EDITORIAL

Dear reader,

You have at your desk the issue no. 1/2012 of the journal AUTOMATIKA, which contains nine papers selected from the 20th International Conference on Applied Electromagnetics and Communications (ICECom) which was held in Dubrovnik (Croatia), 20 - 23 September 2010. Conference papers were limited in length and several authors were invited to submit extended manuscripts to this issue. Fifteen years passed since the first ICECom conference was organized under the present name, and it continues the tradition of meetings which have been organized since early 1970s. The topics covered by ICECom conferences are constantly updated in order to present the state of art in the fields of antenna modelling and design, computational methods in electromagnetics, mobile and personal communications, radar systems and remote sensing, radio navigation and positioning, propagation of EM waves, RFID, electromagnetic compatibility, antenna measurements, THz technology, metamaterials, etc.

The first group of papers in this special issue is about antennas. Prof. Jiro Hirokawa was a keynote speaker and in the paper ***Plate-laminated Waveguide Slot Array Antennas and its Polarization Conversion Layers*** *he gave an overview about the research activities of his group in building millimetre-wave waveguide antennas. This is an important issue nowadays since a lot of new applications have been introduced and being planned for millimetre wavelength range. The main problem in building antennas in this frequency range are losses and simplicity of fabrication, so the proposed plate-laminated waveguide technology offers a lot of advantages. The paper* ***Small Antennas: Miniaturization Techniques and Applications****, Davor Bonefačić et al. gives an excellent overview of the techniques that can be used to build a small antenna – antenna that has limitations in size dictated by the device where it will be used (such as mobile phone). All techniques were experimentally verified and the comparison of all proposed designs is given in the paper. The third paper* ***Comparison of Image and Transmission Line Models of Energized Horizontal Wire above Two-Layer Soil****, Vesna Arnautovski-Toševa et al. discuss the possibility of using simplified models for analyzing wire antennas that are located above mutilayer structure, i.e above realistic model of the soil. Rigorous analysis methods are time-consuming, so the author discusses the accuracy of two simplified approaches: image model and transmission line model. New electromagnetic structures, based on metamaterials with active components, are described in the paper* ***Stability Analysis of Superluminal Metamaterial Transmission Line with Realistic Non-Foster Negative Capacitors****, Silvio Hrabar et al. The paper gives a detailed analysis of a basic building block of the metamaterial transmission line - an active 'tank circuit' that contains both conventional capacitor and non-Foster negative capacitor. The papers* ***Antenna diagnostics using phaseless NF information****, Yuri Álvarez et al., and* ***Radiation Pattern of a Vertical Dipole over Sea and Setup for Measuring thereof****, Antonio Šarolić et al., deal with measurement issues in connection with antennas. In order to detect anomalies in some antenna design the best approach will be to precisely measure the nearfield distribution around antenna, both amplitude and phase. However, this is an extremely complicated task, especially since the phase is rapidly varying in the near field. Therefore, of great importance is the simplification of the near-field measurement requirements, i.e. procedures that can extract enough information from amplitude measurements only. The presented paper gives an extension of the Sources Reconstruction Method (SRM) for antenna diagnostics using phaseless information. The other measurement paper describes a com-*

pact setup for measuring the radiation pattern of an arbitrary positioned antenna above the sea surface. The importance of such measurements is based on the fact that a lot of communication systems consider that users are located above the sea. The paper gives a detailed description of the experimental setup and accuracy of the proposed method. The last three papers are devoted to propagation of electromagnetic waves. The first paper ***Global Optimization of Indoor Radio Coverage****, Lajos Nagy, gives a detail description, together with the implementation advices, of global optimization routines that are suitable for indoor coverage problem. The second paper* ***Benefits and Challenges of Deterministic Reference Channel Models****, Ana Katalinić Mucalo et al. discuss a new paradigm for reference channel models. Current reference channel models are designed as platforms that generate radio channels for testing using random values for their parameters. The paper argues that random generated channels give either no new insight or even delusive information, so they should be replaced with a deterministic reference channel model – an emulator of previously recorded real radio channels. The last selected paper* ***Geometrical Description of Side Street Effects in a Ray Tracing Street Canyon Model****, Dario Bojanjac et al., describes some side street effects in a urban environment and explains how to include these effects in a ray tracing propagation model.*

We hope that you will enjoy reading this special issue. Maybe it will motivate you to come to the next ICECom conference which will be held in Dubrovnik in September 2013.

Guest Editors
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