

Foreword

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Our journal is continuing with the practice of publishing English issues regularly, at present twice a year, in July and in January. As before, most part of the present issue contains English versions of reviewed research papers, selected from the preceeding five Hungarian issues. One of them has been substantially revised. We included also one paper from open call. The editors would like to encourage prospective authors to submit their results specifically for the English issues. Being a selection, the papers' topics span a wide range of issues of current interest as the reader can see from the short summaries below.

A. Mitcsenkov et al address adaptive protection methods. The motivation is that bandwidth requirements of modern integrated networks solidly grow, and at the same time the reliability plays an increasingly important role. Various methods are known and under development to ensure survivability. The main feature of the proposed protection rearrangement framework is that the protection paths can be adaptively rerouted (rearranged) as the traffic and network conditions change, since they do not carry any traffic until a failure occurs.

The paper by *L. Nagy* deals with deterministic indoor wave propagation modeling. Next generation mobile access network system design needs more precise characterization of the radio channel and sophisticated propagation models because of the decreasing cell sizes and of higher data rates. The author proposes a Finite Difference Time Domain method to analyze the 2- and 3-dimensional indoor wave propagation problems. The efficiency and flexibility of FDTD for curved tunnel, indoor office and special EMC cases is demonstrated.

The title of the paper by *L. Csurgai-Horváth and J. Bitó* is "Multipath Propagation Fade Duration Modeling of Land Mobile Satellite Radio Channel". The propagation on a Land Mobile Satellite (LMS) radio link is highly influenced by the shadowing effects of buildings and vegetation, or by the multipath propagation. In this contribution a digital model with Markov chain will be introduced, which is also applicable to determine the statistical parameters of the fade duration. The model is based on the measurement data of a real LMS channel which has been used to calculate the model parameters.

A. Kőrösi et al deal with DSL access networks. They provide an exact data-layer model and mathematical analysis of priority queuing systems representing DSL access networks on packet level with pre-emptive option. The accuracy and the efficiency of the numerical analysis is demonstrated by presenting numerical results based on simulations and numerical analysis both for complete and

partial rejections. The analysis could be applied for an in-depth packet-level performance evaluation of recent DSL systems.

B. Kovács and P. Fülöp investigate mobility management strategies from the point of view of their need of signaling and processing resources on the backbone network and load on the air interface. A method is proposed to model the serving network and mobile node mobility in order to be able to model the different types of mobility management algorithms. Different mobility approaches are analyzed and their performance is numerically compared in various network and mobility scenarios. The aim is to give general design guidelines for the next generation mobility managements on given network and mobility properties.

The paper by *J. Levendovszky et al* is concerned with developing new energy balancing protocols for wireless sensor networks (WSN) to maximize the life-span of the system by using rare event tools. Novel packet forwarding mechanisms from the nodes to the base station (BS) are proposed, which minimize the energy consumption of WSN. The tail distribution of the energy consumption is estimated by the tools of large deviation theory and the concept of generalized statistical bandwidth has been introduced to evaluate the energy need of the network. The new results demonstrate that the lifespan of WSN can significantly be increased by the new protocols.

The paper by *E. Udvary* provides an overview of the basics and application possibilities of the multifunctional Semiconductor Optical Amplifier (SOA) in Sub-Carrier Multiplexed (SCM) systems. The paper focuses on the linearity investigation of the device. It describes the frequency dependence of the modulation and the harmonic products, the effects of the bias current and the optical power, the mismatch between the light and the electrical signal, the temperature and optical reflection sensitivity. It is shown that by using SOA as an external modulator, the device provides acceptable nonlinear distortion for SCM telecommunication systems.

L. Bokor et al present a novel vertical handover mechanism which aims at assuring streaming media services in a heterogeneous network environment where the subscribers are roaming among different wired/wireless access systems including ADSL, WiFi, 2.5G and 3G cellular and WiMAX. The handover scheme provides seamless connectivity during roaming, with adapting the quality of the delivered media stream to the changes of the network characteristics and to the capabilities of a wide variety of devices.

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