Seminar Announcement

May 19, Thursday, 15:00-17:00 PM, Room: A302, WNLO

Title: OFDM Inspired Waveforms for 5G

Prof. *Behrouz Farhang*

Associate Chair

ECE Department, University of Utah
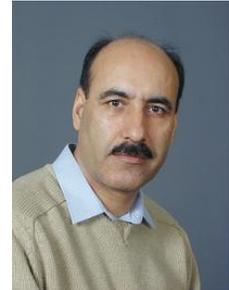
Abstract

As the standardization activities are being formed to lay the foundation for 5G wireless networks, there is a common consensus on the need to replace the celebrated OFDM by a more effective air interface that better serves the challenging needs of 5G. To this end, in the recent past, a number of new waveforms have been introduced in the literature. Interestingly, and at the same time not surprising, these methods share a common fundamental principle with OFDM: each data packet is made up of a number of tones that are modulated by information symbols. In this talk, we build a common framework based on the said OFDM principle and derive these new waveforms from this point of view. This derivation provides a new perspective that facilitates straightforward understanding of these waveforms from different points of views. First, efficient structures for synthesis and analysis of these waveforms are developed straightforwardly. Second, we explain how MIMO processing is facilitated in these waveforms. Third, the impact of asynchronous/quasi-synchronous users transmissions on multiple access interference (MAI) is discussed and solutions that reduce MAI are suggested.

Biography

Behrouz Farhang-Boroujeny (M'84-SM'90) received the Ph.D. degree from Imperial College, University of London, UK, in 1981. From 1981 to 1989 he was with the Isfahan University of Technology, Isfahan, Iran. From 1989 to 2000 he was with the National University of Singapore. Since August 2000, he has been with the University of Utah. He is an expert in the general area of signal processing. His current scientific interests are adaptive filters, multicarrier communications, detection techniques for space-time coded systems, and cognitive radio. In the past, he has worked and has made significant contribution to areas of adaptive filters theory, acoustic echo cancellation, magnetic/optical recoding, and digital subscriber line technologies. He is the author of the books "Adaptive Filters: theory and applications", John Wiley & Sons, 1998, 2013 (second edition) and "Signal Processing Techniques for Software Radios", self published at Lulu publishing house, 2009 and 2010 (second edition).