

VIIIth IMEKO TC4 Workshop on ADC Modelling and Testing (IWADC 2003)

Perugia, Italy
8-10 September 2003

ISBN: 978-1-5108-9348-1

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2003) by the International Measurement Confederation (IMEKO)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2019)

For permission requests, please contact the International Measurement Confederation (IMEKO)
at the address below.

IMEKO Secretariat
Dalszinhaz utca 10, 1st floor, Office room No. 3
H-1061 Budapest (6th district)
Hungary

Phone/Fax: +36 1 353 1562

imeko@t-online.hu

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

DELTA-SIGMA ADCS IN WIRELESS TRANSCEIVERS	1
<i>Ian Galton</i>	
MULTISTEP INTEGRATED A/D CONVERTERS	22
<i>P. Jespers</i>	
AUTOMATIC GENERATION OF LH-BIST ARCHITECTURE FOR ADC TESTING	25
<i>S. Bernard, F. Azaïs, M. Comte, Y. Bertrand, M. Renovell</i>	
A/D CONVERTER IN SUPERCONDUCTOR-SEMICONDUCTOR HYBRID TECHNOLOGY	31
<i>Erland Wikborg</i>	
AN ALL-DIGITAL A/D CONVERTER FOR FAST CONVERSION WITH 4-TAD PARALLEL CONSTRUCTION USING MOVING-AVERAGE FILTERING	35
<i>Takamoto Watanabe, Mitsuo Nakamura, Sumio Masuda</i>	
NOVEL CALIBRATION METHOD FOR A 16-BIT 1.5 MEGASAMPLES/S SUCCESSIVE APPROXIMATION ADC WITH NON-BINARY CAPACITOR ARRAY	39
<i>Jianhua Gan, Shouli Yan, Jacob Abraham</i>	
AN ACCURATE ADC MODEL IN RADAR SYSTEM SIMULATION	43
<i>Kalle Folkesson, Christer Svensson</i>	
ASYNCHRONOUS ADCS: DESIGN METHODOLOGY AND CASE STUDY	47
<i>E. Allier, G. Sicard, L. Fesquet, M. Renaudin</i>	
A RECONFIGURABLE SIGMA-DELTA MODULATOR ARCHITECTURE FOR MOBILE COMMUNICATIONS	51
<i>J. J. Ocampo-Hidalgo, A. Garcia-Ortiz, L. D. Kabulepa, M. Glesner</i>	
A FORMULATION FOR THE SYNTHESIS OF ROBUST DIGITAL CORRECTION FILTERS IN CASCADED SIGMA-DELTA CONVERTERS	55
<i>Mahbub Gani</i>	
BAND PASS SIGMA DELTA MODULATOR WITH TUNEABLE CENTER FREQUENCY	59
<i>L. Cardelli, L. Fanucci, V. Kempe, F. Mannozi, D. Strle</i>	
MOSFET-ONLY 3RD-ORDER Σ-Δ MODULATORS	63
<i>Alan J. Davis, Godi Fischer, Wai Yung, Chuen-Song Chen</i>	
ON-LINE CALIBRATION AND DIGITAL CORRECTION OF MULTI-BIT SIGMA-DELTA MODULATORS	67
<i>A. Fornasari, P. Malcovati, F. Maloberti</i>	
DESIGN CONSIDERATIONS FOR SDMS BEYOND ADSL	71
<i>A. Rodríguez-Vázquez, F. Medeiro, R. del Río, J.M. de la Rosa, B. Pérez-Verdú</i>	
HIGH FREQUENCY & RESOLUTION ADC: TRENDS AND MODELING	76
<i>Richard Morisson</i>	
A 0.9-V 10.7-MHZ 3.6-MW BANDPASS $\Delta\Sigma$ MODULATOR USING UNITY-GAIN-RESET OPAMPS	80
<i>Mustafa Keskin, Un-Ku Moon, Gabor C. Temes</i>	
AMPLIFIER IMPERFECTION EFFECTS IN SWITCHED-CAPACITOR RESONATORS	84
<i>Mustafa Keskin, Un-Ku Moon, Gabor C. Temes</i>	
MEASURING THE DC ACCURACY OF HIGH PERFORMANCE ANALOG TO DIGITAL CONVERTERS	88
<i>Frank Ohnhäuser</i>	
MODELLING OF INSTRUMENTATION SIGMA-DELTA ANALOG-TO-DIGITAL CONVERTERS	92
<i>Valeriy I. Didenko, Andrey L. Movchan, Juriy S. Solodov</i>	
AN ALL-DIGITAL A/D CONVERTER FOR INCREASED RESOLUTION WITH A 2^{<SUP>22</SUP>}-DELAY-UNIT TAD ARCHITECTURE USING MOVING-AVERAGE FILTERING	98
<i>Takamoto Watanabe, Tamotsu Mizuno, Tomohito Terasawa, Sumio Masuda</i>	
IMAGE ANALYSIS TECHNIQUES FOR THE DETECTION OF DEFECTS AT BGA BY X-RAY	102
<i>T. Sumimoto, T. Maruyama, Y. Azuma, S. Goto, M. Mondou, N. Furukawa, S. Okada</i>	
A 14-BIT BANDPASS MASH SIGMA-DELTA PIPELINE A/D CONVERTER	106
<i>S. Marabelli, A. Fornasari, P. Malcovati, F. Maloberti</i>	
A/D CONVERSION ERROR PROPAGATION IN DISTANCE MEASUREMENT WITH A SONAR SYSTEM BASED ON PIEZOPOLYMER SENSORS	110
<i>Antonino S. Fiorillo, Gianni D'Angelo</i>	

RAIL-TO-RAIL HIGH GAIN TELESCOPIC OPERATIONAL AMPLIFIER USING POSITIVE FEEDBACK TECHNIQUE	114
<i>Gil Su Kim, Hoon Jae Ki, Meejoung Kim, Soo Won Kim</i>	
2.5 V, 10-BIT, 50-MS/S CMOS PIPELINE LOW POWER A/D CONVERTER	118
<i>Dae Yong Kim, Gil Su Kim, Hoon Jae Ki, Soo Won Kim</i>	
DYNAMIC NONLINEARITY AT UNDERSAMPLING, FAST ADC	122
<i>J. Halánek, I. Višcor, M. Kasal, M. Villa, P. Cofrancesco</i>	
COMPENSATION OF DIGITAL VOLTMETERS NONLINEARITIES BY MEANS OF A QUANTUM STANDARD	126
<i>Andrea Sosso, Roberto Cerri</i>	
MINIMAL TOTAL HARMONIC DISTORTION POST-CORRECTION OF ADCS	130
<i>Henrik Lundin, Mikael Skoglund, Peter Händel</i>	
MODELING CHARGE INJECTION NON-LINEAR EFFECTS IN SIGMA-DELTA MODULATORS USING SIMULINK	134
<i>Alberto Dei, Maurizio Valle</i>	
SHORT-TERM FREQUENCY STABILITY OF DIGITIZER TESTING SIGNALS	138
<i>Michal Široký, Jan Cermák, Jaroslav Roztocil</i>	
CLOSE-IN SPURS IN DIGITAL RECEIVER	142
<i>Ivo Višcor, Josef Halánek</i>	
ESTIMATION OF THE DIGITIZED MAMMOGRAPHIC BREAST DENSITY BY THE HISTOGRAM APPROACH USING THE NEURAL NETWORK	146
<i>Sachiko Goto, Yoshiharu Azuma, Tetsuhiro Sumimoto, Yoshihiro Takeda, Shigeru Eiho</i>	
THE DESCRIPTION OF THE SPECTRUM CHARACTERISTICS OF THE QUANTIZATION ERROR	150
<i>Anna Domanska</i>	
HIGH RELIABLE DAQ FOR ADC ON LINE TESTING	154
<i>M. Catelani, E. Campani, M. Del Pistoia, R. Singuaroli, M. Mugnaini, A. Fort</i>	
APPLICATION OF PERIODICAL EXPONENTIAL STIMULUS SIGNAL FOR ADC DNL TESTING	158
<i>Roland Holcer, Linus Michaeli, Ján Šaliga</i>	
A PLATFORM FOR MICRO-CONTROLLER CHARACTERIZATION	162
<i>Bruno Andò, Salvatore Baglio, Vito Caruso, Nicola Pitrone</i>	
PERFORMANCE ANALYSIS OF PC-BASED DEVELOPMENT SYSTEMS WITH ONBOARD ADCS/DACS FOR DIGITAL SIGNAL PROCESSING APPLICATIONS	166
<i>D. Macii, S. S. Demirsoy, P. Carbone, I. Kale</i>	
A RISKS ASSESSMENT AND CONFORMANCE TESTING OF ANALOG-TO-DIGITAL CONVERTERS	170
<i>E. Nunzi, P. Carbone, D. Petri</i>	
ELECTROMAGNETIC IMMUNITY OF A PORTABLE PC-BASED MEASUREMENT INSTRUMENT	175
<i>Salvatore Nuccio, Ciro Spataro, Giovanni Tinè</i>	
EVALUATION OF THE MEASUREMENT UNCERTAINTY OF PC-BASED INSTRUMENTS BY USING THE EFFECTIVE NUMBER OF BITS	179
<i>Salvatore Nuccio, Ciro Spataro</i>	
MEASURING DYNAMIC NONLINEARITY OF A/D CONVERTERS VIA SPECTRAL METHODS	183
<i>F. Adamo, F. Attivissimo, N. Giaquinto, I. Kale</i>	
A FREQUENCY-DOMAIN APPROACH TO ADC PHASE-PLANE MODELING AND TESTING	187
<i>Conceição Libano Monteiro, Pasquale Arpaia, António Cruz Serra</i>	
MEASURING CHANNEL SWITCHING ERROR IN DATA ACQUISITION SYSTEMS	191
<i>F. Corrêa Alegria, Pedro Ramos, António Cruz Serra</i>	
NOVEL DUTY-CYCLE-TO-CODE CONVERSION METHOD	194
<i>Sergey Y. Yurish, Nikolay V. Kirianaki</i>	
EFFECT OF INTERNAL WAVE AT LOMBOK STRAIT TO CHLOROPHYLL AREA AT SOUTHERN COASTLINE OFF BALI ISLAND	197
<i>Yessy Arvelyna, Masaki Oshima</i>	
THE EFFECTS OF APERTURE JITTER AND CLOCK JITTER IN WIDEBAND ADCS	201
<i>Michael Löhning, Gerhard Fettweis</i>	
EFFECTS OF PIPELINED ADC ARCHITECTURE AND $\Sigma\Delta$ MODULATOR ON DIGITAL DOWN CONVERSION	206
<i>D. Grimaldi, L. Serratore</i>	

A NOVEL APPROACH FOR TESTING AND IMPROVING THE STATIC ACCURACY OF HIGH PERFORMANCE DIGITAL-TO-ANALOG CONVERTERS.....	210
<i>D. Macii</i>	
PREPROCESSING CIRCUITS FOR PARTIAL DISCHARGES MEASUREMENT	214
<i>M. Kriz</i>	
ESTIMATION OF A/D CONVERTER NONLINEARITIES FROM COMPLEX SPECTRUM.....	217
<i>Jean-Marie Janik</i>	
STOCHASTIC APPROACH FOR MEMORYLESS NONLINEARITY MEASUREMENTS.....	221
<i>Raul Carneiro Martins, António Cruz Serra</i>	
STATISTICAL PERFORMANCE OF GAUSSIAN ADC HISTOGRAM TEST.....	225
<i>A. Moschitta, P. Carbone, D. Petri</i>	
EVALUATING MEASUREMENT UNCERTAINTY IN A/D CONVERTERS WITH AND WITHOUT DITHER.....	230
<i>F. Attivissimo, N. Giaquinto, M. Savino</i>	
STEP-GAUSS STOCHASTIC TESTING METHOD APPLICATION FOR TRANSPORTABLE REFERENCE ADC DEVICE.....	234
<i>Jan Holub, Milan Komárek, Jiri Macháček, Josef Vedral</i>	
ADAPTIVE FILTERING FOR ADC SPECTRAL ANALYSIS	238
<i>D. Dallet, Ch. Rebai, V. L. Boun, D. Elfersi, A. Merino, Ph. Marchegay</i>	
IEEE STANDARD 1057, CRAMÉR-RAO BOUND AND THE PARSIMONY PRINCIPLE.....	242
<i>Tomas Andersson, Peter Händel</i>	
EXPERIMENTAL VALIDATION OF A GENERAL-PURPOSE NON-LINEAR DYNAMIC MODEL FOR S/H-ADC DEVICES	246
<i>P. A. Traverso, G. Pasini, D. Mirri, F. Filicori, G. Iuculano</i>	
MODELING AND DESIGN OPTIMISATION FOR HIGH-RESOLUTION, HIGH-SPEED PIPELINE ADC'S	250
<i>Matteo Parenti, Davide Vecchi, Andrea Boni, Giovanni Chiorboli</i>	
AUTOMATIC REDUCTION OF NOISE IN DATA ACQUIRED BY DIGITAL CAMERAS	254
<i>F. Russo, A. Lazzari</i>	
CONTACT-LESS 3D-COORDINATE MEASUREMENT SYSTEM BY LASER SCANNING AND IMAGE RECONSTRUCTION FROM UNORGANIZED DATA	258
<i>G. Tognola, C. Svelto, M. Parazzini, P. Ravazzani, F. Grandori</i>	
DIGITAL-IMAGE FORMATION BASED ON THE INVERSION OF MICROWAVE SCATTERING DATA.....	262
<i>S. Caorsi, M. Donelli, G. L. Gragnani, A. Massa, M. Pastorino, A. Randazzo</i>	
ONBOARD FEATURE INDEXING FROM SATELLITE LIDAR IMAGES.....	266
<i>Yang Cai, Yongxiang Hu, Mel Siegel, Sriram Janakiram Gollapalli, Ashish R. Venugopal, Ulas Bardak</i>	
TOWARD SOFTWARE DEFINED RADIO : THE ADC GOES FROM BASEBAND TO ANTENNA	270
<i>Yann Deval, Dominique Dallet, Jean-Baptiste Bégueret</i>	
DESIGN, SIMULATION, AND TEST STRATEGIES FOR ANALOG-TO-DIGITAL, DIGITAL-TO-ANALOG CONVERSION CHANNELS IN WIRELESS APPLICATIONS	274
<i>Sebastien Fievet, Sirag Gokoglu, Emmanuel Marais, Roberto Rivoir</i>	
TRUE N-BIT CALIBRATION OF PIPELINE A/D CONVERTERS: TRENDS AND CHALLENGES	278
<i>David J. Allstot, Jianjun Guo, Ward J. Helms, Waisiu Law, Charles T. Peach</i>	
DELTA-SIGMA DATA CONVERTERS FOR WIRELESS APPLICATIONS	282
<i>Bikram Chaudhuri, Sayfe Kiaei</i>	
Author Index	