

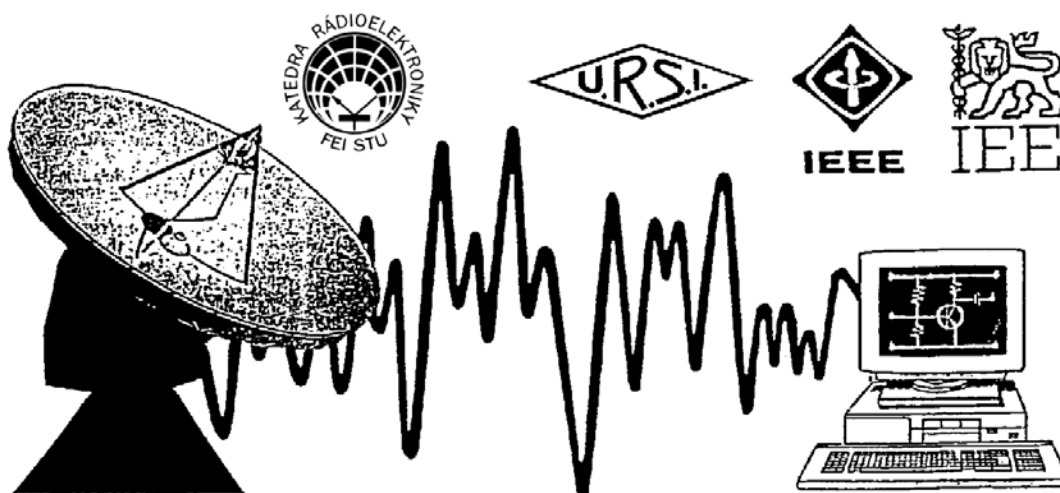


SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA
FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

Czech and Slovak Radioengineering Society
Czechoslovakia IEEE Society and its MTT/AP/ED Chapter
Czech and Slovak IEE Centers
and National Committee of URSI in the Slovak Republic

12th International Czech - Slovak Scientific Conference

RADIOELEKTRONIKA 2002



May 14 - 16, 2002
Bratislava, Slovak Republic

RADIOELEKTRONIKA 2002

12th International Czech - Slovak Scientific Conference

Organizers:

Department of Radio & Electronics SUT Bratislava in co-operation with
Institute of Radio Electronics, Brno University of Technology (Czech Republic),
Czech and Slovak Radioengineering Society,
Czechoslovakia IEEE Society and its MTT/AP/ED Chapter,
Czech and Slovak IEE Centers,
National Committee of URSI in Slovak Republic and
National Committee of URSI in Czech Republic

Conference Co-Chairs: Dr. Vladimír Kudják, SUT Bratislava (Slovak Republic)
Prof. Jiří Svačina, Brno UT (Czech Republic)

Technical Programme Committee:

Prof. Igor Baláž, SUT Bratislava (Slovak Republic) - Chairman

Prof. Ján Chmúrny, MA Liptovský Mikuláš (Slovak Republic)
Prof. Valentin Kuleshov, MEI Moscow (Russia)
Dr. Janos Ladvanszky, Microsystems AG (Austria)
Prof. Dušan Levický, TU Košice (Slovak Republic)
Prof. Miloš Mazánek, CTU Prague (Czech Republic)
Prof. Florián Makáň, SUT Bratislava (Slovak Republic)
Dr. Farid Matta, Agilent Inc., Palo Alto (USA)
Prof. Tadeusz Morawski, PW Warsaw (Poland)
Dr. Stevan Odri, TU Novi Sad (Yugoslavia)
Dr. Oldřich Ondráček, SUT Bratislava (Slovak Republic)
Prof. Jiří Pospíšil, Brno TU (Czech Republic)
Dr. Jiří Rozman, Brno TU (Czech Republic)
Prof. Rudolf Seller, TU Budapest (Hungaria)
Prof. Jiří Sobota, FH Wiesbaden (Germany)
Prof. František Vejražka, CTU Prague (Czech Republic)
Dr. John Venczel, Magnetic Analysis Inc., Mount Vernon NY (USA)
Dr. František Židek, SUT Bratislava (Slovak Republic)
Dr. Aurel Ščehovič, Research Institute of Posts and Telecomm. (SR)

Organisation Committee:

Dr. Pavel Piš, SUT Bratislava (Slovak Republic) – Chairman
Zuzana Krajčušková, SUT Bratislava (Slovak Republic) – Scientific Secretary
Benedikt Hollý, SUT Bratislava (Slovak Republic)
Dr. Miroslav Paško, SUT Bratislava (Slovak Republic)
Dr. Peter Hajach, SUT Bratislava (Slovak Republic)
Jozef Petrek, SUT Bratislava (Slovak Republic)
Miroslav Hagara, SUT Bratislava (Slovak Republic)

Conference Time:

May 14, 2002	social programme
May 15, 2002	9:00 - 17:00
May 16, 2002	9:00 - 13:00

Conference Location: Slovak University of Technology,
Faculty of Electrical Engineering and Information
Technology, Ilkovičova 3, 812 19 Bratislava

Sessions: The conference will cover all aspects of radio electronic theory and practice in a broad sense inclusive problems of special education. The main areas for oral and poster sessions are as follow:

- 1 **Electronic Circuits and Systems**
- 2 **Signal Processing and its Applications**
- 3 **Electromagnetic Waves, Antennas, Microwaves and Optoelectronics**
- 4 **Education and Management in Radio Electronics**
- 5 **Posters**

Languages: All contributions will be presented in one of the following languages: Slovak, Czech or English.

Registration: The conference fee includes admittance to all conference and exhibition rooms, participation in the sessions and discussions, also includes conference proceedings on CD and refreshment breaks.

Conference Proceedings: All papers accepted by the Programme Committee will be published in the Conference Proceedings, which will be available at the conference beginning. **All papers must be written in English.** The price of the Proceedings will be approx. **12 US \$ (or 600 SK)**.


Refreshment: Refreshment breaks (coffee, tea, soft drinks, sandwiches) are included in the conference fee.

Welcome Party: A welcoming reception for the conference participants will be held on May 15, 2002 evening. Informal interactions are greatly encouraged during the welcome party. The participation fee is **12 US \$ (or 600 SK)** not included in the conference fee.

Contact Address :

RADIOELEKTRONIKA 2002
Department of Radio and Electronics
Faculty of Electrical Engineering and Information Technology SUT
Ilkovičova 3
812 19 Bratislava
Slovak Republic

 00421 2 602 91 727 or 00421 2 602 91 137

 00421 2 654 29 683

 radio2002@elf.stuba.sk

<http://www.elf.stuba.sk/radio2002/radio2002.html>

CONFERENCE PROGRAMME

14. 5. 2002	14:30 - 16:00	Registration	B - block
15. 5. 2002	8:00 - 9:30	Registration	B - block
	9:30 - 10:00	Introduction, welcome	AB - 150
	10:00 - 10:45	Invited paper	AB - 150
V. Bilik : Six-port measurement technique: principles, impact, applications.			
	11:00 - 12:30	Oral session 1, 2, 3	
	12:30 - 13:30	Lunch break	
	13:30 - 15:00	Oral session 1, 2, 3	
	15:00 - 15:30	Break – refreshments	B - block
	15:30 - 17:00	Oral session 1, 2, 3, 4	
	16:00 - 17:00	Joint poster session 1, 2, 3, 4 Computer program presentation	B - 004
	18:30 - 21:30	Welcome party	
16. 5. 2002	8:00 - 9:00	Registration	B - block
	9:00 - 10:30	Oral session 1, 2, 3, 4	
	10:30 - 11:00	Break - refreshments	B - block
	11:00 - 12:30	Oral session 1, 2, 3	
	12:30 - 13:00	Close of Conference	
	13:00	Lunch break	

Session 1 ***ELECTRONIC CIRCUITS AND SYSTEMS***

Ia/1	Wednesday	15. 5. 2002	11:00 - 12:30	Room No. AB - 35
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Session Chair : O. Ondráček

- ◆ Pospíšil, J. et al.
Generalized Conditions for Optimized State Model of the Second-Order Dynamical System

- ◆ Dostál, T. - Hanus, S. - Michálek, V. - Pospíšil, J.
State Models of Dynamical Systems in Current Mode
- ◆ Galajda, P. - Guzan, M. - Špány, V.
Virtual Saddle Points in State Space Mystery
- ◆ Bernát, P. - Baláž, I.
Canonical Realisation of Fourth Order Electronic Circuit with One Nonlinear Resistor

Ia/2	Wednesday	15. 5. 2002	13:30 - 15:00	Room No. AB - 35
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Session Chair : E. Šumichrast

- ◆ Pospíšil, J. et al.
Single OP-AMP Structures and Their RL Circuits Equivalents
- ◆ Kolka, Z.
Enhanced Algorithm for Approximate Symbolic Analysis
- ◆ Dostál, T. - Čajka, J. - Vrba, K.
Design of Universal Biquad in Current Mode Based on Voltage and Current Followers
- ◆ Olšák, M. - Vrba, K. - Čajka, J.
Higher-Order Admittance Function Synthesis Suitable for Highpass Filter Design

Ia/3	Wednesday	15. 5. 2002	15:30 - 17:00	Room No. AB - 35
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Session Chair : P. Martinek

- ◆ Čajka, J. - Dostál, T. - Vrba, K.
Nth-Order Allpass Filter Design
- ◆ Matejiček, L. - Vrba, K.
Sensitivity Analysis and Fifth-Order High-Pass Filter with OTAS
- ◆ Hájek, K. - Sedláček, J.
Active RC Filters for Very Low Frequencies
- ◆ Georgieva, N. - Georgiev, A.
Reliability Prediction of the Electronic Devices

II/1 Thursday 16. 5. 2002

9:00 - 10:30

Room No. AB - 35

Session Chair : M. Paško

- ◆ Syrovatka, B.
System Noise Figure of Feedforward Amplifier
- ◆ Viščor, I. - Halánek, J.
Two-channel Digital Measurement System
- ◆ Maršálek, R. - Šebesta, V.
Adaptive Predistortion Linearization in Modern Communications Systems
- ◆ Vlček, M.
Improved Two-Graph Tree Enumeration Methods

II/2 Thursday 16. 5. 2002

11:00 - 12:30

Room No. AB - 35

Session Chair : J. Hribík

- ◆ Petrek, J.
Applied Network Theory-A Requisite for the Radio Network Design
- ◆ Štofanič, V. - Baláž, I. - Sam, A.
The Effect of Amplitude Quantization Noise in Direct Digital Frequency Synthesis
- ◆ Baláž, I. - Minárik, M. - Piš, P.
Single Transistor Dual-mode Crystal Oscillator
- ◆ Blesák, K. - Kudjác, V.
Fast PLL with Simple Passive RLC Filter

Ib/1 Wednesday 15. 5. 2002

11:00 - 12:30

Room No. AB-150

Session Chair : I. Spudil

- ◆ Štursa, J. - Kroupa, V.F.
Iterative Generation of the Sine Signal in Digital Frequency Synthesisers
- ◆ Skalický, P. et al.
OFDM Modulator for LW, MW and SW Bands
- ◆ Tůma, J.
Complex High Power Amplifiers Characteristic Measurement Using Scalar Analyzer
- ◆ Kašpar, Z.
Power-line Communication-Regulation Introduction, PL Modem Implementation and Possible Application
- ◆ Lojko, B. - Fuchs, P.
The Control of Anti-Lock Braking System (ABS) and Anti-Skid Reduce System in the Diesel-Powered Cars Based on the TMS320F243 DSP

Ib/2 Wednesday 15. 5. 2002

13:30 - 15:00

Room No. AB-150

Session Chair : Š. Vávra

- ◆ Abdelgawad, T.E. - Smékal, Z.
Twisted-Pair Channel Modelling for xDSL Applications
- ◆ Abdalla, R. - Herman, I.
Data Transmission between Communication Center (Cc) and Many Primary Stations (Ps)
- ◆ Neprincev, V.I. et al.
About self-excitation of auto-oscillations with factor of amplification smaller than for this purpose necessary
- ◆ Georgieva, N. - Georgiev, A. - Dimova, R.
Investigation Synchronous Add-Drop Multiplexers Stability
- ◆ Tichá, D. - Martinek, P. - Vorlíček, J.
Switched-Current Analog Wave Filters

Session 2 ***SIGNAL PROCESSING AND ITS APPLICATIONS***

Ia/1 Wednesday 15. 5. 2002

11:00 - 12:30

Room No. BC-35

Session Chair : F. Židek

- ◆ Seberry, J. - Wysocki, B.J. - Wysocki, T.A.
Some Good Orthogonal Bipolar Spreading Sequences of the Lengths 12 and 20
- ◆ Kostov, N.T.
Hybrid 4D/2D-OPSK TCMS for Mobile Communications
- ◆ Czyzak, M.
Noniterative Small Range Residue Division
- ◆ Košút, P. - Karlubíková, T. - Kotuliaková, K. - Polec, J.
A Throughput Analysis of an Adaptive GBN ARQ Scheme with A New Switching Algorithm

Ia/2 Wednesday 15. 5. 2002

13:30 - 15:00

Room No. BC-35

Session Chair : V. Šebesta

- ◆ Říčný, V.
Measurement of the Signal-To-Noise Ratio of Videosignals
- ◆ Kratochvíl, T. - Říčný, V.
Utilization of Digital Filter Design for Digital Image Transmission Simulation
- ◆ Kaiser, J.
Colorimetry of the New Scanning and Display Systems
- ◆ Turán, J. - Ovseník, L. - Fazekas, K. - Turán, J. jr.
Image Indexing Based on STIR and MPEG4

Session Chair : V. Řičný

- ◆ Nouza, J.
Building a System for Recognition of Fluently Spoken Czech
- ◆ Karafiát, M. - Černocký, J.
Context Depended Hidden Markov Models in Recognition of Czech
- ◆ Prokopec, J. - Šebesta, V.
Carrier Recovery Utilizing DSP
- ◆ Halánek, J. et al.
Accumulation of Non-Coherent Signal
- ◆ Nebus, F. et al.
FMCW Sensor Evaluation and Real Signals Analysis

Session Chair : J. Štursa

- ◆ Ondrašová, I. - Setnička, V. - Smieško, V.
Automated Instrumentation Application
- ◆ Grézl, F. et al.
Improving TRAPS Features Using LDA
- ◆ Hribík, J. et al.
Analog Input Circuits of Digital Electricity Meter
- ◆ Brejl, M.
FSK Demodulation on DSP
- ◆ Brančík, Ľ.
Matlab Oriented Matrix Laplace Transforms Inversion for Distributed Simulation

II/2 Thursday 16. 5. 2002

11:00 - 12:30

Room No. BC-35

Session Chair : A. Ščehovič

- ◆ Chaloupka, J.
Talking Head: How Much Comprehensible is it ?
- ◆ Nekola, M. – Bernas, M.
New Support For Data Compression in Fits Format
- ◆ Kolář, R. - Kozumplík, J.
Noise Supression in Ultrasound Images with Packed Wavelet Transform
- ◆ Půčik, J. - Hassan, A.
Reassignment Time-Frequency Method in Marginal Domain

Ib/1 Wednesday 15. 5. 2002

11:00 - 12:30

Room No. DE- 35

Session Chair : D. Levický

- ◆ Orel, D. - Rozman, J.
Models of Heating Induced by Ultrasound
- ◆ Polák, M. - Hodges, A. - Balkany, T.
Experience with the Monitoring of V Cranial Nerve During the Acoustic Tumor Surgery
- ◆ Polák, M. - Hodges, A. - Balkany, T.
Compound Action Potentials Measurement with Nucleus 24 Cochlear Implant Users
- ◆ Cocherová, E.
The Temperature Relationships in the Modified Hodgkin-Huxley Model of the Nerve Fiber
- ◆ Stoeva, M. - Yordanova, S.
A Technique for Shape Similarity Research in Databases of Medical Images

Session Chair : V. Smieško

- ◆ Hovančák,R. - Levický,D.
Comparison of Two Watermaking Methods Using Transformation
- ◆ Kulla,P. - Sedliak,I.
The Unconventional Cryptographic Method for Encoding and Decoding of Non-visible Character Chains in Images
- ◆ Syrová,L. - Ravas,R. - Grman,J.
Use of Image Processing in the Schlieren Optical Visualization Methods
- ◆ Klíma,M. - Páta,P. - Bernas,M. - Pazderák,J.
Highly-efficient Image Compression Techniques and Subjective Image Quality

Session 3 *ELECTROMAGNETIC WAVES, ANTENNAS,
MICROWAVES AND OPTOELECTRONICS********Session Chair : V. Kudják***

- ◆ Galwas,B. - Szczepaniak,Z.R.
Generation of Intermodulation Distortions by Electro-Optical Modulators
- ◆ Folkman,V. - Németh,A.
Direction Finding Based on Adaptive Antennas
- ◆ Bienkowski,P. - Trzaska,H.
Operators Bodu Role in Mobile Radiotelephony
- ◆ Ymeri,H. et al.
Frequency-Dependent Internal Inductance Associated with Silicon Substrate of On-Chip Interconnects

I/2 Wednesday 15. 5. 2002

13:30 - 15:00

Room No. CD-35

Session Chair : M. Mazánek

- ◆ Jasenek, J.
The Use of Polarization Optical Time-Domain Reflectometry for the Birefringence Distribution Measurement along the SM Optical Fiber
- ◆ Chovan, J. - Uherek, F. - Hábovčík, P.
Performance Analyses of Optical CDMA Subsystem with Non-ideal Optical Hard-Limiters
- ◆ Vlček, Č. - Bém, P.
Radiation Hardness of Selected Opto-electronic Components
- ◆ Macháč, J. - Zehentner, J. - Lorenz, P.
Uniplanar Leaky Wave Radiator

I/3 Wednesday 15. 5. 2002

15:30 - 17:00

Room No. CD-35

Session Chair : J. Zehenter

- ◆ Šádek, V. - Svačina, J.
Analysis of Two-Wire Transmission Line by a Conformal Mapping Method
- ◆ Lédl, P. - Pechač, P. - Mazánek, M.
Preliminary Study of Vegetation Effects on Signal Propagation in Millimeter Waveband
- ◆ Hlaváč, D. - Wilfert, O.
155-MBPS ATM Free-Space Link Reliability
- ◆ Goňa, S. - Raida, Z.
A Study of Influence of Dielectric Cover on FSS Properties
- ◆ Ružička, B. et al.
Current Source for Laser Diodes with High Protection Against EMI

II/1 Thursday 16. 5. 2002

9:00 - 10:30

Room No. CD-35

Session Chair : J. Jasenek

- ◆ Šumichrast, L. - Božek, R.
Improved Transparent Boundaries for Computer Modelling of Wave Propagation in Parabolic Approximation
- ◆ Šimík, R.
Models and Signal Propagation for DVB-T System
- ◆ Černohorský, D. - Nováček, Z.
Effect of Internal Capacitances in a Slots Excited Dipole Array
- ◆ Bittera, M. - Kováč, K. - Smieško, V.
Development of HF E-Field Probe with the Frequency Independent Isotropy

II/2 Thursday 16. 5. 2002

11:00 - 12:30

Room No. CD-35

Session Chair : V. Smieško

- ◆ Motl, M. - Franek, O. - Raida, Z.
Comparison of Finite Element Complex Frequency Hopping (FE/CFH) and Finite-Difference Time-Domain (FDTD) Methods
- ◆ Kamburov, L.P.
Plane Reflection Type Fresnel Antenna
- ◆ Polívka, M. - Hudec, P.
Study of Trial Band Quarter Wavelength Planar Antenna for Signal Detection in NMT 450/GSM 900/DCS 1800 Bands
- ◆ Otevřel, V. - Raida, Z.
Optimization of an Eight-Part Yagi Antenna: The MCL2 Versus Genetic Optimization

Session 4 ***EDUCATION AND MANAGEMENT IN RADIO
ELECTRONICS***

I/1 Wednesday 15. 5. 2002

15:30 - 17:00

Room No. DE-35

Session Chair : B. Holly

- ◆ Török,I. - Seller,R.
Software for Visualizing Quadratic Time-Frequency Representations
- ◆ Biolek,D. – Biolková,V.
Teaching Numerical Methods of Solving Technical Problems
- ◆ Boreš,P. - Tichá,D.
WWW Pages as o Tool of Semestral Work Presentation
- ◆ Boreš,P - Bicák,J. - Hospodka,J.
Utilization of Library SYNTFIL in Education of Circuit Theory

II/1 Thursday 16. 5. 2002

9:00 - 10:30

Room No. DE-35

Session Chair : M. Hruškovic

- ◆ Raida,Z. et al.
Experience with the Development of Multimedia Text-Books
- ◆ Turán,J. - Ovseník
GUI for Teleeducational Multimedia Courseware: Optoelectronics
- ◆ Makáň, F.
The Mobile Satellite Data Networking
- ◆ Holly.B. - Hassan,A.
AD Convertors and DSP in Biomedical Engineering Education

JOINT POSTER SESSION 1, 2, 3, 4

Wednesday 15. 5. 2002

16:00 - 17:00

B - block

- ◆ Holcer,R. - Michalko,P.
Parameter Identification of the Unified ADC Error Model
- ◆ Píš,P. - Kukučka,M. - Lehocki,F. - Juhás,P.
New Accesses and Possibilities in Medical Diagnostics
- ◆ Radoczi, P.
Least Square Aproximation in Cutted Frames
- ◆ Guzan, M.
The Load Plane and Singularities in MVL Circuit
- ◆ Michálek,R. et al.
Digital Part of Digital Electricity Meter
- ◆ Králiková,E. - Setnička,V.
Methods of MFL Output Signal Visualization
- ◆ David, P.
Experiments with Speaker Recognition Using GMM
- ◆ Matějka, Š.
Measurements in DVB-T Single Frequency Network
- ◆ Schwarz,P. - Černocký,J..
Keyword Detection in Czech Fluent Speech
- ◆ Ulovec,K..
DVB Multimedia Home Platform DVB-MHP
- ◆ Beník,Š. - Hajach,P.
Antenna Array for Adaptive Antennas
- ◆ Jus, M.
Multirate Digital Signal Processing-Filter Banks
- ◆ Hradecký,Z. - Mazánek,M.
Comparison of Microwave Structures Modelling Using Frequency Domain and Time Domain Analysis
- ◆ Tykal, J.
Image Segmentation Using Second Generation Wavelets

- ◆ Hoffman, K. - Sokol, V.
3D Vertical Stub on Microstrip Line
- ◆ Bača, B.
Algorithm for Active Noise Control
- ◆ Kollár, M.
Flip-Flop Sensor an Offer for Increased Function of the Smart Sensors
- ◆ Hallon, J. - Kováč, K. - Smieško, V.
Sensitivity of Single Supply BJT OPAMP to Pulse Disturbance and its Modelling
- ◆ Setnička, V. - Zubal, R. - Kollár, M.
Sensing and Data Scanning Tools for MFL Testing
- ◆ Poruba, J.
Experiments with Dynamic Spectral Subtraction Using the Human Ear Masking Characteristics
- ◆ Grman, J. - Ravas, R. - Syrová, L.
Application of Wavelet Transformation in Eddy Current Testing
- ◆ Motlíček, P.
Application of Mel-Scale Filter Bank for Noise Estimation in Speech Processing
- ◆ Dýmal, P.
Special Transmitter for EGSM Band
- ◆ Závodný, L.
The Model of Metal Oxide Semiconductor Transistor for First Step of Circuits Design
- ◆ Axman, V.
Second-Order Filters by Voltage and Current Followers
- ◆ Kolouch, J.
Verification of Digital Design Using Non-Synthesizable Description
- ◆ Čermák, K.
Laser and Physical Optics Design Software
- ◆ Stančík, P.
TV Contactless Area Meter
- ◆ Hučka, R.
Spread Spectrum Multirate User Access Using Orthogonal Walsh Codes
- ◆ Matějka, P. - Černocký, J.
Feature Gaussianization for Speech Recognition
- ◆ Urbanec, T.
Wlan Cards Parameters and Possibility of their Improvement
- ◆ Šebesta, J. - Kasal, M.
High Speed Terminal Node Controller

- ◆ Bělohrad,D. - Švéda,K. - Kasal,M.
Optimalized Magnetic Field Homogeneity for MR Coils
- ◆ Habr.M. - Holec,A.
Methods for Objects Separation for Recognition Tasks
- ◆ Georgiev,A. - Georgieva,N.
Design of Pulsed Transformers
- ◆ Širakov, S.E.
The Instantaneous Dissipation of a Class AB Amplifier
- ◆ Ordasi, G.
Surface Vibration Measurement with LIDAR
- ◆ Seidl, L.
The Differential GPS System Based on GSM-GPRS
- ◆ Hagara,M. - Moravčík,J.
Plus Operator for Edge Detection in Digital Images
- ◆ Kubinec, P.
Some Properties of the Sound Signal Interpolation by Windowed Sinc Function
- ◆ Cvek, J.
Waveguide and Evanescent Waveguide Applicator for Microwave Thermotherapy
- ◆ Herza, J.
The Probe for Evaluation of Applicators for Microwave Thermotherapy
in the Water Phantom of the Biological Tissue