and Dong-Yong Kim (Chonbuk National University, Korea)

16:00-16:20
(9) ECT-97-40
A Realization of Wave Active Filter using CFAs
Yasutomo Kinugasa(Matsue National College of Technology, Japan),
Masashi Ishida and Yutaka Fukui (Tottori University, Japan)

16:20-16:40
(10)ECT-97-41
A Current-to-Frequency Converter Using Switched-Current Circuits
Yukihiro Kuroda, Akira Hyogo and Keitaro Sekine (Science University of Tokyo, Japan)

16:40-17:00
(11)ECT-97-42
LV Rail to Rail CMOS CCII and Its Application to Filter Design
Hassan O. Elwan and Ahmed M. Soliman (Cairo University, Egypt)

## MAY 7th, Wednesday

(AM)

__WE-1 (9:00-10:20)__Chair: Akira Hyogo (Science University of Tokyo, Japan)

9:00-9:20

(12)ECT-97-43

Neuron-MOS Parallel Search Hardware for Real-Time Signal Processing

Tsutomu Nakai, Tadashi Shibata and Tadahiro Ohmi (Tohoku University, Japan)

9:20-9:40

(13)ECT-97-44

Neuron-MOS Analog/Digital Merged Circuit Technology for Center-of-Mass Tracker Circuit

Ning Mei Yu, Tadashi Shibata and Tadahiro Ohmi (Tohoku University, Japan)

9:40-10:00

(14)ECT-97-45

A Modular Analog NLMS Structure for Adaptive Filtering

Luis Niño-de-Rivera, Hector Perez-Meana (National Polytechnic Institute, Mexico)

and Edgar Sánchez-Sinencio (Texas A&M University, U.S.A.)

10:00-10:20

(15)ECT-97-46

Efficient Building Blocks for On-Chip Learning Neural Networks

Miguel Meléndez-Rodríguez and José Silva-Martínez

(National Institute of Astrophysics Optics and Electronics, Mexico)

__WE-2 (10:40-12:00)__Chair: Dong-Yong Kim (Chonbuk National University, Korea)

10:40-11:00

(16)ECT-97-47

An Area-Efficient and Highly-Linear CMOS Four-Quadrant Analog Multiplier

Moonjae Jeong, Shigetaka Takagi and Nobuo Fujii (Tokyo Institute of Technology, Japan)

11:20-11:40

(17)ECT-97-48

LV CMOS Analog VLSI Composite Cell Design and Its Application to High Speed Multiplier.

Changku Hwang (Micrys, Inc., U.S.A.), Akira Hyogo (Science University of Tokyo, Japan),

Mohammed Ismail and Hong-Sun Kim (The Ohio State University, U.S.A.)

11:20-11:40
(18)ECT-97-49
A CMOS VCO Tuned by an On-chip Inductor and MOS Variable Capacitors
Akira Yoshida and Takashi Taya (OKI Electric Industry Co.,Ltd., Japan)

11:40-12:00
(19)ECT-97-50
GaAs MESFET High Frequency Current Mirror
Nobukazu Takai and Nobuo Fujii (Tokyo Institute of Technology, Japan)

(PM)
__WE-3 (14:00-15:10)__Chair: Nobuo Fujii (Tokyo Institute of Technology, Japan)
14:00-15:10
(20)ECT-97-51
[Special Talk] The Challenge of Creating Future Generation of
Analog Engineers.
Keitaro Sekine (Science University of Tokyo, Japan)

__WE-4 (15:40-16:50)__Chair: Nobuo Fujii (Tokyo Institute of Technology, Japan)
15:40-16:50
(21)ECT-97-52
[Special Talk] LV/LP VLSI : An Introduction and Socioeconomic Impact
Mohammed Ismail(The Ohio State University, U.S.A.)

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[Banquet]
18:30 Opening
19:00 Dinner
[Dinner Talk]
19:50 Welcoming Remarks
Jose Cruz (Dean of Engineering,The Ohio State University)
20:00 Ohio-Far East Trade Relations
Pamela Mahl (Program Manager at the Ohio Department of Development,
the International Trade Division)

## May 8th,Thursday

(AM)

__TH-1 (9:00-10:20)__Chair: Steven B. Bibyk (The Ohio State University, U.S.A.)

9:00-9:20

(22)ECT-97-53

High Dynamic Range Design for ∑ΔM with Wide Input Ranges

Hung-Chuan Pai and Steven B. Bibyk (The Ohio State University, U.S.A.)

9:20-9:40

(23)ECT-97-54

A New Lowpass Filter for the Fast Frequency Acquisition of the PLL Frequency Synthesizer

Yasuaki Sumi(Tottori SANYO Electric Co., Japan), Shigeki Obote(Tottori University, Japan),
Kazutoshi Tsuda(Japan Radio Co., Japan),
Kouichi Syoubu and Yutaka Fukui (Tottori University, Japan)

9:40-10:00

(24)ECT-97-55

A Novel (N+1/2) Pulse Swallow Divider for the PLL Frequency Synthesizer

Yasuaki Sumi(Tottori SANYO Co., Japan), Yasunori Tanimoto(SINKO MEX Co., Japan),
Kazutoshi Tsuda(Japan Radio Co., Japan),
Shigeki Obote, Kouichi Syoubu and Yutaka Fukui(Tottori University, Japan)

10:00-10:20

(25)ECT-97-56

A Small Ethernet Hardware for Measurement Equipments with Microprocessor

Nobuhiro Shiramizu, Akira Hyogo and Keitaro Sekine (Science University of Tokyo, Japan)

__TH-2 (10:40-12:00)__Chair: Roelof F. Wassenaar (University of Twente, The Netherlands)

10:40-11:00

(26)ECT-97-57

An Analog Adaptive Decision Feedback Equalizer Structure For Land Mobile Communications

Mariko Nakano-Miyatake and Hector Perez-Meana (National Polytechnic Institute, Mexico)

11:00-11:20

(27)ECT-97-58

Analysis and Implementation of Multi-Coupled Chaotic Oscillator

Koichiro Tsutsumi, Akira Hyogo and Keitaro Sekine (Science University of Tokyo, Japan)

11:20-11:40
(28)ECT-97-59
LV/LP CMOS Square-Law Composite Transistors for Analog VLSI Applications
Akira Hyogo(Science University of Tokyo, Japan), Changku Hwang(Micrys, Inc., U.S.A.),
Mohammed Ismail (The Ohio State University, U.S.A.)
and Keitaro Sekine (Science University of Tokyo, Japan)

11:40-12:00
(29)ECT-97-60
Current-Mode Continuous-Time Filters Using Widlar Current Mirrors
Joung-Chul Ahn (Electronics and Telecommunications Research Institute, Korea),
Takeshi Yanagisawa (Shibaura Institute of Technology, Japan),
Nobuo Fujii (Tokyo Institute of Technology, Japan) and
Chang Goo Kang (Electronics and Telecommunications Research Institute, Korea)

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