

# Selected papers of the CSNDSP 2018 conference – Guest Editorial

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**The 11th IEEE, IET International Symposium on Communication Systems, Networks, and Digital Signal Processing (CSNDSP) was hosted by The Faculty of Electrical Engineering and Informatics at Budapest University of Technology and Economics, Hungary, 18-20 July 2018. Detailed information can be found on its website (<http://csndsp2018.com/>).**

In CSNDSP 2018 we had four colloquiums on Satellite and Space Communications, Photonic Communications Systems and Networks, Communication Networks Optimization and Optical Wireless Communications as well as some special sessions on the emerging topics organized by the experts working in these research areas to whom CSNDSP is very grateful. During the conference, we had five keynote lectures and 142 technical presentations. The CSNDSP 2018 conference was attended by more than 170 participants from 33 different countries.

From the conference program, six papers were selected for the current special issue of the Infocommunications Journal. All selected papers are related to the physical layer of 5G mobile networks. Two papers present new modulation methods. The third paper introduces an optoelectronic mixer to support photonic-assisted wireless transmission. The next two papers demonstrate the electrical challenges of the system by investigating wideband matching and antenna design. The final paper studies the cost analysis of ultra-reliable low latency 5G communication.

Filter bank multicarrier (FBMC) modulation and spectrally efficient frequency division multiplexing (SEFDM) are the promising candidate as the physical layer waveform in next-generation broadband networks.

“*Practical Evaluations of SEFDM: Timing Offset and Multipath Impairments*” presents the non-orthogonal signal waveform SEFDM, which improves spectral efficiency at the cost of self-created inter-carrier interference. The timing offset and the multipath impairments are experimentally demonstrated on the test bed.

„*Overview and Complexity Evaluation of FBMC Transmitter Architectures*” studies the Frequency Spreading (FS) and Poly-Phase Network (PPN) architectures. Based on the complexity calculations, the alternative PPN provides the best results.

“*Optoelectronic mixer with a photoconductive switch for 1550 nm wavelengths*” experimentally demonstrates an optoelectronic mixer based on an ultrafast photoconductive switch in a heterodyne detection system for RoF transmission. The setup has a relatively flat response curve in a wide frequency range up to 67 GHz. The two presented mixing schemes open the way to the design of new photonic-assisted microwave telecommunication link.

“*A Systematic Analysis and Design of a High Gain Microstrip Antenna based on a Single EBG Layer*” introduces the design of novel Electromagnetic Band Gap lens based microstrip antenna. The simulation work presents a significant improvement in the antenna parameters.

“*Overcoming the Realization Problems of Wideband Matching Circuits*” also investigates an important problem of broadband applications. It presents practical design rules for impedance matching. The process can speed up realization issues.

“*Reducing operational costs of ultra-reliable low latency services in 5G*” focuses on the cost analysis, it examines how the operational expenses dominated by administrative costs can be reduced without impacting the quality of the provided ultra-reliable low latency services in 5G mobile networks.

I hope this careful selection will satisfy our readers’ expectations.



**Eszter Udvary** received Ph.D. degree in electrical engineering from Budapest University of Technology and Economics (BME), Budapest, Hungary, in 2009. She is currently an Associate Professor at BME, Department of Broadband Infocommunications and Electromagnetic Theory, where she leads the Optical and Microwave Telecommunication Lab. Dr. Udvary’s research interests are in the broad areas of optical communications, include optical and microwave communication systems, Radio over fibre systems, optical and microwave interactions and applications of special electro-optical devices. She is a member of the Editorial Board of the Infocommunications Journal and a member of HTE and IEEE. She was the chair of the local organizing committee of CSNDSP 2018 conference.