2011 3rd International Congress on Ultra Modern Telecommunications and Control Systems and Workshops

(ICUMT 2011)

Budapest, Hungary
5 – 7 October 2011

IEEE

IEEE Catalog Number: CFP1163G-PRT
ISBN: 978-1-4577-0682-0

TABLE OF CONTENTS

A New Flow Formulation for FIPP p-cycle Protection Subject to Multiple Link Failures 1
Hai Anh Hoang, Brigitte Jaumard

GoP-level Distortion Optimization for Video Quality Enhancement in MANETs 8
Pejman Goudarzi, Mehdi Hosseinpour, Farima Ayatollahi

Differentiated QoE Provisioning for Video Delivery over Wireless Networks 13
Pejman Goudarzi, Mohammad R. Nezami Ranjbar, Farima Ayatollahi

Scheduling Variable Rate Multimedia Streams Over a Shared Internet with QoS Guarantees 18
Abheek Saha, Seema Garg

Exact Solutions for the Robust Prize-Collecting Steiner Tree Problem 25
Eduardo Álvarez-Miranda, Ivana Ljubic, Paolo Toth

Predicting Topology Survivability Using Path Diversity 32
Justin P. Rohrer, James P. G. Sterbenz

Internet-Based Survey on Driver's Psychosomatic State for the Creation of Driver Monitor Function 39
Masahiro Miyaji, Haruki Kawanaka, Koji Oguri

An Evaluation of Approximate Network Optimization Methods for Improving IP-level Fast Protection with Loop-Free Alternates 45
Máté Nagy, Gábor Rétvári

Quantitative and Qualitative Network Robustness Analysis Under Different Multiple Failure Scenarios 52
M. Manzano, E. Calle, D. Harle

Design and Implementation of Reliable Multi-layer Service Network 59
Shigeo Urushidani, Michihiro Aoki

Failure Protected Shortest Paths in GMPLS Networks 65
Teresa Gomes, José Silva, José Craveirinha, Carlos Simões

An Overlay Mapping Model for Achieving Enhanced QoS and Resilience Performance 72
Xian Zhang, Chris Phillips, Xiuzhong Chen

TCP and UDP Processing Requirements for Network Interface Design at 100 Gbps 79
Mohamed Elbeshti, Michael Dixon, Terry Koziniec

Influence of the Jitter Buffer on the Quality of Service VoIP 84
Stefan Paulsen, Tadeus Uhl, Krzysztof Nowicki

Assessing Risk for Network Resilience 89
Marcus Schöller, Paul Smith, David Hutchison

Physical Impairment of Monitoring Trails in All Optical Transparent Networks 96
Ehsan Sarvghad Moghaddam, János Tapolcai, Dániel Mazroa, Éva Hosszu

Reliability Polynomials Crossing More Than Twice 103
Jason I. Brown, Yakup Koç, Robert E. Kooij

Automated Learning of Loop-Free Alternate Paths for Fast Re-Routing 109
Wouter Tavernier, Dimitri Papadimitriou, Didier Colle, Mario Pickavet, Piet Demeester

A Dynamic Path Computation Algorithm for e2e Dedicated Protection in a GMPLS Controlled Multilayer (Ethernet/WSON) Network 116
Anica Bukva, Ramon Casellas, Ricardo Martínez, Raül Muñoz

Efficient Heuristic for Routing Static Dependable Connections in WDM Networks with SRLGs 123
Maroua Bakri, Mohamed Koubàa, Ammar Bouallègue

Quantifying the Role of Access Control in End-to-End Network Security 130
Usama Ahmed, Ammar Masood, Liaquat Ali Khan

Selective Protection for All-Optical Physical Impairment Constrained Routing 135
Peter Soproni, Tibor Cinkler, Jacek Rak

Practical Benchmark Analysis of Traffic Protection with Ethernet-over-SDH Transmission 142
Amra Imamovic, Vlatko Lipovac

High Speed MIMO LTE Application Based on Matrix Inversion Algorithms Using Floating Point DSP 149
Md. Abdul Latif Sarker, Moon Ho Lee

Architecture of Multichannel Quantum Cryptographic System 154
Sergey Biryuchinskiy, Konstantin Melnikov, Vladimir Melnikov

Protected Multichannel Free Space Optics Communication System 157
Sergey Biryuchinskiy, Konstantin Melnikov

Energy Efficient Enhanced-AODV Protocol for Multi-Rover Systems 161
Shreyas S. Vidyarthi, S. Vijayalakshmi, G. A. Vijaeendra Simha, B. Smitha Shekar, G. Narendra Kumar
Drum-Boiler Control System Employing Shrink and Swell Effect Remission in Thermal Power Plants 166
Mihai Iacob, Gheorghe-Daniel Andreescu
Identification of Anomalies on Encrypted Communications Based on Multi-Scale Behavior Modeling 174
Eduardo Rocha, Paulo Salvador, António Nogueira, Joel Rodrigues
Stopband and Transmission Zero Widening via Nonuniformities in Linear Distributed Systems 181
Adly T. Fam
Cooperative Range-Free Localization for Wireless Sensor Networks 186
Jin He
Survivable P2P Multicasting Flow Assignment in Dual Homing Networks 192
Wojciech Kmiecik, Krzysztof Walkowiak
Joint Working and Spare Capacity Assignment for Anycast Streaming in Survivable Networks Protected by p-Cycles 199
Adam Smutnicki, Krzysztof Walkowiak
Reliability of Wireless Mesh Networks with Directional Antennas 205
Mateusz Zotkiewicz, Michal Pióro
A Polynomial Multicommodity Flow Problem with Difficult Path Generation 212
Dritan Nace, Michal Pióro, Artur Tomaszewski, Mateusz Zotkiewicz
Design of 2-level Hierarchical Ring Networks 217
Kishore Kshirsagar, Kesav Kaza, Krishnan Rajan
An Integer Linear Programming Model for Optimal Self Protection Multi-Path Selection 224
Nayyar Almas Kazmi, Arie M. C. A. Koster
Fractional Spanning Tree Packing Problem with Survivability Constraints for Throughput Maximization in Overlay Multicast Networks 231
Michal Kucharzak, Krzysztof Walkowiak
Augmenting Optical Topology to Improve Survivability 238
Zoltán Zsóka, Tamás Izsó, Péter Bajor, Emil Babics
Maximizing Access to IT Services on Resilient Optical Grids 245
Brigitte Jaumard, Ali Shaikh
Implementation of an Intelligent System for Estimation of Fundamental Frequency of Speech 251
Musfir Mohammed, K. Edet Bijoy
Photonic Sampled and Electronically Quantized Analogue to Digital Conversion in Access Networks 256
Mohammadreza Behjati, S. R. Abdollahi, H. S. Al-Raweshidy
An Efficient and Customized Pipelined Cryptography Hardware 262
Otávio S. M. Gomes, Robson L. Moreno, Tales C. Pimenta
10G EPON vs. XG-PON1 Efficiency 268
Pamela Begovic, Nasuf Hadziahmetovic, Darijo Raca
A Fast Cryptography Pipelined Hardware Developed in FPGA with VHDL 277
Otávio S. M. Gomes, Robson L. Moreno, Tales C. Pimenta
Practical Aspects of Access Network Indoor Extensions Using Multimode Glass and Plastic Optical Fibers 283
Gerd Keiser, Hao-Yu Liu, Shao-Hsi Lu, Puspa Devi Pukhrambam
Ultra Wide-Band Impulse Transmission over Optical Fibre 287
Gábor Fehér, Csaba Fuzy, Eszter Udvary, Tibor Berceli
Analytical Evaluation of Splice and Bending Losses of Photonic Crystal Fibers Based on Empirical Relations 292
George S. Kliros, Konstantina C. Gota, Theodora P. Pikouli
Deployment of IPv6 Testbed in a Research Network with GPON Access Technology 298
J. F. Pozzuto, J. O. Tognolli Jr., L. Martins, M. A. B. Sanches, N. S. De A. Chaves
A Note on a Hybrid Rerouting Scheme 304
Alfred Bashllari, Akli Fundo, Dritan Nace, Ilir Shinko
Partial Redundancy of the Control Plane Routers in the GMPLS Controlled Optical Networks 309
Janusz Korniak, Pawel Rozycki
Good Code Sets 314
Adly T. Fam
An Analysis of MIMO-OFDM for Underwater Communications 320
Ha Duyen Trung, Nguyen Van Duc
Amorphous Molybdenum Oxide Nanorods for Electrochromic Applications 325
I. Navas, R. Vinod Kumar, K. Maniammal, V. P. Mahadevan Pillai
Receiver Performance-Complexity Tradeoff in LTE MU-MIMO Transmission 330
Zijian Bai, Stanislaus Iwelski, Guido Bruck, Peter Jung, Biljana Badic, Tobias Scholand, Rajarajan Balraj

A New Timing Synchronization Approach for OFDM Systems 337
Hamed Abdzadeh-Ziabari, Mahrokh G. Shayesteh
Joint Multiple Relay Selection and Power Optimization in Two-Way Relay Networks 341
Hasan Kartlak, Niyazi Odabasioglu, Aydin Akan
Availability Model of Optical Communication Network for Ship's Engines Control 345
Irena Jurdana, Vinko Tomas, Renato Ivce
Mobility Work Re-Visited Not Considered Harmful 351
Dirk Trossen, Xenofon Vasilakos, Paris Flegkas, Vasilis Sourlas, George Parisis
A Hidden Markov Based End-to-End Architecture to Measure, Model, Emulate, and Estimate Wireless Access Network Characteristics 359
B. Güzelarslan, S. Struck, M. Dippold, M. Paul, T. Michael
Cooperative Clustered Architecture and Resource Reservation for OBS Networks 366
Ihsan Ul Haq, Henrique M. Salgado, Jorge C. S. Castro
Perspective Security Procedures for Femtocell Backbone 372
Tomas Vanek, Matej Rohlik
QoS Evaluation of Multiservice Applications Over Integrated Satellite-Terrestrial Networks 376
Lukman Audah, Zhili Sun, Haitham Cruickshank
Measurement Methods for QoS in VoIP Review 384
Nadia Ghiata, Marius Marcu
Modified CHOKe: Analysis and Improvement of a Stateless Queue Management Scheme for Fair Bandwidth Allocation 390
Medi A. Nazar, Manu Ignatius, Prabandana Listyanto, Zaineb A. Taqi Al-Qazwini
Performance Evaluation of a Relay Network with UWB Links Exploiting Time-Reversal Technique 398
Zolfa Zeinalpour Yazdi, Masoumeh Nasiri Kenari, Behnaam Aazhang
Performance Enhancement of FM- QCSK Chaotic Communication System 406
Hikmat N. Abdullah
Constant Weight Codes Based on Ideals of Commutative Rings 410
Anirban Ghatak
Performance Analysis of a Dispersion Managed Soliton Transmission System 416
M. Ratheesh Kumar, V. P. Mahadevan Pillai, K. G. Gopchandran
Incorporating Feature Point-based Motion Hypotheses in Distributed Video Coding 420
Ralph Hänsel, Henryk Richter, Erika Müller
How Efficient Is Energy-Efficient Ethernet? 426
Sergio Herrería-Alonso, Miguel Rodríguez-Pérez, Manuel Fernández-Veiga, Cándido López-García
Outage Probability of Random Relying of MDS Codeword Blocks in Cooperative Multi-Hop Networks 433
Katsumi Sakakibara, Shuji Kobayashi, Jumpei Taketsugu
Execution Framework Model for Power-Aware Applications 439
Marius Marcu, Dacian Tudor
Fault-Tolerant Controllers in Adjacent Wireless Networked Control Systems Using 802.11 447
Tarek K. Refaat, Esraa A. Makled, Ramez M. Daoud, Hassanein H. Amer, Mai Hassan
A Real-time Motion Control Strategy for Redundant Robots Improving Dynamics and Accuracy 453
Markus Lotz, Hartmut Bruhm, Alexander Czinki, Michael Zalewski
A Reconfigurable Software Radio Framework for Accessing Diverse Resources in Distributed Nodes 459
Haopeng Liu, Xin Su, Yuan You, Jie Zeng
Efficient Lossless Compression of Colour Image Data with Diverse Characteristics 464
Tilo Strutz, Thomas Schmiedel, Thomas Schatton
Reliable Architecture for a Two-Wagon Switched Ethernet Train Control Network 469
Tarek K. Refaat, Hassanein H. Amer, Ramez M. Daoud
The Development of HD-VoIP Application with G.711.1 for Smartphone 476
Seung-Han Choi, Ngoc-Son Han, Do-Young Kim, Byung-Sun Lee, Chang-Ho Seo
Steganographic Protocols Based on Rank Metric Codes 480
R. S. Selvaraj, Jejaw Demamu
Smart Adaptive Tone-Reservation for PAPR Reduction Technique with Throughput Constraint for Multi-User OFDMA Systems 484
Pattama Phoomchusak, Chaiyod Pirak
Geo-Predictive Error Correction Adaptation for Broadcast Services 489
Vinod Kumar Malamal Vadakital, Miska M. Hannuksela, Igor D. D. Curcio, Moncef Gabbouj
A New Companding Technique for PAPR Reduction in OFDM Communication Systems 495
Orhan Gazi

Zero-Padded Symmetric Conjugate Technique for Intercarrier Interference Cancellation in MIMO-OFDM Systems 500
Aurupong Yiwleak, Chaiyod Pirak, Rudolf Mathar
Routing and Traffic Grooming in Multi-Domain Optical Networks 506
Wajdi Halabi, Kris Steenhaut, Marnix Goossens, Ann Nowé
Resilience Analysis of Key Update Strategies for Resource-Constrained Networks 513
Ender Yüksel, Hanne Riis Nielson, Flemming Nielson
A Novel Conflict-Free Memory and Processor Architecture for DVB-T2 LDPC Decoding 521
Alberto Jiménez-Pacheco, Onkar Dabeer
A QoS Aware Cross-Layer Optimisation for Wireless Video Streaming 528
Dhananjay Kumar, R. Sudarson, R. Sivasankari
Energy Efficient Operation of 3GPP LTE-Advanced and IEEE 802.16m Downlink Channel 534
Alexey Anisimov, Sergey Andreev, Alexandra Lokhanova, Andrey Turlikov
Using SIP for Seamless Handover in Heterogeneous Networks 539
Elin Sundby Boysen, Joakim Flathagen
Proposal of QoS Enabled GMPLS Controlled XG-PON 547
Lukasz Brewka, Anders Gavlery, Henrik Wessing, Lars Dittmann
The Impact of Social Distance on Utility Based Resource Allocation in Next Generation Networks 553
Georgios I. Tsiropoulos, Dimitrios G. Stratogiannis, Nikolaos Mantas, Malamati Louta
Improving Data Integrity and Performance of Cryptographic Structured Log File Systems 559
Genti Daci, Megi Shyle
Multiuser Interference Cancellation in a Passive Network with PON-OCDMA Uncontrolled Power 564
A. Okassa M'Foubat, F. Elbahhar, C. Tatkeu
Design Optimization of the Tau Haptic Device 569
Suleman Khan, Aftab Ahmad, Kjell Andersson
Comparison of Link to System Interface Models for WiMAX System 577
Zakaria Hanzaz, Hans Dieter Schotten
A QoE-aware IMS Infrastrusture for Multimedia Services 583
Harilaos Koumaras, Nikolaos Zotos, Lemonia Boula, Anastasios Kourtis
Overhead Analysis in WiMAX-based IPTV Systems 590
Alireza Abdollahpouri, Bernd E. Wolfinger
Energy Efficiency in M2M Networks: A Cooperative Key Establishment System 598
Yosra Ben Saied, Alexis Olivereau, Djamal Zeghlache
Design and Simulation of a Optical Communication System with Dispersion Managed RZ Pulse 606
M. Ratheesh Kumar, V. P. Mahadevan Pillai, K. G. Gopchandran
Luminescent $Gd_{1.9}Eu_{0.1}O_3$ Nanospheres for Flat Panel Displays 610
R. G. Abhilash Kumar, K. G. Gopchandran
Optical Color Image Encryption Based on Hartley Transform and Double Random Phase Encoding System 617
K. Karuna Kesavan, M. Ratheesh Kumar
Studies on Oscillator Strength of Nanostructured Amorphous, Anatase and Rutile TiO_2 Films 620
S. Sankar, K. G. Gopchandran
An Approach to Stiffness Analysis Methodology for Haptic Devices 629
Aftab Ahmad, Kjell Anderson, Ulf Sellgren
Impact of Smart Traffic Handling Scheme on Downlink Power of UMTS Base Station in Multilayer Network 637
Muhammad Usman Sheikh, Jukka Lempiäinen
LTE Performance with Variable Number of Users per Transmission Time Interval along with AMS 642
Muhammad Usman Sheikh, Rafal Jagusz, Jukka Lempiäinen
Non-Invasive Respiratory Motion Tracking Using M-Sequence UWB Radar 647
A. Volkan Atli, Ersin Öztürk
Candidate Cycles Generation for p-cycle Calculation Considering SRLGs 651
Miguel Ferreira, Teresa Gomes
Dynamic Grooming, Is It Really Dynamic? 659
Balázs Farkas, Zoltán Zsóka
Observer-Controller Design for Reduced-Order of Nuclear Reactor System Via Balancing Approximation 667
H. Zarabadipour, H. Emadi
Combined Compressive Sampling and Distribution Discontinuities Detection Approach to Wideband Spectrum Sensing for Cognitive Radios 672
Wael Guibène, Hessam Moussavinik, Aawatif Hayar

An Heuristic for Maximally SRLG-disjoint Path Pairs Calculation 679
José Silva, Teresa Gomes, Luís Fernandes, Carlos Simões, José Craveirinha
Optical Data Security Using Hartley Transform, Pixel Scrambling and Chaos Theory for Images 687
K. Karuna Kesavan, M. Ratheesh Kumar
Synthesizing Transient Traffic of Temporal Visual Signals for Discrete Event Simulation 692
Mauritz Panggabean, Leif Arne Rønningen
Experimental dSPACE Verification of Fuzzy Compensator of Windup Problem in Sensorless Direct Torque Control of Induction Motor 696
Z. Boulghasoul, A. Elbacha, E. Elwarraki
On the Performance of Cooperative Multihop Communications 703
Smich Butcharoen, Chaiyod Pirak, Rudolf Mathar
Virtual Clustering for Resource Management in Cognitive Femtocell Networks 709
Faisal Tariq, Laurence S. Dooley, Adrian S. Poulton
A Performance Study of Kullback-Leibler Distance-based Spectrum Sensing Algorithm 716
Bassem Zayen, Aawatif Hayar
Mobile Optical System for Laser Communication Links between Vehicles 721
Vladimir V. Nikulin, Rahul M. Khandekar
UrgentMesh: Wireless Mesh Networks with DVB-Satellite for Emergency Management 727
Tawfik Al Hadhrami, Qi Wang, Malcolm Crowe, Christos Grecos
User-Centric Approach to Always-Best-Connected Networks 733
Jari Kellokoski, Timo Hämäläinen
Alamouti-Coded Decode-and-Forward Protocol with Optimum Relay Selection for Cooperative Communications 739
Wanakorn Swasdio, Chaiyod Pirak, Gerd Ascheid
Design of a Control System with High Robust Stability Characteristics 745
Gulnara Abitova, Mamirbek Beisenbi, Vladimir Nikulin
ILP Based Diverse Path Routing with Node Inclusion 750
Zs. Lakatos, L. Bajzik, T. Karasz, K. Berczi, E. Kovacs, L. Vegh
Environment Exploration with Visual FastSLAM Technique: Experiments and Results 758
Adão De Melo Neto, Paulo Fernando Ferreira Rosa, Thiago Eustaquio Alves De Oliveira, Paulo César Pellanda
Attack-Resilient and Multiple-Tree-based P2P-IPTV Distribution 765
Mathias Fischery, Sascha Grau, Sebastian Kehry, Guenter Schaefer
Performance Analysis of Optical OFDM Systems 773
S. Hussin, K. Puntsri, R. Noé
Decision of Mobile Devices Enabling HT and Non-HT MAC of 802.11n Based on the Consideration of Energy Efficiency 778
Kuo-Chang Ting, Hwang-Cheng Wang, Fang-Chang Kuo, Chih-Cheng Tseng, Ping Ho Ting
Competitive Pricing with Demand Heterogeneity in Open Wireless Access Market 785
Pamela Gonzalez-Sanchez, Saltanat M. Khamit, Jens Zander
Fairness of Scheduling Algorithms for Real-time UMTS Traffic in Case of IP Link Congestion 791
Sladana Zoric, Mladen Kos, Himzo Bajric
Pipeline Time-Interleaved All-Photonic Sampling and Quantization Analogue-to-Digital Converter 799
S. R. Abdollahi, H. S. Al-Raweshidy, R. Nilavalan
Impact of Active Node Determination Approach for Energy Efficiency in WSN MAC Protocol Design 806
Nukhet Sazak, Ismail Erturk, Etem Koklukaya, Murat Cakiroglu
Coarse Frequency Offset Estimation Using a Delayed Auto-Quadricorrelator in OFDM-based WLANs 811
Hun-Sik Kang, Doyoung Kim, Sin-Chong Park
A QoS Aware Reinforcement Learning Algorithm for Macro-femto Interference in Dynamic Environments 815
Andrei L. Stefan, Mandalika Ramkumar, Rasmus H. Nielsen, Neeli R. Prasad, Ramjee Prasad
Connectivity Calculation in Mobile Ad Hoc Networks: Realistic Performance Simulation 822
G. T. Pitsiladis, A. Krokos, A. D. Panagopoulos, Ph. Constantinou
Analysis on Wiretap Lattice Codes and Probability Bounds from Dedekind Zeta Functions 827
Camilla Hollanti, Emanuele Viterbo
Spectrum Handoff Strategy Using Cumulative Probability in Cognitive Radio Networks 835
Adisorn Lertsinsrubtavee, Naceur Malouch, Serge Fdida
Resilient Security System by Deploying Dynamic Crypto-Architectures 842
Wael Adi
On the Capacity Analysis of IEEE802.11n MIMOOFDM WLAN Systems Using Sub-Optimal MIMO Detectors and Compact Space-Multimode Antenna Arrays 847
Asuman Yavanoglu, Özgür Ertug

Hybrid Network as a Service - Proposal and Implementation 853
Jun-Ichi Mizusawa, Naofumi Kitsunezaki
Handicapped People Virtual Keyboard Controlled by Head Motion Detection 858
Ondrej Krejcar
Scalable Service Guarantees through Stochastic Modeling for Bandwidth Aggregation of Multiple Wireless Links during Mobility 865
Syed Zubair Ahmad, Muhammad Saeed Akbar, Samiullah Khan
Photoluminescent Effect of Ag_2S Coated ZnS Nanoparticles 871
N. Sajid Babu, M. Abdul Khadar
Two-State Discretized Transmit Power Control For Ad-Hoc Sensor Networks 875
Naser G. Tarhuni, Mohamed S. Elmusrati, Abdulla Abouda
Deployment Aspects of Autonomic Cooperative Communications in Emergency Networks 881
Michal Wódczak
Reducing Path Inflation in Chordal Graphs with Tree-based Label Assignment Through the Exploration of Shortcuts 887
Przemyslaw Bereski, Piotr Pacyna
Network Aware Peer Selection Method for P2P File-Downloading Using Packet-Pair Measurement 892
Masatoshi Kawarasaki, Go Itoh
Novel CMOS CCCII Structure Based on Multiple Differential Pairs 899
Roungsan Chaisricharoen, Boonruk Chipipop
Context-Aware Energy Management for Energy-Self-Sufficient Network Nodes in Wireless Mesh Networks 904
Alexander Gladisch, Robil Daher, Philipp Lehsten, Djamshid Tavangarian
Cooperative Cognitive WBAN: From Game Theory to Population Dynamism 912
Mohsin Nazir, Aneeqa Sabah
A Research Framework for the Clean-Slate Design of Next-Generation Optical Access 918
Kyeong Soo Kim
Connectivity to the Infrastructure in VANETs 926
D. Moltchanov, J. Jakubiak, Y. Koucheryavy
Performance Assessment of OFDM-based and OWDM-based Radio-over-Fiber Systems in the Presence of Phase Noise 931
Gholamreza Baghersalimi
A Performance Study of Optical Subsystem Equalization in a WCDMA-based Radio-over-Fiber Communication System 936
Gholamreza Baghersalimi
Memory-aware SLA-based Mechanism for Shared-Mesh WDM Networks 942
Alireza Nafarieh, Shyamala C. Sivakumar, William Phillips, William Robertson
Behavior of Attacker and Some New Possible Attacks in Vehicular Ad hoc Network (VANET) 950
Irshad Ahmed Sumra, Iftikhar Ahmad, Halabi Hasbullah, Jamalul-Lail Bin Ab Manan
Trust Levels in Peer-to-Peer (P2P) Vehicular Communication 958
Irshad Ahmed Sumra, Halabi Bin Hasbullah, Jamalul-Lail Bin Ab Manan
Energy Efficient Dynamic Multi-level Hierarchical Clustering Technique for Network Discovery in Wireless Sensor Networks 966
Aby K. Thomas, R. Devanathan
Real Time Acquisition of ESPI Specklegram and Automated Analysis for NDE 971
A. Mujeeba, V. U. Nayar
Application of Fiber-Optic Techniques in the Transport and Access Transmission Networks of Mobile Systems 974
Attila Hilt, László Pozsonyi
Low-Crosstalk 3x3 Optical Cross-Connect Using Fiber Bragg Gratings 982
Shien-Kuei Liaw, Pei-Shih Tsai, Hoa Le Minh, Kuang-Yu Hsu, Andrey Tverjanovich
Author Index