

GUEST EDITORIAL

- 2 Special Section on the 2007 Advanced Methods for Uncertainty Estimation in Measurement Workshop / **A. Ferrero**

SPECIAL SECTION PAPERS

- 4 Metrological Characterization of a Vision-Based Measurement System for the Online Inspection of Automotive Rubber Profile / **R. Anchini, G. Di Leo, C. Liguori, A. Paolillo**
- 14 A Vector Approach for Image Quality Assessment and Some Metrological Considerations / **A. De Angelis, A. Moschitta, F. Russo, P. Carbone**
- 26 A Study on Uncertainty-Complexity Tradeoffs for Dynamic Nonlinear Sensor Compensation / **M. Gubian, A. Marconato, A. Boni, D. Petri**
- 33 Guidelines to Manage Measurement Uncertainty in Conformance Testing Procedures / **D. Macii, D. Petri**
- 41 Representing and Approximating Symmetric and Asymmetric Probability Coverage Intervals by Possibility Distributions / **G. Mauris**
- 46 Uncertainty Evaluation of Objective Speech Quality Measurement in VoIP Systems / **P. Paglierani, D. Petri**
- 52 Reduction of Uncertainty in Air Gauge Adjustment Process / **M. Rucki**
- 58 Uncertainty and Worst-Case Analysis in Electrical Measurements Using Polynomial Chaos Theory / **A.H.C. Smith, A. Monti, F. Pond**
- 68 An Adaptive Quality Assessment System—Aspect of Human Factor and Measurement Uncertainty / **J. Wirandi, J. Chen, W. J. Kulesza**

REGULAR SECTION PAPERS

- 76 Power Measurement in DVB-T Systems: On the Suitability of Parametric Spectral Estimation in DSP-Based Meters / **L. Angrisani, D. Capriglione, L. Ferrigno, G. Miele**
- 87 Four-Terminal-Pair Inductance Comparison Between INRIM and CTU / **L. Callegaro, V. D'Elia, J. Bohacek**
- 94 Fully Differential AC-Coupling Networks: A Comparative Study / **O. Casas, E. M. Spinelli, R. Pallds-Areny**
- 99 Characterization of Thermoelectric Modules for Powering Autonomous Sensors / **S. Dalola, M. Ferrari, V. Ferrari, M. Guizzetti, D. Marioli, A. Taroni**
- 108 Non-Invasive Fast Detection of Internal Fouling Layers in Tubes and Ducts by Acoustic Vibration Analysis / **J.J. da Silva, A. M. N. Lima, F. H. Neff, J. S. da Rocha New**
- 115 Shielding Effectiveness Measurements for Ferromagnetic Shields / **S. Di Praia, M. Marracci, B. Tellini, C. Zappacosta**
- 122 Mutual Inductance of a Precise Rogowski Coil in Dependence of the Position of Primary Conductor / **L. Ferkovic, D. Ilic, R. Malaric**
- 129 Very-Low-Frequency Electromagnetic Field Detector With Data Acquisition / **S. A. Hanna, Y. Motai, W. J. Varhue, S. Titcomb**
- 141 Three-Dimensional TOP Robot Vision System / **S. Hussmann, T. Liepert**

- 147 Elastic Bar Transfer Function Determination Using Two-Point Strain Measurements / **Z. Kaczmarek**
- 152 Detection of Flicker Caused by Interharmonics / **T. Kim, E. J. Powers, W. M. Grady, A. Arapostathis**
- 161 Coaxial Capacitive Dividers for High-Voltage Pulse Measurements in Intense Electron Beam Accelerator With Water Pulse-Forming Line / **J.-L. Liu, B. Ye, T.-W. Zhan, J.-H. Peng, J.-D. Zhang, X.-X. Wang**
- 167 Room Acoustics Measurement System Design Using Simulation and Experimental Studies / **D. Necsulescu, W. Zhang, W. Weiss, J. Sasiadek**
- 173 Measurement of Magnetic Field Distorting the Electron Beam Direction in Scanning Electron Microscope / **M. Pluska, L. Oskwarek, R. J. Rak, A. Czerwinski**
- 180 Output Impedance Measurement in Low-Power Sources and Conditioners / **R. E. Serrano-Finetti**
- 187 High-Resolution Delay Testing of Interconnect Paths in Field-Programmable Gate Arrays / **J. R. Smith, T. Xia**
- 196 Characteristics of Short-Term Phase Noise of MIMO Channel Sounding and Its Effect on Capacity Estimation / **A. Taparugssanagorn, J. Ylitalo**
- 202 Quadrature Bridge for R-C Comparisons Based on Polyphase Digital Synthesis / **B. Trinchera, L. Callegaro, V. D'Elia**
- 207 Moving Web-Tension Determination by Out-of-Plane Vibration Measurements Using a Laser / **M. Vedrines, V. Gassmann, D. Knittel**
- 214 Effects of Overlapping and Windowing on Frequency Response Function Estimates of Systems With Random Inputs / **W. D. Widanage, J. L. Douce, K. R. Godfrey**
- 221 A Support-Vector-Machine-Based Approach to RF Sensor Spectral Signature Classifications / **M.B. Yeary, S. Nemat, T.-Y. Yu, Y. Wang, Y. Zhai**
- 229 A Novel Definition and Measurement Method of Group Delay and Its Application / **X. Zhu, Y. Li, S. Yong, Z. Zhuang**

238 Special Section on the 2007 IEEE AUTOTESTCON / **W. Sheppard**

SPECIAL SECTION PAPERS

- 240 Practical Implementation of Diagnosis Systems Using Timed Failure Propagation Graph Models / **S. Abdelwahed, G. Karsai, N. Mahadevan, S. C. Ofsthun**
- 248 Extending the Bandwidth and Dynamic Range of Old RF Instruments to Meet State-of-the-Art Performance, Using a Synthetic Instrument Approach / **O. Andersen, D. Wisell, P. Stenvard, N. Keskitalo**
- 255 Improving Digital System Diagnostics Through Prognostic and Health Management (PHM) Technology / **M. Baybutt, C. Minnella, A. E. Ginart, P. W. Kalgren, M. J. Roemer**
- 263 Wideband Digital Downconverters for Synthetic Instrumentation / **M. T. Hunter, W. B. Mikhael, A. G. Kourtellis**
- 270 Device Verification Testing of High-Speed Analog-to-Digital Converters in Satellite Communication Systems / **S. Kim, R. Elkis, M. Peckerar**
- 281 Vector Signal Analyzer Implemented as a Synthetic Instrument / **R. W. Lowdermilk, F.J. Harris**
- 291 Prognostics Methods for Battery Health Monitoring Using a Bayesian Framework / **B. Saha, K. Goebe, S. Poll, J. Christophersen**
- 297 Characterizing System Health Using Modal Analysis / **A. R. Scott**
- 303 Application of Blind Deconvolution Denoising in Failure Prognosis / **B. Zhang, T. Khawaja, R. Patrick, G. Vachtsevanos, M. E. Orchard, A. Saxena**

REGULAR SECTION PAPERS

- 311 Velocity-Moisture Relationships for Sandy Soils. Experimental Results and Data Analysis / **F. Adamo, F. Attivissimo, L. Fabbiano N. Giaquinto**
- 318 A Novel Method of Distance Measurement Based on Pulse Position Modulation and Synchronization of Chaotic Signals Using Ultrasonic Radar Systems / **F. Alonge, M. Branciforte, F. Motta**
- 330 Modeling Timing Jitter Effects in Digital-to-Analog Converters / **L. Angrisani, M. D'Arco**
- 337 Advances of Barkhausen Emission Measurement / **V. S. Augutis, Ž. Nakutis, R. Ramanauskas**
- 342 Distributional Smoothing in Bayesian Fault Diagnosis / **S. G. W. Butcher, J. W. Sheppard**
- 350 A t-Norm-Based Fuzzy Approach to the Estimation of Measurement Uncertainty / **C. De Capua, E. Romeo**
- 356 Improved Static Testing of A/D Converters for DC Measurements / **A. Di Nisio, N. Giaquinto, L. Fabbiano, G. Cavone, M. Savino**
- 365 The Construction of Random-Fuzzy Variables From the Available Relevant Metrological Information / **A. Ferrero, S. Salicone**
- 375 Flicker Measurement System for Wind Turbine Certification / **J. J. Gutierrez, J. Ruiz, L. A. Leturiondo, A. Lazkano**
- 383 Impedance Measurements Using Genetic Algorithms and Multiharmonic Signals / **F. M. Janeiro, P. M. Ramos**
- 389 A Filtering Technique for Three-Phase Power Systems / **M. Karimi-Ghartemani, H. Karimi, A. R. Bakhshai**

- 397 A Resistance Deviation-to-Pulsewidth Converter for Resistive Sensors / **H. Kim, W -S Chung, H -J Kim, S -H Son**
- 401 A Novel Statistical Timing and Leakage Power Characterization of Partially Depleted Silicon-on-Insulator Gates / **K. K. Kim, Y-B Kim, F. Lombardi**
- 411 Online Voidage Measurement of Two-Phase Flow Based on the Ant System Algorithm / **Q. Li, Z. Huang, B. Wang, H Li**
- 416 Quantifying Surface Deformation With the Edge of Light-Enhanced Visual Inspection / **Z. Liu, M. Genest, D. S. Forsyth, A. Marincak**
- 423 Measurement of Asymmetric Minor Loops in Soft Ferrites Up to Medium Frequencies / **S. Lizón-Martmez, B. Tellini, R. Giannetti, G. Robles**
- 429 High-Resolution ACLR Measurement Architecture for Adaptive Feedforward Amplifiers / **I. Mayordomo, J. Legarda, J. Presa, D. Valderas**
- 434 Transconductance Converters Based on Current Mirrors Applied to pH Measurement Using ISFET Sensors / **D. Ramirez Muñoz, S. Casans Berga, D. F. Novoa Diaz, R. Garcia-Gil, A. E. Navarro Antón**
- 441 Linearization Circuit of the Thermistor Connection / **Z. P. Nenova, T. G. Nenov**
- 450 Performance Characterization of a Measurement System for Locating Transient Voltage Sources in Power Distribution Networks / **L. Peretto, R. Sasdelli, E. Scala, R. Tinarelli**
- 457 Principles and Demonstration of Intrabody Communication With a Sensitive Electrooptic Sensor / **A. Sasak, M. Shinagawa, K. Ochiai**
- 467 On the Feasibility of Pressure Profile Measurements With Time-Domain Reflectometry / **A. Scheuermann, C. Huebner**
- 475 Quasi Analytical Bit-Error-Rate Analysis Technique Using Best Linear Approximation Modeling / **G. Yandersteen, Y. Rolain, K. Yandermot, R. Pintelon, J. Schoukens, W. Van Moer**
- 483 An Improved Broadband Conversion Scheme for the Large-Signal Network Analyzer / **W. Van Moer, Y. Rolain**
- 488 A New Method for Measuring Packet Loss Probability Using a Kalman Filter / **D. Zhang, D. Ionescu**

REGULAR PAPERS

- 502 Improved Analysis of Implicit RMS Detectors / **M. T. Abuelma'atti**
- 506 Analysis of the Residual Spectrum in ADC Dynamic Testing / **D. Agrez**
- 512 Precision of Independently Based Gain and Offset Error of an ADC Using the Histogram Method / **F.C. Alegria, A. C. Serra**
- 522 An Internet-Based Interactive Embedded Data-Acquisition System for Real-Time Applications / **A. Z. Alkar, M. A. Karaca**
- 530 A Multihit Time-to-Digital Converter Architecture on FPGA / **A. M. Amiri, M. Boukadoum, A. Khouas**
- 541 Model-Based Compensation of SAR Nonlinearity / **P. Arpaia, L. Michaeli, S. Rapuano**
- 551 Robust Sensor-Based Navigation for Mobile Robots / **I. A. R. Ashokaraj, P. M. G. Silson, A. Tsourdos, B. A. White**
- 557 Power Quality Monitoring Controlled Through Low-Cost Modules / **L. F. Auler, R. d'Amore**
- 563 CMRR in Voltage-Op-Amp-Based Current-Mode Instrumentation Amplifiers (CMIA) / **S. J. Azhari, H. Fazlalipoor**
- 570 Development of a High-Precision Calorimeter for Measuring Power Loss in Electrical Machines / **W. Cao, K. J. Bradley, A. Ferrah**
- 578 A Novel Indirect Method to Determine the Radiation Impedance of a Handheld Antenna Structure / **M. H. Capstick, J. O. Jekkonen, A. C. Marvin, I. D. Flintoft, L. Dawson**
- 586 GPS-Based System for the Measurement of Synchronized Harmonic Phasors / **A. Carta, N. Locci, C. Muscas**
- 594 Yarn Hairiness Characterization Using Two Orthogonal Directions / **V. H. Carvalho, P. J. Cardoso, M. S. Belsley, R. M. Vasconcelos, F. O. Soares**
- 602 Novel Classifier Fusion Approaches for Fault Diagnosis in Automotive Systems / **K. Choi, S. Singh, A. Kodali, K. R. Pattipati, J. W. Sheppard, S. M. Namburu, S. Chigusa, D. V. Prokhorov, L. Qiao**
- 612 A Fuzzy Approach to Decision Making About Compliance of Environmental Electromagnetic Field With Exposure Limits / **C. De Capua, R. Morello, N. Pasquino**
- 618 Advanced Instrument For Field Calibration of Electrical Energy Meters / **A. Delle Femine, D. Gallo, C. Landi, M. Luiso**
- 626 Proximity Effects in the Near-Field EMF Metrology / **T. Dlugosz, H. Trzaska**
- 631 Implementation of a 3-D Hyperspectral Instrument for Skin Imaging Applications/ **H. Erives, N. B. Targhetta**
- 639 Calculation of Pulse Parameters and Propagation of Uncertainty / **P.O. Hale, C. M. J. Wang**
- 649 Error Model Application in Neural Reconstruction of Nonlinear Sensor Input Signal / **J. Jakubiec, P. Makowski, J. Roj**
- 657 Economic Evaluation Model for International Standardization of Technology / **Y. Kim, H. S. Kim, H. Jeon, Y. Sohn**
- 666 Definition of Instantaneous Dielectric Loss Factor and Digital Algorithm for Online Monitoring / **Q. Li, L. Zhang, T. Zhao**
- 674 Remote Measurement of Temperature in the Presence of a Strong Magnetic Field / **S. F. Lord, S. L. Firebaugh, A. N. Smith**

- 681 Optimization of Optical Receiver Parameters for Pulsed Laser-Tracking Systems / **L. M. Manojlovic, Z. P. Barbaric**
- 691 Improving Absorbance Spectrum Reconstruction via Spectral Data Decomposition and Pseudo-Baseline Optimization / **R. Z. Morawski, A. Miekina**
- 698 Stand-Alone Surface Roughness Analyzer / **S. Moslehpour, C. Campana, D. Sherry, B. Deryniosky**
- 707 Vibration Detector Based on GMR Sensors / **I. Pelegn'Sebastid, J. Alberola Lluch, J. R. Lajara Vizcaino, J. Santiso Bellon**
- 713 MIMO-OFDMA Measurements; Reception, Testing, and Evaluation of WiMAX MIMO Signals With a Single Channel Receiver / **M. E. Sahin, H. Arslan**
- 722 Improving the Accuracy of Magnetostrictive Linear Position Sensors / **F. Seco, J. M. Martin, A. R. Jimenez**
- 730 Stream Soil Moisture Estimation by Reflected GPS Signals With Ground Truth Measurements / **L.-C. Shen, J.-C. Juang, C.-L. Tsai, C.-C. Chang, P.-Y. Ko, C.-L. Tseng**
- 738 Noncontact Characterization of Carbon-Fiber-Reinforced Plastics Using Multifrequency Eddy Current Sensors / **W. Yin, P. J. Withers, U. Sharma, A. J. Peyton**

EDITORIAL

- 748 Editorial Foreword / **J. Olthoff**
 749 2008 Conference on Precision Electromagnetic Measurements (CPEM) /
T. E. Lipe, Y.-H. Tang

SPECIAL ISSUE PAPERS

AC AND DC CURRENT

- 751 Calibration of Rogowski Coils at Power Frequencies Using Digital Sampling
 / **B. Djokić**
 756 Novel Digital Voltage Ramp Generator for Use in Precision Current Sources
 in the Picoampere Range / **G.-D. Willenberg, H. N. Tauscher**

AC AND DC VOLTAGE

- 761 Systematic Error Analysis of Stepwise-Approximated AC Waveforms
 Generated by Programmable Josephson Voltage Standards /
C. J. Burroughs, Jr., A. Rufenacht, S. P. Benz, P. D. Dresselhaus
 768 Development and Application of a Programmable Partial Discharge
 Calibrator / **M. Chiampi, G. Crotti, Y. Hu, A. Sardi**
 775 Operating Margins for a Pulse-Driven Josephson Arbitrary Waveform
 Synthesizer Using a Ternary Bit-Stream Generator / **E. Houtzager,**
S. P. Benz, H. E. van den Brom
 781 Simple Algorithm for Sampling Synchronization of ADCs / **W. G. Kurten**
Ihlenfeld, M. Seckelmann
 786 Design and Characterization of a Sampling System Based on E—A Analog-
 to-Digital Converters for Electrical Metrology / **R. Iuzzolino, L. Palafox,**
W. G. Kurten Ihlenfeld, E. Mohns, C. Brendel
 791 Josephson-Voltage-Standard-Locked Sine Wave Synthesizer: Margin
 Evaluation and Stability / **B. Jeanneret, F. Overney, L. Callegaro,**
A. Mortara, A. Rufenacht
 797 Development and Investigation of SNS Josephson Arrays for the Josephson
 Arbitrary Waveform Synthesizer / **J. Kohlmann, O. F. Kieler,**
R. Iuzzolino, J. Lee, R. Behr, B. Egeling, F. Müller
 803 Modeling and Measuring Error Contributions in Stepwise Synthesized
 Josephson Sine Waves / **J. Lee, R. Behr, A. S. Katkov, L. Palafox**
 809 Precision Differential Sampling Measurements of Low-Frequency
 Synthesized Sine Waves With an AC Programmable Josephson Voltage
 Standard / **A. Riifenacht, C. J. Burroughs, Jr., S. P. Benz,**
P. D. Dresselhaus, B. C. Waltrip, T. L. Nelson
 816 First Direct Comparison of a Cryocooler-Based Josephson Voltage Standard
 System at 10 V / **M. Schubert, M. Starkloff, M. Meyer, G. Wende,**
S. Anders, B. Steinbach, T. May, H.-G. Meyer
 821 A Two-Way Josephson Voltage Standard Comparison Between NIST and
 NRC / **Y. Tang, B. M. Wood, C. A. Hamilton**
 827 Reconfigurable Unit for Precise RMS Measurements / **U. Pogliano,**
B. Trinchera, F. Francone
 832 Comparison of a Multichip 10-V Programmable Josephson Voltage
 Standard System With a Superconductor-Insulator-Superconductor-Based
 Conventional System / **T. Yatnada, Y. Murayama, H. Yamamori,**
H. Sasaki, A. Shoji, A. Iwasa, H. Nishinaka, Y. Nakamura

AC-DC DIFFERENCE

- 838 Progress Toward a 1 V Pulse-Driven AC Josephson Voltage Standard / **S. P. Benz, P. D. Dresselhaus, A. Riifenacht, N. F. Bergren, J. R. Kinard, R. P. Landim**
- 844 Precision AC-DC Transfer Measurement System Based on a 1000-V Inductive Voltage Divider / **I. Budovsky, T. Hagen**
- 848 Single-Junction Thermal Voltage Converters With Reduced Uncertainties at Frequencies up to 1 MHz / **T. Hagen, I. Budovsky**
- 853 Correction of Systematic Errors Due to the Voltage Leads in an AC Josephson Voltage Standard / **P. S. Filipski, J. R. Kinard, T. E. Lipe, Y.-H. Tang, S. P. Benz**
- 859 Improved High-Input-Impedance mV-Amplifiers With Gain Factors From 10 to 900 / **T. Funck, M. Stojanovic, M. Klonz**
- 863 Direct Measurement of AC Current by Measuring the Voltage Drop on the Coaxial Current Shunt / **B. Voljc, M. Lindic, R. Lapuh**
- 868 Design and Fabrication of MJTCs on Quartz Substrates at NIST / **L. Scarioni, T. E. Lipe, J. R. Kinard**
- 872 Coaxial Shunts as AC-DC Transfer Standards of Current / **U. Pogliano, G. C. Bosco, D. Serazio**

FUNDAMENTAL CONSTANTS

- 878 A Magnetic Levitation Technique for the Simultaneous Comparison of Mass Artifacts in Air and Vacuum / **Z. Jabbour, P. J. Abbott, R. Liu, E. Williams**
- 884 Improvements in the NIST Johnson Noise Thermometry System / **S. P. Benz, J. Qu, H. Rogalla, D. R. White, P. D. Dresselhaus, W. L. Tew, S. W. Nam**
- 891 Oxide Layer Mass Determination at the Silicon Sphere of the Avogadro Project / **I. Busch, H.-U. Danzebrink, M. Krumrey, M. Borys, H. Benin**
- 897 Nanonewton Force Generation and Detection Based on a Sensitive Torsion Pendulum / **S.-J. Chen, S.-S. Pan**
- 902 Improvements of the Measurement Chain for the Determination of the von Klitzing Constant R_K / **C. Consejo, O. Thevenot, L. Lahousse, F. Piquemal, J. M. David**
- 908 Density of a Single-Crystal Natural Silicon Sphere / **W. Giardini, P. Manson, M. Wouters, B. Warrington, B. Ward, N. Bignell, C. Walsh, E. Jaatinen, M. Kenny**
- 915 Improvement in the Volume Determination for Si Spheres With an Optical Interferometer / **N. Kuramoto, K. Fujii**
- 919 Investigations on Diameter Measurements of the Avogadro Silicon Sphere Dependent on the Position in the Field of View of the Interferometer Optics / **G. Bartl, R. A. Nicolaus**
- 924 Progress on the BIPM Watt Balance / **A. Picard, H. Fang, A. Kiss, E. de Mirandes, M. Stock, C. Urano**
- 930 Prototype of a Pendulum for Deriving the Kilogram From Electrical Quantities / **U. Pogliano, D. Serazio**
- 936 Toward a Final Result From the NPL Mark II Watt Balance / **I. A. Robinson**
- 942 Toward the Redefinition of the Kilogram: Measurements of Planck's Constant Using Watt Balances / **LA. Robinson**

- 949 Balance Pan Damping Using Rings of Tuned Sloshing Liquids /
**E. R. Williams, D. Haddad, G. Geneves, P. Gournay, C. Hauck,
F. Villar, R. L. Steiner, R. Liu**

IMPEDANCE

- 955 A High-Stability Capacitance Sensor System and Its Evaluation /
S. Avramov-Zamurovic, R. D. Lee
- 962 A Four-Terminal Coaxial-Pair Maxwell-Wein Bridge for the Measurement of
Self-Inductance / **M. Cole**
- 967 DC and Low-Frequency Humidity Dependence of a 20 pF Air-Gap Capacitor
/ **G. Rietveld, H. E. van den Brom**
- 973 Controlling Losses With Gates and Shields to Perfect a Quantum Hall
Impedance Standard / **J. Schurr, B. P. Kibble, G. Hein, K. Pierz**
- 980 A New Short-Bar Method for 4TP Admittance Standards Calibration by
Using a Modified Z-Matrix Expression to Improve Signal-to-Noise Ratio
(S/N) for Higher Impedances / **K. Suzuki**
- 985 A New Self-Calibration Method for a Decade Inductive Voltage Divider by
Using Bifilar Windings as an Essential Standard at Wide Frequency /
K. Suzuki
- 993 A New Self-Calibration Method of an LCR Meter for RF Resistance
Calibration Using Capacitance Standards / **K. Suzuki**

LOW CURRENT/SET

- 997 Progress Towards the Electron Counting Capacitance Standard at PTB /
H. Scherer, S. V. Lotkhov, G.-D. Willenberg, B. Camarota
- 1003 Photonics Gaussian Beams and Spatial Modulation in Nanopositioning /
D. Haddad, P. Juncar, G. Geneves, and M. Wakim

POWER AND ENERGY

- 1010 Standard of Electrical Power at Frequencies Up to 200 kHz / I. Budovsky
- 1017 The Calibration of IEC Standard Flickermeters Using Complex Modulated
Signals / **P. Clarkson, P. S. Wright**
- 1023 KRISS-NRC Intercomparisons of Calibration Systems for Instrument
Transformers With Many Different Ratios at Power Frequency / **J. K. Jung,
E. So, Y. T. Park, M. Kim**
- 1029 Calibration of High-Voltage Current-Comparator-Based Capacitance and
Dissipation Factor Bridges Using Nonsynchronous Sampling /
G. A. Kyriazis
- 1035 An Audio Frequency Multiplier With Planar Thermal Converters for Power
Measurements / **E. Mohns**
- 1041 AC Power Standard Using a Programmable Josephson Voltage Standard /
**B.C. Waltrip, B. Gong, T. L. Nelson, Y. Wang, C. J. Burroughs, Jr.,
A. Rufenacht, S. P. Bern, P. D. Dresselhaus**
- 1049 The Josephson-Effect-Based Primary AC Power Standard at the PTB:
Progress Report / **L. Palafox, R. Behr, W. G. Kurten Ihlenfeld,
F. Müller, E. Mohns, M. Seckelmann, F. Ahlers**
- 1054 Onsite Calibration of a Current Transformer Using a Rogowski Coil /
E.-P. Suomalainen, J. K. Hallstrom
- 1059 Traceability and Verification of Interharmonic Generators in Support of
Low-Frequency Immunity Testing (IEC61000-4-13) / **P. S. Wright,
P. Clarkson**

RADIO FREQUENCY

- 1065 Improved Optoelectronic Technique for the Time-Domain Characterization of Sampling Oscilloscopes / **M. Bieler, M. Spitzer, K. Pierz, U. Siegner**
- 1072 Variable Termination Unit for Noise-Parameter Measurement / **D. Gu, D. K. Walker, J. Randa**
- 1078 Development of Evaluation Techniques for Air Lines in 3.5- and 1.0-mm Line Sizes / **M. Horibe, M. Shida, K. Komiyama**
- 1084 Comparison Between Two National Metrology Institutes of Diameters and Characteristic Impedance of Coaxial Air Lines / **M. Horibe, N. M. Ridler**
- 1090 Noise Temperature and Uncertainty Evaluation of a Cryogenic Noise Source by a Sliding Short Method / **H. Iida, Y. Shimada, K. Komiyama**
- 1097 Reference Calibration Methods for Small Circular Loop Antenna in Low-Frequency Band / **M. Ishii, Y. Shimada**
- 1104 Determination of the Correction Factor of Waveguide Microcalorimeters in the Millimeter-Wave Range / **R. Judaschke and J. Rühak**
- 1109 Characterization Method of Electric Field Probe by Using Transfer Standard in GTEM Cell / **N.-W. Rang, J.-S. Kang, D.-C. Kim, J.-H. Kim, J.-G. Lee**
- 1114 Determination of the Microwave Field Strength Using the Rabi Oscillation for a New Microwave Power Standard / **M. Kinoshita, K. Shimaoka, K. Komiyama**
- 1120 Measurement and Uncertainty Analysis of Free-Space Antenna Factors of a Log-Periodic Antenna Using Time-Domain Techniques / **S. Kurokawa, M. Hirose, K. Komiyama**
- 1126 Validation of the Open-Area Antenna Calibration Site at CENAM / **V. Molina-Lopez, M. Botello-Perez, I. Garcia-Ruiz**
- 1135 Uncertainty of Free-Space Dipole Antenna Factor From 1 GHz to 2 GHz / **T. Morioka**
- 1141 Comparison Among Coaxial Microcalorimeter Models / **L. Brunetti, L. Oberto, M. Sellone, E. T. Vremera**
- 1146 Uncertainty Analysis for Noise-Parameter Measurements at NIST / **J. Randa**
- 1152 Uncertainty Propagation Through Network Parameter Conversions / **J. Stenarson, K. Yhland**
- 1158 Influence of Nonideal Calibration Items on S-Parameter Uncertainties Applying the SOLR Calibration Method / **U. Stumper**
- 1164 A Simple RF Attenuation Measurement Technique With a Small Mismatch Uncertainty / **A. Widarta, T. Kawakami**

RESISTANCE

- 1170 Uncertainty Evaluation in a Two-Terminal Cryogenic Current Comparator / **M. E. Bierzychudek, R. E. Elmquist**
- 1176 Improved Cryogenic Current Comparator Setup With Digital Current Sources / **M. Gotz, D. Drung, E. Pesel, H.-J. Barthelmess, C. Hinrichs, C. Aßmann, M. Peters, H. Scherer, B. Schumacher, T. Schurig**
- 1183 Atomic-Layer-Deposited Alumina (Al₂O₃) Coating on Thin-Film Cryoresistors / **O. M. Hahtela, A. F. Satrapinski, P. H. Sievila, N. Chekurov**
- 1188 SIM Comparison of DC Resistance Standards at 1 Ω, 1 MΩ, 1 GΩ / **D. G. Jarrett, R. E. Elmquist, N. F. Zhang, A. Tonina, M. Porfiri, J. de Brito Fernandes, H. Schechter, D. Izquierdo, C. Faverio, D. Slomovitz, D. Inglis, K. Wendler, F. H. Marquez, B. R. Medina**

- 1196 Internally Damped CCC for Accurate Measurements of Small Electrical Currents / **G. Rietveld, P. de la Court, H. E. van den Brom**
- 1202 CCC Bridge With Digitally Controlled Current Sources / **C. A. Sanchez, B. M. Wood, A. D. Inglis**
- 1206 Ni-Cr-Based Thin-Film Cryoresistors / **A. F. Satrapinski, A. M. Savin, S. Novikov, O. M. Hahtela**

TIME AND FREQUENCY

- 1211 Fiber-Based Acetylene-Stabilized Laser / **V. Ahtee, M. Merimaa, K. Nyholm**
- 1217 Current Status of a Pulsed CPT Cs Cell Clock / **R. Baudot, S. Guerandel, E. de Clercq, N. Dimarcq, A. Clairon**
- 1223 Ultrastable Frequency Dissemination via Optical Fiber at NICT / **M. Fujieda, M. Kumagai, T. Gotoh, M. Hosokawa**
- 1229 Frequency Calibration Based on the Adaptive Neural-Fuzzy Inference System / **W.-H. Hsu, K.-Y. Tu, J.-S. Wu, C.-S. Liao**
- 1234 Frequency Measurement Capability of a Fiber-Based Frequency Comb at 633 nm / **H. Inaba, Y. Nakajima, F.-L. Hong, K. Minoshima, J. Ishikawa, A. Onae, H. Matsumoto, M. Wouters, B. Warrington, N. Brown**
- 1241 First-Order Sideband Pulling in Atomic Frequency Standards / **J. H. Shirley, T. P. Heavner, S. R. Jefferts**
- 1247 A New Approach for Steering UTC(KRIS) / **S. W. Lee, C. B. Lee, S. H. Yang**
- 1252 Interrogation Laser for a Strontium Lattice Clock / **T. Legero, C. Lisdat, J. S. R. Vellore Winfred, H. Schnatz, G. Grosche, F. Riehle, U. Sterr**
- 1258 The Stability of an Optical Clock Laser Transferred to the Interrogation Oscillator for a Cs Fountain / **B. Lipphardt, G. Grosche, U. Sterr, C. Tamm, S. Weyers, H. Schnatz**
- 1263 Remote Frequency Control via IEEE 1588 / **K.-Y. Tu, C.-S. Liao, and S.-Y. Lin**

EDITORIAL

- 1271 Editor-in-Chief's Note—I²MTC 2008 Special Issue / **R. Zoughi, A. El Saddik, F. Pond**

SPECIAL ISSUE PAPERS

- 1273 Novel Near-Field Millimeter-Wave Differential Probe Using a Loaded Modulated Aperture / **M. A. Abou-Khousa, S. Kharkovsky, R. Zoughi**
- 1283 A Floorprint-Based Defect Tolerance for Nano-Scale Application-Specific 1C / **S. Ahn, Z. Patitz, N.-J. Park, H. J. Kim, N. Park**
- 1291 A New Calibration Procedure for 3-D Shape Measurement System Based on Phase-Shifting Projected Fringe Profilometry / **R. Anchini, G. Di Leo, C. Liguori, A. Paolillo**
- 1299 Measuring I/Q Impairments in WiMAX Transmitters / **L. Angrisani, A. Napolitano, M. Vadursi**
- 1307 Experimental Comparison of Different Standards for Dynamic Characterization of ADCs / **E. Balestrieri, M. Corrado, P. Daponte, S. Rapuano**
- 1316 Amplitude Estimation by a Multipoint Interpolated DFT Approach / **D. Belega D. Dallet**
- 1324 Model and Experimental Characterization of the Dynamic Behavior of Low-Power Carbon Monoxide MOX Sensors Operated With Pulsed Temperature Profiles / **S. Bice Hi, A. Depart, G. Faglia, A. Flammini, A. Fort, M. Mugnaini, A. Ponzoni, V. Vignoli, S. Rocchi**
- 1333 A Configurable Mixed-Signal Architecture for Label-Free Smart Biosensor Applications / **L. Bissi, P. Placidi, A. Scorzoni**
- 1345 A Simple Method for the Calibration of Traditional and Electronic Measurement Current and Voltage Transformers / **A. Brandolini, M. Faifer, and R. Ottoboni**
- 1354 Finite-Sample Bias Propagation in Autoregressive Estimation With the Yule-Walker Method / **P. M.T. Broersen**
- 1361 Modified Durbin Method for Accurate Estimation of Moving-Average Models / **P. M.T. Broersen**
- 1370 Five Separate Bias Contributions in Time Series Models for Equidistantly Resampled Irregular Data / **P.M.T. Broersen**
- 1380 Practical Aspects of the Spectral Analysis of Irregularly Sampled Data With Time-Series Models / **P. M.T. Broersen**
- 1389 Nonlinear System Identification Using a Subband Adaptive Volterra Filter / **T. G. Burton, R. A. Goubran, F. Beaucoup**
- 1398 Measurement Procedures for the Electrical Characterization of Oxide Thin Films / **A. Carullo, S. Grassini, M. Parvis**
- 1405 A Wireless Sensor Network for Cold-Chain Monitoring / **A. Carullo, S. Corbellini, M. Parvis, A. Vallan**
- 1412 Assessment of a TD-Based Method for Characterization of Antennas / **A. Cataldo, G. Monti, E. De Benedetto, G. Cannazza, L. Tarricone, L. Catarinucci**
- 1420 A Noninvasive Resonance-Based Method for Moisture Content Evaluation Through Microstrip Antennas / **A. Cataldo, G. Monti, E. De Benedetto, G. Cannazza, L. Tarricone**

- 1427 Metrological Characterization and Operating Principle Identification of Static Meters for Reactive Energy: An Experimental Approach Under Nonsinusoidal Test Conditions / **A. Cataliotti, V. Cosentino, A. Lipari, S. Nuccio**
- 1436 Disturbing Load Identification in Power Systems: A Single-Point Time-Domain Method Based on IEEE 1459-2000 / **A. Cataliotti and V. Cosentino**
- 1446 A Novel Approach to Current Transformer Characterization in the Presence of Harmonic Distortion / **A. Cataliotti, D. Di Cara, A. E. Emanuel, S. Nuccio**
- 1454 An Inverter-Fed Induction Motor Diagnostic Tool Based on Time-Domain Current Analysis / **L. Cristaldi, M. Faifer, M. Lazzaroni, S. Toscani**
- 1462 State Estimation for the Localization of Harmonic Sources in Electric Distribution Systems / **G. D'Antona, C. Muscas, S. Sulis**
- 1471 Autonomous Sensor System With Power Harvesting for Telemetric Temperature Measurements of Pipes / **S. Dalola, V. Ferrari, M. Guizzetti, D. Marioli, E. Sordini, M. Serpelloni, A. Taroni**
- 1479 Characterization and Modeling of an Experimental UWB Pulse-Based Distance Measurement System / **A. De Angelis, M. Dionigi, A. Moschitta, R. Giglietti, P. Carbone**
- 1487 Seat Occupancy Detection Based on Capacitive Sensing / **B. George, H. Zangl, T. Bretterkieber, G. Brasseur**
- 1495 Logic Built-in Self-Test for Core-Based Designs on System-on-a-Chip / **K. George, C.-I. H. Chen**
- 1505 Multimodal Solution for a Waveguide Radiating Into Multilayered Structures—Dielectric Property and Thickness Evaluation / **M. T. Ghasr, D. Simms, R. Zoughi**
- 1514 Noninvasive Fault Classification, Robustness and Recovery Time Measurement in Microprocessor-Type Architectures Subjected to Radiation-Induced Errors / **H. Guzman-Miranda, M. A. Aguirre, J. Tombs**
- 1525 Learning Multisensor Confidence Using a Reward-and-Punishment Mechanism / **M. A. Hossain, P. K. Atrey, A. El Saddik**
- 1535 Estimating a Nonparametric Colored-Noise Model for Linear Slowly Time-Varying Systems / **I. Lataire R. Pintelon**
- 1546 Nozzle and Working-Condition Classifications for Water Jet Systems / **M. Lazzaroni, S. Ferrari, L. Cristaldi, M. Annoni**
- 1555 Dynamic Kernel Function Fast Fourier Transform With Variable Truncation Scheme for Wideband Coarse Frequency Detection / **Y.-H. G. Lee, C.-I. H. Chen**
- 1563 Accuracy Performance of a Time-of-Flight CMOS Range Image Sensor System / **F. Leonardi, D. Covi, D. Petri, D. Stoppa**
- 1571 A New Method for the Online Voidage Measurement of the Gas-Oil Two-Phase Flow / **X. Li., Z. Huang, B. Wang, H. Li**
- 1578 Nondestructive Pressure Measurement in Vessels Using Rayleigh Waves and LCR Waves / **Z. Ling, H. Zhou, H. Zhang**
- 1585 Solid Volume Fraction Measurement of Gas-Solid Two-Phase Flow Based on Terahertz Time-Domain Spectroscopy Technique: A Preliminary Study and Static Experimental Results / **Y. Liu, Z. Huang, H. Ji, H. Li**
- 1592 A Measurement-Based Power Consumption Simulator for Bluetooth Modules / **D. Macii, R. Corradi, D. Petri**

- 1602 Further Studies of the Accuracy of Clamp-on Transit-Time Ultrasonic Flowmeters for Liquids / **D. V. Mahadeva, R. C. Baker, J. Woodhouse**
- 1610 Rail Current Measurement With Noninvasive Large Dynamic Probe / **A. Mariscotti**
- 1617 Analysis of a Sigma-Delta Resistance-to-Digital Converter for Differential Resistive Sensors / **N. M. Mohan, B. George, and V. J. Kumar**
- 1623 A Novel Interface for Eddy Current Displacement Sensors / **M. R. Nabavi, S. Nihtianov**
- 1633 Capacitive-Sensor Interface With High Accuracy and Stability / **R. Nojdelov, S. Nihtianov**
- 1640 Optical Sensors for Real-Time Measurement of Motorcycle Tilt Angle / **M. Norgia, I. Boniolo, M. Tanelli, S. M. Savaresi, C. Svelto**
- 1650 A Low-Cost Optical Sensor for Noncontact Vibration Measurements / **G. Perrone, A. Vallan**
- 1657 A Mobile Agent for Measurements in Distributed Power Electronic Systems / **F. Pond, A. A. Deshmukh**
- 1670 New Spectrum Leakage Correction Algorithm for Frequency Estimation of Power System Signals / **T. Raddi, P. M. Ramos, and A. Cruz Serra**
- 1680 Recent Developments on Impedance Measurements With DSP-Based Ellipse-Fitting Algorithms / **P.M. Ramos, F. M. Janeiro, M. Tlemqani, A. C. Serra**
- 1690 Novel Methodology for Online Half-Broken-Bar Detection on Induction Motors / **J. D. J. Rangel-Magdaleno, R. de Jesus Romero-Troncoso, R. A. Osornio-Rios, E. Cabal-Yepez, L. M. Contreras-Medina**
- 1699 A Novel Calibration-Free Method of Measurement of Oxygen Saturation in Arterial Blood / **K.A. Reddy, B. George, N. M. Mohan, V. J. Kumar**
- 1706 Use of Fourier Series Analysis for Motion Artifact Reduction and Data Compression of Photoplethysmographic Signals / **K.A. Reddy, B. George, V. J. Kumar**
- 1712 Temperature Measurement by Microwave Radiometry: Application to Microwave Sintering / **C. Beaucamp-Ricard, L. Dubois, S. Voucher, P.-Y. Cresson, T. Lasri, J. Pribetich**
- 1720 UV-LEDs for Monitoring Dialysis Adequacy / **L. Rovati, S. Cattini**
- 1727 Prediction-Based Haptic Data Reduction and Transmission in Telementoring Systems / **N. Sakr, J. Zhou, N. D. Georganas, J. Zhao**
- 1737 Robustness Issues of the Best Linear Approximation of a Nonlinear System / **J. Schoukens, J. Lataire, R. Pintelon, G. Vandersteen, T. Dobrowiecki**
- 1746 A Completely Configurable Digital System for Simultaneous Measurements of Hysteresis Loops and Barkhausen Noise / **M. Soto, A. Marti'nez-de-Guerenu, K. Gurruchaga, F. Arizti**
- 1756 A Vision-Based Technique for Lay Length Measurement of Metallic Wire Ropes / **A. Vallan, F. Molinari**
- 1763 Fast Anytime Fuzzy Fourier Estimation of Multisine Signals / **A. R. Varkonyi-Koczy**
- 1771 Indices for Harmonic Distortion Monitoring of Power Distribution Systems / **S. Vlahinic, D. Brnobic, N. Sfojkovic**
- 1778 On the Performance Gain of the FFT Filter-Bank-Based Summation and Majority CFAR Detectors / **S. Wang, R. Inkol, S. Rajan, F. Patenaude**
- 1789 A Feasibility Study on Autonomous Online Condition Monitoring of High-Voltage Overhead Power Lines / **H. Zangl, T. Bretterkieber, G. Brasseur**

1797 An Object-Tracking Algorithm Based on Multiple-Model Particle Filtering With State Partitioning / **Y. Zhai, M. B. Yeary, S. Cheng, N. Kehtarnavaz**

GUEST EDITORIAL

- 1814 Foreword to the Special Section on the VII International Seminar on Electrical Metrology (VII-SEMETRO) / **F.H. Vasconcelos**

SPECIAL SECTION PAPERS

- 1816 Remaining Capacity Measurement and Analysis of Alkaline Batteries for Wireless Sensor Nodes / **A. B. da Cunha, B. R. de Almeida, D. C. da Silva, Jr.**
- 1823 Applications of Thermoresistive Sensors Using the Electric Equivalence Principle / **R.C.S. Freire, S. Y. C. Catunda, B. A. Luciano**

GUEST EDITORIAL

- 1831 Foreword to the Special Section on the 2007 IEEE International Symposium on Precision Clock Synchronization for Measurement, Control, and Communication / **G. Gaderer, K. Lee**

SPECIAL SECTION PAPERS

- 1833 Optimal Synchronization of Local Clocks by GPS 1PPS Signals Using Predictive FIR Filters / **L. Arceo-Miguel, Y. S. Shmaliy, and O. Ibarra-Manzano**
- 1841 Ten Microseconds Over LAN, for Free (Extended) / **J. Ridoux, D. Veitch**
- 1849 Synchronization Performance of the Precision Time Protocol in Industrial Automation Networks / **R. L. Scheiterer, C. Na, D. Obradovic, and G. Steindl**
- 1858 Timing Recovery for IEEE 1588 Applications in Telecommunications / **R. Subrahmanyam**

REGULAR SECTION PAPERS

- 1869 Session Initiation Protocol Automatic Debugger / **D. Bao, D. L. Carni, L. De Vito, L. Tomaciello**
- 1878 Measurements of the Complex Transmission/Reflection Coefficient of a Material Using Mixed-Type Common-Path Heterodyne Interferometry / **J. J. Chieh, S. Y. Yang, H.-E. Horng, C.-Y. Hong, H. C. Yang**
- 1886 Energy-Efficient Distributed Adaptive Multisensor Scheduling for Target Tracking in Wireless Sensor Networks / **J. Lin, W. Xiao, F. L. Lewis, L. Xie**
- 1897 Low-Cost CP-PLL DFT Structure Implementation for Digital Testing Application / **C.-L. Hsu, Y.-T. Lai**
- 1907 A Temperature-Stable Metal Detector / **S. Chekcheyev**
- 1911 Measurement Range Increase of a Phase-Shift Laser Rangefinder Using a CMOS Analog Neural Network / **L. Gatet, H. Tap-Beteille**
- 1919 Surface-Response-Based Modeling of Digitizers: A Case Study on a Fast Digital Integrator at CERN / **P. Arpaia, V. Inglese, G. Spiezia, S. Tiso**
- 1929 Optimal Allocation of Multichannel Measurement Devices for Distribution State Estimation / **C. Muscas, F. Pilo, G. Pisano, S. Sulis**
- 1938 On-Chip Voltage Reference-Based Time-to-Digital Converter for Pulsed Time-of-Flight Laser Radar Measurements / **J. Nissinen, J. Kostamovaara**
- 1949 Design and Instrumentation of Force Feedback in Telerobotics / **M. A. Al-Mouhamed, M. Nazeeruddin, N. Merah**

- 1958 Measurement of Paint Coating Thickness by Thermal Transient Method / **F. Maier, B. G. Zagar**
- 1967 Calibration of a Novel MEMS Inertial Reference Unit / **J. K. Bakkeng**
- 1975 The Influence of Windowing on Bias and Variance of DFT-Based Frequency and Phase Estimation / **S. Schuster, S. Scheiblhofer, A. Stelzer**
- 1991 High-Speed Microscale Optical Tracking Using Digital Frequency-Domain Multiplexing / **R. A. MacLachlan, C. N. Riviere**
- 2002 Intrinsic Noise and Temperature Coefficients of Selected Voltage References / **R. Fleddermann, M. Trobs, F. Steier, G. Heinzl, K. Danzmann**
- 2008 Bandwidth of Current Transformers / **N. Kondrath, M. K. Kazimierczuk**
- 2017 Methods and Techniques for Accurate and Reliable Measurement and Estimation of Distribution Functions in Real Time / **S. M. Berber, K. W. Sowerby, A. G. Williamson**
- 2026 DFT-Based SoC/VLSI IP Protection and Digital Rights Management Platform / **Y.-C. Fan, J.-H. Shen**
- 2034 Autocalibration of MEMS Accelerometers / **I. Frosio, F. Pedersini, N. A. Borghese**

GUEST EDITORIAL

- 2046 Foreword to the Special Section on the 1ST 2006 IEEE International Workshop on Imaging Systems and Techniques / **G. C. Giakos**

SPECIAL SECTION PAPERS

- 2048 Interpolation of Medical Ultrasound Images From Coherent and Noncoherent Signals / **A. Trucco, S. Curletto, M. Palmese**
- 2061 Processing and Analysis of Underwater Acoustic Images Generated by Mechanically Scanned Sonar Systems / **A. Trucco, M. Garofalo, S. Repetto, G. Vernazza**
- 2072 New Microwave Axial Tomograph for the Inspection of Dielectric Materials / **A. Salvade, M. Pastorino, R. Monleone, G. Bozza, A. Randazzo**
- 2080 Three-Dimensional Acoustic Imaging by Chirp Zeta Transform Digital Beamforming / **M. Palmese, A. Trucco**
- 2087 Gradient-Vector-Flow Snake Method for Quantitative Image Reconstruction Applied to Mandibular Distraction Surgery / **G. Tognola, M. Parazzini, G. Pedretti, P. Ravazzani, F. Grandori, A. Pesatori, M. Norgia, C. Svelto**
- 2094 Adjustment of Computer Input Device for Patients With Tetraplegia by Using a Mouse Cursor Locus Image / **Y. Tanimoto, Y. Rokumyo, K. Furusawa, A. Tokuhiko, H. Ukida, H. Yamamoto**
- 2102 Carotid Artery Motion Estimation From Sequences of B-Mode Ultrasound Images: Effect of Scanner Settings and Image Normalization / **S. Golemati, J. S. Stoitsis, D. A. Perakis, E. Varela, A. Alexandridi, C. H. Davos, K. S. Nikita**
- 2113 DIAGNOSIS: A Telematics-Enabled System for Medical Image Archiving, Management, and Diagnosis Assistance / **S. G. Mougiakakou, I. K. Valavanis, N. A. Mouravliansky, A. Nikita, K. S. Nikita**
- 2121 Modified Factorial-Free Direct Methods for Zernike and Pseudo-Zernike Moment Computation / **G. A. Papakostas, Y. S. Boutalis, D. A. Karras, B. G. Mertzios**

REGULAR SECTION PAPERS

- 2132 Performance Improvement of a DSP-Based Digital Integrator for Magnetic Measurements at CERN / **P. Arpaia, V. Inglese, G. Spiezia**
- 2139 A Model of the Flickermeter for Frequency Modulation of the Input Voltage / **G. Wiczyński**
- 2145 Application of Heuristic Graph Search to Test-Point Selection for Analog Fault Dictionary Techniques / **C. Yang, S. Tian, B. Long**
- 2159 Application of Support Vector Machine and Genetic Algorithm for Improved Blood Cell Recognition / **S. Osowski, R. Siroic, T. Markiewicz, K. Siwek**
- 2169 Noncontact Laser Inspection Based on a PSD for the Inner Surface of Minidiameter Pipes / **E. Wu, Y. Ke, B. Du**
- 2174 Current Conveyor-Based Square/Triangular Waveform Generators With Improved Linearity / **D. Pal, A. Srinivasulu, B. B. Pal, A. Demosthenom, B. N. Das**
- 2181 Development of Optimized Screen-Printed Immunosensors / **A. M. Pernia, M. J. Prieto, I. C. Grille, J. A. Martin-Ramos, A. Costa-García**

- 2189 Maximum-Likelihood Data Fusion of Phase-Difference and Threshold-Detection Techniques for Wind-Speed Measurement / **J. M. M. Villanueva, S. Y. C. Catunda, R. Tanscheit**
- 2196 Novel Built-in Current-Sensor-Based IDDQ Testing Scheme for CMOS Integrated Circuits / **C.-L. Hsu, M.-H. Ho, C.-F. Lin**
- 2209 Pseudorandom Stimuli Generation for Testing Time-to-Digital Converters on an FPGA / **A. M. Amiri, A. Khouas, M. Boukadoum**
- 2216 Voltage-Mode Multifunction Filters Employing a Single DVCC and Grounded Capacitors / **E. Yuce**
- 2222 Modeling and Experimental Testing of Strain Gauges in Operational and Failure Modes / **B. L. Ellis L. M. Smith**
- 2228 A Novel Method for Determining the R-Card Sheet Impedance Using the Transmission Coefficient Measured in Free-Space or Waveguide Systems / **M. W. Hyde, IV, M. J. Havrilla, P. E. Crittenden**
- 2234 IEEE 1057 Jitter Test of Waveform Recorders / **S. Shariat-Panahi, F. A. Correa Alegria, A. Manuel, A. M. da Cruz Serra**
- 2245 A Delay Generation Technique for Narrow Time Interval Measurement / **R. Rashidzadeh, R. Muscedere, M. Ahmadi, W. C. Miller**
- 2253 Online Detection of Broken Rotor Bars in Induction Motors by Wavelet Packet Decomposition and Artificial Neural Networks / **A. Sadeghian, Z. Ye, B. Wu**
- 2264 A 99-dB DR Fourth-Order Delta-Sigma Modulator for 20-kHz Bandwidth Sensor Applications / **Y. Choi, J. Roh, H. Roh, H. Nam, S. Lee**
- 2275 Time-Domain Free-Field Measurements of the Relative Permittivity of Building Materials / **C. A. Grosvenor, R. T. Johnk, J. Baker-Jarvis, M. D. Janezic, B. Riddle**
- 2283 Multichannel Spatial Encoding and Extraction for Low-Noise Laser Applications / **J. Chaudry, R. J. Seethaler, J. F. Holzman**
- 2290 Online Ringing Characterization as a Diagnostic Technique for IGBTs in Power Drives / **A. E. Ginart, D. W. Brown, P. W. Kalgren, M. J. Roemer**
- 2300 Built-in Self-Test Design for Fault Detection and Fault Diagnosis in SRAM-Based FPGA / **C.-L. Hsu, T.-H. Chen**
- 2316 Biological Tissue Complex Permittivity Measured From ϵ_{2i} —Error Analysis and Error Reduction by Reference Measurements / **M.-R. Tofighi, A. S. Daryoush**
- 2328 Optical Detection of Partial Discharges on Insulator Strings of High-Voltage Transmission Lines / **S. C. Oliveira, E. Fontana**
- 2335 A Method to Detect the Microshock Risk During a Surgical Procedure / **L. E. S. Spalding, W. P. Carpes, Jr., N. J. Batistela**
- 2343 Model Parameterization of Nonlinear Devices Using Impedance Spectroscopy / **J. Kowal, D. Hente, D. U. Sauer**
- 2351 Equivalent Circuit Modeling of an Asymmetric Disc-Type Ultrasonic Motor / **P.-A. Juang, C.-C. Tsai**
- 2358 Toward Establishing Dynamic Calibration Method for Force Transducers / **Y. Fujii**

SHORT PAPERS

- 2365 Design of a 300-kW Calorimeter for Electrical Motor Loss Measurement / **W. Cao, X. Huang, I. French**
- 2367 Near-Field Millimeter-Wave Imaging of Exposed and Covered Fatigue Cracks / **S. Kharkovsky, M. T. Ghasr, R. Zoughi**

SPECIAL SECTION ON THE 2007 IEEE INTERNATIONAL SYMPOSIUM ON INTELLIGENT SIGNAL PROCESSING

GUEST EDITORIAL

2375 Special Section on the 2007 IEEE International Symposium on Intelligent Signal Processing / **J. Ureha, A. R. Vdrkonyi-Koczy**

SPECIAL SECTION PAPERS

- 2377 Closing Loops With a Virtual Sensor Based on Monocular SLAM / **R. Munguia, A. Grau**
- 2385 Performance Evaluation of 3D-LOCUS Advanced Acoustic LPS / **J. C. Prieto, A. R. Jimenez, J. Guevara, J. L. Ealo, F. Seco, J. O. Roa, F. Ramos**
- 2396 Localization and Geometric Reconstruction of Mobile Robots Using a Camera Ring / **D. Pizarro, M. Mazo, E. Santiso, M. Marron, I. Fernandez**
- 2410 Image Denoising Using a New Implementation of the Hyperanalytic Wavelet Transform / **I. Firoiu, C. Nafornita, J.-M. Boucher, A. Isar**
- 2417 Cellular Neural Network Algorithms for Real-Time Image Analysis in Plasma Fusion / **J. G. Vagliasindi, A. Murari, P. Arena, L. Fortuna, G. Mazzitelli, and JET-EFDA Contributors**
- 2426 Biomimetic Mechanosensor Array Processing for 2-D Airflow Direction and Amplitude Sensing / **M. Van Dyck, F. De Mey, H. Peremans**
- 2433 How to Apply Nonlinear Subspace Techniques to Univariate Biomedical Time Series / **A. R. Teixeira, A. M. Tome, M. Bdm, C. G. Puntonet, E. W. Lang**
- 2444 Comparison of Soft-Sensor Design Methods for Industrial Plants Using Small Data Sets / **L. Fortuna, S. Graziani, M. G. Xibilia**
- 2452 Uncertainty in Power System State Variables Obtained Through Synchronized Measurements / **S. Chakrabarti, E. Kyriakides, M. Albu**
- 2459 Decentralized Adaptive Control of Large-Scale Affine and Nonaffine Nonlinear Systems / **B. Karimi, M. B. Menhaj, M. Karimi-Ghartemani, I. Saboori**

REGULAR SECTION PAPERS

- 2468 Estimation of Nonparametric Noise Models for Linear Dynamic Systems / **I. Schoukens, R. Pintelon**
- 2475 A Genetic Algorithm Applied for Optimization of Antenna Arrays Used in Mobile Radio Channel Characterization Devices / **P.O. Karamalis, A. G. Kanatas, P. Constantinou**
- 2488 Multisensor Strategies to Assist Blind People: A Clear-Path Indicator / **B. Ando, S. Graziani**
- 2495 Capacitance and Inductance Sensor Circuits for Detecting the Lengths of Open- and Short-Circuited Wires / **Y.C. Chung, N. N. Amarnath, C. M. Furse**
- 2503 Temperature Dependence of Fixed Pattern Noise in Logarithmic CMOS Image Sensors / **D. Joseph, S. Collins**
- 2512 A Novel Technique of Flow Measurement for a Conducting Liquid / **S. C. Bera, B. Chakraborty**

- 2518 Technique for the Evaluation of Chirality, Permittivity, and Permeability of a Reciprocal Chiral Slab Through the Utilization of the Time-Harmonic Green Functions / **F. H. Ahmad, R. M. Castellane, B. P. Durst, J. R. Fairley**
- 2525 Highly Accurate Inclinator Robust to Ultralow-Frequency Acceleration Disturbances and Applications to Autotracking Antenna Systems for Vessels / **T. Yoshida, K. Ohata, M. Ueba**
- 2535 Impedance Measurement With the D-Optimum Experimental Conditions / **M. Witczak, R. Rybski, J. Kaczmarek**
- 2544 Null Detector Circuit Design Scheme for Detecting Defective AC-Coupled Capacitors in Differential Signaling / **S. Baeg**
- 2557 Single CFA-Based Integrator, Differentiator, Filter, and Sinusoid Oscillator / **R. Nandi, S. K. Sanyal, T. K. Bandyopadhyay**
- 2565 Vector Autoregressive Order Selection in Practice / **P. M. T. Broersen**
- 2574 Static Meters for the Reactive Energy in the Presence of Harmonics: An Experimental Metrological Characterization / **A. Cataliotti, V. Cosentino, S. Nuccio**
- 2580 Instantaneous Sequence-Component Resolution of 3-Phase Variables and Its Application to Dynamic Voltage Restoration / **D. A. Fernandez, S. R. Naidu, C. A. E. Coura, Jr.**
- 2588 Experimental Analysis of In-Channel Interference Effects on the Performance of a DVB-T System / **L. Angrisani, M. Farias, D. Fortin, A. Sona**
- 2597 TDR Moisture Estimation for Granular Materials: An Application in Agro-Food Industrial Monitoring / **A. Cataldo, M. Vallone, L. Tarricone, G. Cannazza, M. Cipressa**
- 2606 Bandwidth Measurement Method for Quasi-Monochromatic Light Sources / **A.W. Domanski, D. Budaszewski, R. Cieslak, T. R. Wolinski**
- 2611 A Sparse Robust Model for a Linz-Donawitz Steel Converter / **I. Valyon, G. Horvdth**
- 2618 Galvanic Coupling Enabling Wireless Implant Communications / **M. S. Wegmueller, S. Huclova, J. Froehlich, M. Oberle, N. Felber, N. Kitster, W. Fichtner**
- 2626 A Camera Based Method for the Measurement of Motion Parameters of IPMC Actuators / **K. Tsiakmakis, J. Brufau-Penella, M. Puig-Vidal, T. Laopoidos**
- 2634 Selective Range Data Acquisition Driven by Neural-Gas Networks / **A.-M. Cretu, P. Payeur, E. M. Petriu**
- 2643 A Magnetic Field Probe With MHz Bandwidth and 7-Decade Dynamic Range / **A. Mariscotti**
- 2653 A Novel Dual-Core Architecture for the Analysis of DNA Microarray Images / *L. Sterpone*
- 2663 An Automated Measurement System for the Characterization of Electron Device Degradation Under Nonlinear Dynamic Regime / **A. Raffo, V. Di Giacomo, P. A. Traversa, A. Santarelli, G. Vannini**
- 2671 High-Resolution High-Power Quasi-Optical Free-Space Spectrometer for Dielectric and Magnetic Measurements in Millimeter Waves / **S. Chen, K. A. Korolev, J. Kupersmidt, K. Nguyen, M. N. Afsar**
- 2679 Code-Density Test of Analog-to-Digital Converters Using Single Low-Linearity Stimulus Signal / **L. Jin, D. Chen, R. L. Geiger**

- 2686 An Accurate Machine for Real-Time Two-Phase Flowmetering in a Laboratory-Scale Flow Loop / **M. Meribout, N. Z. Al-Rawahi, A. M. Al-Naamany, A. Al-Bimani, K. Al Busaidi, A. Meribout**
- 2697 High-Resolution ADC Linearity Testing Using a Fully Digital-Compatible BIST Strategy / **H. Xing, H. Jiang, D. Chen, R. L. Geiger**
- 2706 Experimental Analysis of the Coupling Mechanisms Between a 4 GHz PPA and a 5-7 GHz Z/C-VCO / **S. Bronckers, G. Vandersteen, L. De Locht, M. Libois, G. Van der Plas, Y. Rolain**
- 2714 A Novel TDR-Based Coaxial Cable Sensor for Crack/Strain Sensing in Reinforced Concrete Structures / **S. Sun, D. J. Pommerenke, J. L. Drewniak, G. Chen, L. Xue, M. A. Brower, M. Y. Koledintseva**
- 2726 Hamon-Guarded 10 x 100 Mil Network to Increase the Accuracy of the Transfer of the Resistance Unit up to 1 Gil at INRIM / **P.P. Capra, F. Galliana**
- 2730 Finite-Element Modeling of Electrostatic Sensors for the Flow Measurement of Particles in Pneumatic Pipelines / **I. Krabicka, Y. Yan**
- 2737 Measurement of Postural Change in Trunk Movements Using Three Sensor Modules / **W.-Y. Wong, M.-S. Wong**
- 2743 Doppler Shift Mitigating Algorithm for Quadrature Phase Delay Estimator / **J. Li, Y. Wang**
- 2747 Adjustable-Speed Drive Bearing-Fault Detection Via Wavelet Packet Decomposition / **K. Teotrakool, M. J. Devaney, L. Eren**
- 2755 Design of Software-Defined Radio Channel Simulator for Wireless Communications: Case Study With DSRC and UWB Channels / **I. Mar, C.-C. Kuo, Y.-R. Lin, T.-H. Lung**
- 2767 Overall Uncertainty Estimation in Multiple Narrow-Band *In Situ* Electromagnetic Field Measurements / **D.I. Stratakis, A. I. Miaoudakis, T. D. Xenos, V. G. Zacharopoulos**
- 2780 Impulsive Noise Cancellation Based on Soft Decision and Recursion / **S. Zahedpour, S. Feizi, A. Amini, M. Ferdosizadeh, F. Marvasti**
- 2791 A Novel Angle Algorithm of Polarization Sensor for Navigation / **K. Zhao, J. Chu, T. Wang, Q. Zhang**
- 2797 A Modular Agent Architecture for an Autonomous Robot / **K.-S. Hwang, C.-Y. Lo, W.-L. Liu**
- 2807 Characterization of the Accommodation Effect in Soft Hysteretic Materials Via Sensorless Measurement Technique / **B. Tellini, R. Giannetti, S. Lizon-Martinez, M. Marracci**
- 2815 Position Estimation and Error Analysis in Linear Switched Reluctance Motors / **S.W. Zhao, N. C. Cheung, W.-C. Can, J. M. Yang**
- 2824 A Novel Method for Providing Precise Time Synchronization in a Distributed Control System Using Boundary Clock / **J.H. Cho, H. Kim, S. Wang, J. Lee, H. Lee, S. Hwang, S. Cho, Y. Oh, T.-J. Lee**
- 2830 Capacitive Sensor for Three-Axis Force Measurements and Its Readout Electronics / **J. G. V. da Rocha, P. F. A. da Rocha, S. Lanceros-Mendez**
- 2837 Design and Development of a Low-Cost Digital Magnetic Field Meter With Wide Dynamic Range for EMC Precompliance Measurements and Other Applications / **S. M. Satav, V. Agarwal**
- 2847 Improving Haptic Feedback Fidelity in Wave-Variable-Based Teleoperation Orientated to Telemedical Applications / **Y. Ye, P. X.Liu**
- 2856 Dynamically Reconfigurable Architecture Design for Ultrasonic Imaging / **E. Oruklu, J. Saniie**

- 2867 A Novel Optimal Fuzzy System for Color Image Enhancement Using Bacterial Foraging / **M. Hanmandlu, O. P. Verma, N. K. Kumar, M. Kulkarni**
- 2880 Exploration and Mapping Using the VFM Motion Planner / **S. Garrido, L. Moreno, D. Blanco**
- 2893 Voltage-Fluctuation-Based Identification of Noxious Loads in Power Network / **G. Wiczynski**
- 2899 Experimental Analysis of an Ultrawideband Hybrid EBG/Ferrite Ground Plane / **J. M. Bell, M. F. Iskander**

REGULAR PAPERS

- 2911 Theoretical Modeling and Experimental Verification of the Permeability Measurements of Thick Films at Microwave Frequencies / **M. C. Dimri, V. K. Tripathi, S. C. Kashyap, Y. H. Jeong, D. C. Dube**
- 2916 Analysis of the Effects of Flicker on the Blood-Flow Variation in the Human Eye / **L. Peretto, C. E. Riva, L. Rovati, G. Salvatori, R. Tinarelli**
- 2923 Integrated Model and Compensation of Thermal Errors of Silicon Microelectromechanical Gyroscope / **F. Jiancheng, L. Jianli**
- 2931 Analysis of a Direct Interface Circuit for Capacitive Sensors / **J.E. Gaitan-Pitre, M. Gasulla, R. Pallds-Areny**
- 2938 Fault Detection on Critical Instrumentation Loops of Gas Turbines With Reflectometry / **C. Neus, P. Boets, L. Van Biesen, R. Moelans, G. Van de Vyvere**
- 2945 Optical Fiber Bus Protection Network to Multiplex Sensors: Amplification by Remotely Pumped EDFAs / **O. Garcia Lopez, K. Schires, P. Urquhart, N. Gueyne, B. Duhamel**
- 2952 Fuzzy Motion-Adaptive Interpolation With Picture Repetition Detection for Deinterlacing / **P. Brox, I. Baturone, S. Sa'nchez-Solano**
- 2959 Arithmetic Circuits of Redundant SUT-RNS / **S. Timarchi K. Navi**
- 2969 Dynamic Clustering and Modeling Approaches for Fusion Plasma Signals / **J. A. Martin H., M. Santos, G. Farias, N. Duro, J. Sanchez, R. Dormido, S. Dormido-Canto, J. Vega, H. Vargas**
- 2979 Human Gait Acquisition and Characterization / **J. P. Ferreira, M. M. Crisdstomo, A. P. Coimbra**
- 2989 Combining MLPs and RBFNNs to Detect Signals With Unknown Parameters / **D. de la Mata-Moya, M. P. Jarabo-Amores, M. Rosa-Zurera, J. C. Nieto Borge, F. Lopez-Ferreras**
- 2996 Location of Optical Fibers for the Calibration of Incoherent Optical Fiber Bundles for Image Transmission / **P. R. Fernandez, J. L. Lazaro, A. Gardel, O. Esteban, A. E. Cano, P. A. Revenga**
- 3004 Embedded Vision Modules for Tracking and Counting People / **A. Gardel Vicente, I. Bravo Munoz, P. Jimenez Molina, J. L. Lazaro Galilea**
- 3012 Online Sliding-Window Methods for Process Model Adaptation / **P. M. Ferreira, A. E. Ruano**
- 3021 An ASIC Front End for Planar High-Frequency Contactless Inductive Position Sensors / **M. Rahal, A. Deniosthenous**
- 3031 Ultrasonic Multitransducer System for Classification and 3-D Location of Reflectors Based on PCA / **A. Ochoa, J. Urena, A. Hernandez, M. Mazo, J. A. Jimenez, M. C. Perez**
- 3042 On Testing the Electronic Revenue Energy Meters / **A. Ferrero, M. Faifer, S. Salicone**
- 3050 Virtual Reality-Environments for Integrated Systems Health Management of Rocket Engine Tests / **G. D. Lecakes, Jr., J. A. Morris, J. L. Schmalzel, S. Mandayam**
- 3058 Automated Speaker Recognition for Home Service Robots Using Genetic Algorithm and Dempster-Shafer Fusion Technique / **Y. Zhan, H. Leung, K.-C. Kwak, H. Yoon**
- 3069 Towards Versatile Electronic Nose Pattern Classifier for Black Tea Quality Evaluation: An Incremental Fuzzy Approach / **B. Tudu, A. Metla, B. Das, N. Bhattacharyya, A. Jana, D. Ghosh, R. Bandyopadhyay**

- 3079 A Hand-Held Indentation System for the Assessment of Mechanical Properties of Soft Tissues In Vivo / **M.-H. Lu, W. Yu, Q.-H. Huang, Y.-P. Huang, Y.-P. Zheng**
- 3086 Terrain and Model Queries Using Scalar Representations With Wavelet Compression / **C. Fünfzig, T. Ullrich, D. W. Fellner, E. N. Bachelder**
- 3094 Integration of Cell-Mapping and Reinforcement-Learning Techniques for Motion Planning of Car-Like Robots / **M. Gomez Plaza, T. Martinez-Mann, S. Sanchez Prieto, D. Meziat Luna**
- 3104 Monitoring in Industrial Systems Using Wireless Sensor Network With Dynamic Power Management / **F. Salvadori, M. de Campos, P. S. Sausen, R. F. de Camargo, C. Gehrke, C. Rech, M. A. Spohn, A. C. Oliveira**
- 3112 Grid Impedance Monitoring System for Distributed Power Generation Electronic Interfaces / **S. Cobreces, E. J. Bueno, D. Pizarro, F. J. Rodriguez, F. Huerta**
- 3122 Characterization of an Asymmetric Disk-Type Ultrasonic Motor With Single-Phase Current Drive / **P.-A. Juang, C.-C. Tsai**
- 3130 Energy-Based Feature Extraction for Defect Diagnosis in Rotary Machines / **R. Van, R. X. Gao**
- 3140 Acquisition Times in Magnetic Resonance Imaging: Optimization in Clinical Use / **G. Andria, F. Attivissimo, G. Cavone, A. M. L. Lanzolla**
- 3149 Power-Quality Monitoring Instrument With FPGA Transducer Compensation / **A. Delle Femine, D. Gallo, C. Landi, M. Luiso**
- 3159 Electronic Gating for Particle/Cell Counting and Sizing, DSP-operated / **F. R. E. De Bisschop**
- 3167 Control of a Biped Robot With Support Vector Regression in Sagittal Plane / **J. P. Ferreira, M. M. Crisdstomo, A. P. Coimbra, B. Ribeiro**
- 3177 Modified LMS-Based Feedback-Reduction Subsystems in Digital Hearing Aids Based on WOLA Filter Bank / **R. Vicen-Bueno, A. Martihez-Leira, R. Gil-Pita, M. Rosa-Zurera**
- 3191 Investigation of Flux-Linkage Profile Measurement Methods for Switched-Reluctance Motors and Permanent-Magnet Motors / **K. Lu, P. O. Rasmussen, A. E. Ritchie**
- 3199 Metrological Performance of Traffic Detection Systems / **G. Di Leo, A. Pietrosanto, P. Sommella**
- 3207 Measuring Uncertainty in Lichen Biomonitoring of Atmospheric Pollution: The Case of SO₂ / **F. A. Batzias, C. G. Siontorou**
- 3221 Eddy-Current Displacement Transducer With Extended Linear Range and Automatic Tuning / **D. Vyroubal**
- 3232 Ferrofluidic Pumps: A Valuable Implementation Without Moving Parts / **B. Ando, A. Ascia, S. Baglio, N. Pitrone**
- 3238 Determination of the Complex Residual Error Parameters of a Calibrated One-Port Vector Network Analyzer / **G. Wubbeler, C. Elster, T. Reichel, R. Judaschke**
- 3245 PDF-Based Progressive Polynomial Calibration Method for Smart Sensors Linearization / **J. M. Dias Pereira, O. Postolache, P. M. B. Silva Girdo**
- 3253 Smart Sensors Network for Air Quality Monitoring Applications / **O. A. Postolache, J. M. Dias Pereira, P. M. B. Silva Girdo**
- 3263 An Assessment of a Mobile Communication Link for a System to Navigate Visually Impaired People / **Z. Hunaiti, V. Garaj, W. Balachandran**

- 3269 An Integrated Micro-Fluxgate Magnetic Sensor With Front-End Circuitry / **A. Baschiroto, E. Dallago, P. Malcovati, M. Marchesi, E. Melissano, M. Morelli, P. Siciliano, G. Venchi**
- 3276 Optimal Settings for Measuring Frequency Response Functions With Weighted Overlapped Segment Averaging / **J. Antoni, J. Schoukens**
- 3288 An Improved Taylor Method for Frequency Measurement in Power Systems / **Z. Salcic, S. Kiong Nguang, Y. Wu**
- 3295 Performance Improvement of Tomographic Image Reconstruction Based on DSP Processors / **P.E. Cruvinel, M. F. L. Pereira, J. H. Saito, L. d. F. Costa**
- 3305 Inverse Function Analysis Method for Fringe Pattern Profilometry / **Y. Hu, J.Xi, J.F. Chicharo, W. Cheng, Z. Yang**
- 3315 Multisensor Network for Urban Electromagnetic Field Monitoring / **D. Gallo, C. Landi, N. Pasquino**
- 3323 Development of a "Synchronization Trigger" for the Spanish Oceanographic Ships Based on an Embedded Real-Time Java System / **J. Sorrihas, J. del Rib, S. Shariat-Panahi, C. C. Dickel, A. Mduel-Ldzaro, E. Trullols**
- 3335 A 1-D Solid-State-Sensor-Based Array System for Magnetic Field Imaging of Steel Reinforcing Bars Embedded Within Reinforced Concrete / **D. S. Benitez, S. Quek, P. Gaydecki, V. Torres**
- 3341 Calibration of a High-Accuracy 3-D Coordinate Measurement Sensor Based on Laser Beam and CMOS Camera / **J. L. Lazaro Galilea, J.-M. Lavest, C. A. Luna Vazquez, A. Gardel Vicente, I. Bravo Munoz**
- 3347 An Adaptive LLC-Based and Hierarchical Power-Aware Routing Algorithm / **C. Alippi, R. Camplani, M. Roveri**

**SPECIAL SECTION ON IEEE AUTOTESTCON 2008—THE SYSTEMS
READINESS TECHNOLOGY CONFERENCE**

GUEST EDITORIAL

3363 Special Section on IEEE AUTOTESTCON 2008—The Systems Readiness
Technology Conference / **L. V. Kirkland**

SPECIAL SECTION PAPERS

3365 Frequency Synthesizer Failure Heuristics / **I. N. Spiegel**

3373 Regression Analysis of Automatic Measurement Systems / **M. J. Flynn,
S. Sarkani, T. A. Mazzuchi**

3380 A Test Methodology for Determining Space Readiness of Xilinx SRAM-
Based FPGA Devices and Designs / **H. M. Quinn, P. S. Graham,
M. J. Wirthlin, B. Pratt, K. S. Morgan, M. P. Caffrey, J. B. Krone**

REGULAR SECTION PAPERS

3396 High-Resolution Indirect Feet-Ground Interaction Measurement for
Hydraulic-Legged Robots / **S. Nabulsi, J. F. Sarria, H. Monies,
M. A. Armada**

3405 Interfacing Differential Resistive Sensors to Microcontrollers: A Direct
Approach / **F. Reverter, O. Casas**

3411 Measurement of Magnetism in Composite Materials / **B. Tellini,
M. Bologna, A. Petri**

3418 ESD On-Wafer Characterization: Is TLP Still the Right Measurement Tool? /
**M. Scholz, D. Linten, S. Thijs, S. Sangameswaran, M. Sawada,
T. Nakaei, T. Hasebe, G. Groeseneken**

3427 Fast Ship Electronic System for Seakeeping Experimental Studies /
**J. R. Piorno, S. E. San Roman, J. M. Giron-Sielra, J. M. de la Cruz
Garcia**

3434 A Novel Method for Stochastic Measurement of Harmonics at Low Signal-
to-Noise Ratio / **B. M. Santrac, M. A. Sokola, Z. Milrovic, I. Zupunski,
V. Vujicic**

3442 Real-Time Noncrosstalk Sonar System by Short Optimized Pulse-Position
Modulation Sequences / **Q.-H. Meng, S.-Y. Lan, Z.-J. Yao, G.-W. Li**

3450 A di/dt Compensation Technique in Delay Testing by Disconnecting Power
Pins / **S. Baeg**

3457 A Genetic Algorithm for Target Tracking in FLIR Video Sequences Using
Intensity Variation Function / **G. Paravati, A. Sanna, B. Pralio,
F. Lambert**

3468 Uncertainty of Timebase Corrections / **C. M. Wang, P. D. Hale,
D. F. Williams**

3473 Improved Method for Object Recognition in Complex Scenes by Fusioning
3-D Information and RFID Technology / **C. Cerrada, S. Salamanca,
A. Man, E. Perez, J. A. Cerrada, I. Abad**

3481 Fully Integrated Seven-Order Frequency-Range Quadrature Sinusoid
Signal Generator / **C. Yang, A. J. Mason**

3490 Using ANOVA in a Microwave Round-Robin Comparison / **K. Barbe,
W. Van Moer, Y. Rolain**

- 3499 Accuracy Analysis of a Pointing Mechanism for Communication Applications / **M. Penile, S. Debei, M. Zaccariotto**
- 3510 Measuring Time-Varying I/Q Impairments in Digital Transmitters / **L. Angrisani, R. Schiano Lo Moriello, and M. Vadursi**
- 3519 Capacitive Sensor Interface for an Electrostatically Levitated Micromotor / **F. Han, Q. Wu, R. Zhang, J. Dong**
- 3527 Active Instrument Controller With Script Interpreter/ **B. Glazar, M. Jankovec, M. Topic**
- 3534 A Combined TD-FD Method for Enhanced Reflectometry Measurements in Liquid Quality Monitoring / **A. Cataldo, L. Catarinucci, L. Tarricone, F. Attivissimo, E. Piuze**
- 3544 Fitting Spheres to Range Data From 3-D Imaging Systems / **M. Franaszek, G. S. Cheok, K. S. Saidi, C. Witzgall**
- 3554 Traceable Waveform Calibration With a Covariance-Based Uncertainty Analysis / **P.O. Hale, A. Dienstfrey, J. C. M. Wang, D. F. Williams, A. Lewandowski, D. A. Keenan, T. S. Clement**
- 3569 A Novel Flux Linkage Measurement Method for Linear Switched Reluctance Motors / **S.W. Zhao, N. C. Cheung, W.-C. Can, Z. G. Sun**
- 3576 Installation Direction Analysis of Star Sensors by Hybrid Condition Number / F. Jiancheng and N. Xiaolin
- 3583 Real-Time DSP-Based Conductance Catheter Measurement System for Estimating Ventricular Volumes / **C.-L. Wei, C.-E. Chen, I.-T. Tseng, C.-H. Chen**
- 3592 On the Electrical Origin of Flicker Noise in Vacuum Devices / **J. Izpura**
- 3602 A New Impedance Measurement System for PZT-Based Structural Health Monitoring / **F.G. Baptista, J. V. Filho**
- 3609 Design of a Portable E-Nose Instrument for Gas Classifications / **A. Ozmen, E. Dogan**
- 3619 Characterization of RFID Strap Using Single-Ended Probe / **S.-L. Chen, K.-H. Lin**
- 3627 A New System for Soft-Tissue Balance Measurement in Total Knee Replacement / **I. Wu, G. Wang, D. Ye, Y. Wang**
- 3633 Hybrid Soil Parameter Measurement and Estimation Scheme for Excavation Automation / **K. Althoefer, C. P. Tan, Y. H. Zweiri, L. D. Seneviratne**
- 3642 A Micropower Front End for Three-Axis Capacitive Microaccelerometers / **M. Kamarainen, M. Saukoski, M. Paavola, J. A. M. Jamnen, M. Laiho, K. A. I. Halonen**
- 3653 LPG Gas-Sensing System With SnO₂ Thin-Film Transducer and 0.7-fj.m CMOS Signal Conditioning ASIC / **S. Bagga, N. Bhat, S. Mohan**
- 3659 Simple-Design Low-Noise NLTL-Based Frequency Synthesizers for a CPT Cs Clock / **R. Baudot, S. Guerandel, E. de Clercq**
- 3666 Comparative Study of Various Methods of DFT Calculation in the Wake of IEC Standard 61000-4-7 / **T. Tarasiuk**
- 3678 Research on Novel Grating Eddy-Current Absolute-Position Sensor / **L. Weiwu, Z. Hui, Q. Hongli**
- 3684 Evaluation of Delays Induced by Foundation Fieldbus HI Networks / **Q. Li, D. J. Rankin, J. Jiang**
- 3693 A Synchronous Chopping Demodulator and Implementation for High-Frequency Inductive Position Sensors / **M. Rahal, A. Demosthenous**
- 3702 Digital Measuring System for Monitoring Motor Shaft Parameters on Ships / **I.I. Dzapo, Z. Stare, N. Bobanac**

- 3713 Identification of Listeria Species Using a Low-Cost Surface-Enhanced Raman Scattering System With Wavelet-Based Signal Processing / **G. C. Green, A. D. C. Chan, B. S. Luo, H. Dan, M. Lin**
- 3723 A PMU for the Measurement of Synchronized Harmonic Phasors in Three-Phase Distribution Networks / **A. Carta, N. Locci, C. Muscas**
- 3731 All-Organic Motion Sensors: Electromechanical Modeling / **G. Di Pasquale, L. Fortuna, S. Graziani, M. La Rosa, D. Nicolosi, G. Sicurella, E. Umana**
- 3739 Nozzles Classification in a High-Pressure Water Jet System / **M. Annoni, L. Cristaldi, M. Lazzaroni, S. Ferrari**
- 3746 Burst Transceiver Unit for Wireless Passive SAW Sensing System / **S. Krishnamurthy, M. Z. Atashbar, B. J. Bazuin**
- 3754 Open and Standardized Resources for Smart Transducer Networking / **S. R. Rossi, A. A. de Carvalho, A. C. R. da Silva, E. A. Batista, C. Kitano, T. A. Santos Filho, T. A. Prado**
- 3762 A Novel Level Measurement Technique Using Three Capacitive Sensors for Liquids / **Hi Canbolat**
- 3769 Northern Cross Radiotelescope: Test and Measurements of Reliability Performance on Radioreceiver Chains / **M. Catelani, V. L. Scarano, R. Singuaroli, S. Montebugnoli, G. Bianchi, F. Perini, I. Trotta**
- 3778 Bimodal Method of Determining Fat and Salt Content in Beef Products by Microwave Techniques / **S.K. Ng, A. Gibson, G. Parkinson, A. Haigh, P. Ainsworth, A. Plunkett**
- 3788 Manufacture of an RF Magnetic Shielding Plate Having Orientation Characteristics / **T. Nishikubo, H. Endo, M. Itoh**
- 3796 Condition Monitoring of Metallized Polypropylene Film Capacitors in Railway Power Trains / **G. M. Buiatti, J. A. Martin-Ramos, A. M. R. Amoral, P. Dworakowski, A. J. M. Cardoso**
- 3806 Influence of Sampling Voltmeter Parameters on RMS Measurements of Josephson Stepwise-Approximated Sine Waves / **H. E. van den Brom, E. Houtzager, S. Verhoeckx, Q. E. V. N. Martina, G. Rietveld**

REGULAR PAPERS

- 3817 Estimation of the Utility's and Consumer's Contribution to Harmonic Distortion / **G.V.de Andrade, Jr., S. R. Naidu, M. G. G. Neri, E. G. da Costa**
- 3824 A Feature Selection Algorithm for the Regularization of Neuron Models / **P. Tomds, L. A. Sousa**
- 3831 In Vivo Blood Characterization From Bioimpedance Spectroscopy of Blood Pooling / **T. Dai, A. Adler**
- 3839 A Precise Analysis of the IEC Flickermeter When Subject to Rectangular Voltage Fluctuations / **J. Ruiz, J. J. Gutierrez, U. Irusta, A. Lazkano**
- 3847 The Histogram Test of ADCs With Sinusoidal Stimulus Is Unbiased by Phase Noise / **F.C. Alegria, A. C. Serra**
- 3855 An Improved Super-Resolution Source Reconstruction Method / **Y. Alvarez Lopez, F. Las-Heras Andres, M. R. Pino, T. K. Sarkar**
- 3867 The Quality of Lagged Products and Autoregressive Yule-Walker Models as Autocorrelation Estimates / **P.M.T. Broersen**
- 3874 Jitter Measurement and Compensation for Analog-to-Digital Converters / **C.-W. Fan, J.-T. Wu**
- 3885 Particle Filtering for State Estimation in Nonlinear Industrial System / **G. G. Rigatos**
- 3901 On the Calibration of DA Converters Based on R//3R Ladder Networks / **G. Scandurra, C. Ciofi, G. Campobello, G. Cannatd**
- 3907 Inductive Sensor for Measuring High Frequency Partial Discharges Within Electrical Insulation / **G. Robles, J. M. Martinez-Tarifa, M. V. Rojas-Moreno, J. Sanz-Feito**
- 3914 Current-Mode Capacitive Sensor Interface Circuit With Single-Ended to Differential Output Capability / **T. Singh, T. Scether, T. Ytterdal**

EDITORIAL

- 3925 Editor-in-Chief's Year-End Message / **R. Zoughi**
3927 List of Reviewers

PAPERS

- 3935 A Low-Cost Ultra-Wideband Indoor Ranging System / **A. De Angelis, M. Dionigi, A. Moschitta, P. Carbons**
3943 Fast Tracking of Power Quality Disturbance Signals Using an Optimized Unscented Filter / **J. B.V. Reddy, P. K. Dash, R. Samantaray, A. K. Moharana**
3953 Discounted Least-Squares Gearshift Detection Using Accelerometer Data / **P. Handel**
3959 Chaos-EP-Based Digital Redesign of Uncertain Hybrid Time-Delay Systems With State and Input Constraints / **Y.-P. Chang, H. A. Malki, S.-H. Tsai, L.-S. Shieh, G. Chen**
3972 Loss Angle and Permittivity Determination of a Dielectric Rod Using a Three-Wire Cage-Shape System / **J. A. Branddo Faria**
3978 In Situ Monitoring of Photoresist Thickness Uniformity of a Rotating Wafer in Lithography / **A. Tay, W. K. Ho, X. Wit, X. Chen**
3985 True-Power Measurement in Digital Communication Systems Affected by In-Channel Interference / **L. Angrisani, A. Napolitano, M. Vadursi**
3995 Wearable Sensing Glove With Embedded Hetero-Core Fiber-Optic Nerves for Unconstrained Hand Motion Capture / **M. Nishiyama, K. Watanabe**
4001 Wireless Sensor for Continuous Real-Time Oil Spill Thickness and Location Measurement / **I.I. Denkilkian, A. Koulakezian, R. Ohannessian, M. S. Chalfoun, M. K. W. Joujou, A. Chehab, I. H. Elhajj**

CORRESPONDENCE

- 4012 Corrections to "Three-Dimensional Acoustic Imaging by Chirp Zeta Transform Digital Beamforming" / **M. Palmese, A. Trucco**
4013 2009 INDEX