



MTT-S Society News

MTT-S Regional Coordinator Visits Turkey

■ Ozgur Ergul and Jan Machac

Jan Machac, one of the two IEEE Microwave Theory and Techniques Society (MTT-S) Region 8 coordinators, visited the Turkey IEEE Antennas and Propagation Society/MTT-S/Electron Devices Society/Electromagnetic Compatibility Society Joint Chapter from 29 November through 3 December 2017. His host was the Chapter chair, Prof. Ozgur Ergul (Figure 1), and the Chapter's new team. Prof. Machac realizes that an essential part of an MTT-S regional coordinator's activities includes visiting Chapters to get first-hand information about their vitality, as well as to personally meet with Chapter officers and support them in their important work for the Society.

Prof. Machac visited two institutions in Ankara: Bilkent University, founded in 1984, and Middle East Technical University, founded in 1956. These two are among the top universities in Turkey

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(and only 5 km apart). During both meetings, Prof. Machac delivered his technical lecture, "Substrate Integrated Waveguide: A Base for Leaky Wave Antennas," followed by scientific questions and discussion (Figure 2). After the technical portion of the presentation, he went on to provide information about the IEEE and MTT-S, offering a detailed overview of the IEEE's organizational structure and its various missions as well as describing the MTT-S's main activities, including the diverse support given by the Society to related Chapters



Figure 1. Ozgur Ergul (left) introduces Jan Machac at Middle East Technical University.



Figure 2. The meeting room is full of interested participants, including Chapter Chair Ozgur Ergul (first row, right) and Chapter Treasurer Hande Ibili (second row, right).



Figure 3. An outdoor meeting of the Chapter Steering Committee with Jan Machac. From left: Turker Dolapci, Ozgur Ergul, Jan Machac, Sadri Guler, Hande Ibili, and Ayca Arslan Ergul.

and MTT-S members. Students were particularly interested in the graduate scholarships, and so the Society may expect some strong applications for these scholarships from Turkey in the future.

During a Saturday sightseeing tour of Ankara, the capital of Turkey, Prof. Machac further discussed the activities of the Chapter with Chapter represen-

tatives (Figure 3). Under the leadership of Prof. Ergul and young members of the Chapter Steering Committee (Hande Ibili, Sadri Guler, and Turker Dolapci), the Chapter has been completely revitalized with more than 18 distinct activities in 2017, in addition to a busy schedule for 2018. This is similar to the rebirth of the mythical phoenix,

rising out of its ashes. Due to previous inactivity before the new team was elected, the Chapter has very limited funding and is sometimes even supported personally by the Chapter chair. Prof. Machac encouraged the Chapter to apply for grant opportunities, including the MTT-S Outstanding Chapter Award.



Book/Software Reviews *(continued from page 87)*

In Chapter 4, “Approaching the Matched Filter Bound,” OFDM and SC-FDE for different channel-coding schemes are analyzed. The number of relevant separable multipath components is a fundamental element that influences the performance of both schemes. Based on the results presented, it is shown that SC-FDE has an overall performance advantage over OFDM.

In Chapter 5, “Efficient Channel Estimation for Single-Frequency Networks,” the authors propose an efficient channel estimation method that takes advantage of the sparse nature of the equivalent channel impulse response. It employs low-power training sequences to obtain an initial coarse channel estimate and an iterative receiver with joint detection and channel estimation. The performance results show very good performance, close to that with perfect channel estimation.

Channel 6, “Asynchronous Single Frequency Networks,” is dedicated to joint carrier frequency offset estimation and compensation over the severe time-distortion effects inherent in single-frequency network systems. In today’s popular wireless broadcast systems (the OFDM modulation schemes), the high peak-to-average power ratio leads to amplification difficulties, with the presence of a carrier frequency offset compromising the orthogonality between the OFDM subcarriers. The authors suggest a possibly more efficient approach that uses SC-FDE schemes in broadcasting systems with single-frequency network operation. They explain and compare three methods, the third of which achieved very high gains (its performance surpassing all other methods).

Chapter 7, “Multipath Channel with Strong Doppler Effects,” focuses on the strong Doppler effects of the SC-FDE

receiver and proposes new, iterative frequency-domain receivers that can attenuate the impact of strong Doppler effects. These receivers may be considered modified turbo equalizers implemented in the frequency domain. The performance result of the proposed compensation methods can achieve high gain under substantially different Doppler drifts, making them suitable for SC-FDE transmission and resulting in excellent performance in the presence of fast-varying Doppler drifting channels.

Frequency-Domain Receiver Design for Doubly Selective Channels summarizes extensive research work on wireless communication between OFDM and SC-FDE and suggests the optimum approach. In so doing, it might revolutionize wireless communication technology. Note that the book is suitable for graduate-level or research work.

