

Table of Contents

Plenary lecture

| | | |
|--|--|-----------|
| Maloberti F. | High-Speed Analog-to-Digital Converters Using Nanometer CMOS Technology (abstract) | 1 |
| Abdel Raheem G., Usama S., Khaled S. | Simple and Accurate Approach for Pseudo Random Code Regeneration | 3 |
| Arbet D., Stopjakova V. | Influence of the Oscillation Frequency Value on the Efficiency of Oscillation-Based Tests | 7 |
| Atasoyu M., Alaybeyoglu E., Kuntman H. | Reconfigurable Filter Structure Designed for Different Positioning Systems | 11 |
| Bauer J., Posta P., Fligl S., Lettl J. | Universal Embedded Controller for Matrix Converter | 15 |
| Benabid S., Aghdam E. | Design and Simulation of a 6th Order Continuous-Time Sigma-Delta Modulator Using Integrated LC Filter in a Standard CMOS Technology | 21 |
| Benes P. | Improving the Safety of Human-Robot Cooperation with Control of Joint Stiffness | 27 |
| Beresik R., Puttera J., Nebus F. | Seismic Sensor System for Security Applications Based on MEMS Accelerometer | 31 |
| Biolek D., Biolkova V., Kolka Z. | Memristor Pinched Hysteresis Loops: Touching Points, Part I | 37 |
| Biolek D., Biolkova V., Kolka Z. | Memristor Pinched Hysteresis Loops: Touching Points, Part II | 41 |
| Bizon N., Raducu M., Oproescu M., Constantinescu L. | Energy Efficiency of the PV Panels Using a MPPT Controller with Improved Search Speed - Part I: Modeling of the PV Power System under Extremum Seeking Control | 45 |
| Bizon N., Raducu M., Oproescu M., Constantinescu L. | Energy Efficiency of the PV Panels Using a MPPT Controller with Improved Search Speed - Part II: Simulation Results | 51 |
| Borsky M., Pollak P. | The Optimization of PLP Feature Extraction for LVCSR Recognition of MP3 Data | 55 |

| | | |
|--|--|------------|
| Buchta L., Pohl L. | Dead-Time Compensation Strategy with Adaptive Harmonic Compensator | 59 |
| Burian P. | Compact Version of Cartesian Genetic Programming | 63 |
| Dijemeni E., Roberts D. | Desktop Based Real Time Oxygen Auto-Ventilation and Gas Monitoring System for Homecare Respiratory Application | 67 |
| Dobias M., Stastny J. | Subband Optimization for EEG-Based Classification of Movements of the Same Limb | 71 |
| Dudacek K., Ledvina J., Vavricka V. | Development of a HART Compatible HART Line Powered Communication Module | 75 |
| Duricek M., Krajcovic T. | Interactive Hybrid Control-Flow Checking Method | 79 |
| Fiala P., Linhart R. | High Performance Polyphase FIR Filter Structures in VHDL Language for Software Defined Radio Based on FPGA | 83 |
| Frivaldsky M., Dobrucky B., Spanik P., Koscelnik J. | A Novel B3C Converter | 87 |
| Frivaldsky M., Spanik P., Drgona P., Koscelnik J. | Indirect Investigation of Heat Transfer of Electronic System | 93 |
| Hargas L., Koniar D., Hrianka M., Durdik P., Banovcin P. | Moving Object Searching Based on Virtual Instrumentation | 99 |
| Harvanova V., Krajcovic T. | Wireless Home Monitoring System - Design and Evaluation | 103 |
| Hofmann G., Scharfenberg G. | Applicability of the ISO 26262 for Functional Safety for Motorbikes | 107 |
| Hrusak J., Stork M., Mayer D. | Nonlinear Stabilization of Oscillators by State Space Energy Error Feedback | 113 |
| Chandra Shaker P., Srinivasulu A. | Quadrature Oscillator Using Operational Transresistance Amplifier | 117 |
| Ionescu L., Mazare A., Anton C., Stoian C. | The Hardware Implementation of a Quantum Computation System Emulator | 121 |

| | | |
|---|--|------------|
| Iqbal F., Ata S. | CMOS 5GHz Low Noise Amplifier for 802.11ac | 125 |
| Janik D., Kosan T., Sadsky J., Peroutka Z. | Implementation of SVPWM Algorithm without Trigonometric Functions | 131 |
| Jara M., Blahnik V., Peroutka Z., Talla J., Matuljak I. | Control of H-Bridge Power Inverter with LCL Filter | 135 |
| Jarzebowicz L., Judek S. | 3D Machine Vision System for Inspection of Contact Strips in Railway Vehicle Current Collectors | 139 |
| Jilek J., Stork M. | Wrist Cuff Method Determines Mean Arterial Pressure in Dual-Cuff Blood Pressure System | 145 |
| Judek S. | Control System for Contactless Electrical Energy Transfer with Varying Air Gap | 149 |
| Koscelnik J., Sedo J., Dobrucky B. | Modeling of Resonant Converter with Nonlinear Inductance | 153 |
| Kubak J., Stastny J., Kujan P. | Programmable PWM Modulator Optimized for High Speed for OPWM Test Platform | 157 |
| Kubik Z., Skala J., Nikolayev D. | 3D FEM Simulation of Small Stripline for EMC Testing | 161 |
| Kus V., Josefova T. | Effect of Dead Times on the Values of Input Current Harmonics Drawn from the Grid by a Voltage-Source Active Rectifier | 165 |
| Kutilek P., Hejda J., Socha V., Vlckova K., Cerny R. | Evaluation of the Relative Position of the Head and Shoulders in Neurological Practice | 169 |
| Kysela M., Dolezal I. | A Motion Detection System of the Patient in the Bed Using the NiTi Pressure Sensors | 173 |
| Lahoda J. | Phase Coupled Oscillators Based on Dissipation Normal Form – Mathematical Model of Swimming Fish | 177 |
| Laskody T., Prazenica M., Kascak S. | Space Vector Pulse Width Modulation for Two-Phase Two-Stage Matrix Converter with Four Legs | 181 |
| Linhart R., Fiala P. | Measuring RF Circuits Response Using Software Defined Radio System | 185 |

| | | |
|---|--|------------|
| Lozek M., Havlickova N., Havlik J. | Adaptive Mechanical Model of Cardiovascular System: Regulatory Processes | 189 |
| Majer L., Mihalov J., Stopjakova V., Zalusky R., Brenkus J., Uram M. | An RF Network Combiner Towards a Wireless Multi-Communication System for Smart Households | 193 |
| Matousek D., Brtnik B. | Matrix Method Derived from Graph Method of SI Circuit Solution | 197 |
| Matousek Z., Ochodnický J., Babjak M. | M-FSK Intra-Pulse Modulation Analysis by Subspectral Decomposition Method | 201 |
| Matousek Z., Ochodnický J., Sostronek M., Kurty J. | Small Loop Antennas Parameters Measurement in GTEM Cell | 205 |
| Merz C., Kupris G., Niedernhuber M. | Design and Optimization of a Radio Frequency Energy Harvesting System for Energizing Low Power Devices | 209 |
| Moldaschl J., Broulim J., Palocko L. | Boost Power Factor Correction Topology with Average Current Control | 213 |
| Moldaschl J., Broulim J., Palocko L. | Principle of Power Factor Corrector with Critical Conduction Mode | 217 |
| Muzikova V., Glasberger T., Smidl V., Peroutka Z. | Comparison of Full-Model and Reduced-Model EKF Based Position and Speed Estimators for Sensorless DTC of Permanent Magnet Synchronous Machines | 221 |
| Nagy L., Stopjakova V., Satka A. | Design of E/D-Mode InAlN/GaN HFET Inverter and its Robustness Analysis | 225 |
| Novak M., Kosek M., Eichler J. | Effective Approximation of Transfer Characteristics of Low Frequency Amplifier | 229 |
| Oklapi E., Deubzer M., Schmidhuber S., Lalo E., Mottok J. | Optimization of Real-Time Multicore Systems Reached by a Genetic Algorithm Approach for Runnable Sequencing | 233 |

| | | |
|---|--|------------|
| Osipov D. | 2.2ppm/°C Bandgap Voltage Reference with High-Order Temperature Compensation | 239 |
| Palacky P., Oplustil J., Kalvar D., Uchoc M., Sprlak R. | Two Stepped System of Converters with Accumulation of Electrical Energy | 243 |
| Pichlik P., Zoubek O., Zdenek J. | Measuring Device for Measurement of Train Dynamic Motion during Wheel Slip | 247 |
| Pospisil T., Novak J. | New Method of CAN Nodes Health Monitoring | 251 |
| Puricer P., Kovar P. | Empirical Model of the ADS-B Channel for Airport Area | 255 |
| Safarova V., Hes L., Militky J. | An Approach to Electrical Resistance Measurement Eliminating Contact Resistance Problem | 259 |
| Sharma R., Honc D., Dusek F. | Sensor Fusion for Prediction of Orientation and Position from Obstacle Using Multiple IR Sensors: An Approach Based on Kalman Filter | 263 |
| Sivakumari K., Srinivasulu A., Venkata Reddy V. | A High Slew Rate, Low Voltage CMOS Class-AB Amplifier | 267 |
| Storek D. | Rendering Moving Sound Source for Headphone-Based Virtual Acoustic Reality: Aspects of Signal Processing Implementation | 271 |
| Stork M., Hrusak J., Mayer D. | High Spectral Quality Sinusoidal Oscillator with Energy Based Amplitude Control | 277 |
| Stork M., Tolar D. | Wireless Electronic Systems for Physiological Parameters Measuring | 281 |
| Stork M., Vancura V. | Hidden Pacemaker Pulses Detection Based on Wavelet and Hilbert-Huang Transform | 285 |
| Svoboda P., Novak M., Bubla V., Pokorny P. | Apparatus for Feedback Control of Electrospinning Process | 289 |
| Teodorescu H. | Iterated Maps with Exponential Slopes for Nonlinear Dynamics Generation | 293 |
| Tsujimura T., Hashimoto T., Izumi K. | Genetic Reasoning for Finger Sign Identification Based on Forearm Electromyogram | 297 |

| | | |
|--|--|------------|
| Ukte A., Kizilkaya A., Elbi M. | Statistical Multirate High-Resolution Signal Reconstruction Using the Empirical Mode Decomposition Based Denoising Approach | 303 |
| Usama S., Tohamy A. | Denoising for RF Signal in OFDM System with AWGN Channels | 307 |
| Vale-Cardoso A., Araujo H., Guimaraes H. | A Feed-Forward Approach for DC Cancellation in Fully- Differential Instrumentation Amplifiers | 311 |
| Viteckova S., Kutilek P., Kauler J., Svoboda Z. | Fuzzy Expert System for Determining the Human Gait Phase | 315 |
