**Talk Title:** What’s Next after OFDM?

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**Abstract:** In the past decades, digital wireless communications has experienced tremendous developments including generations of cellular systems, and high speed WiFi systems, and has become one necessary component in ordinary people’s daily life. Its standards have come with the path of TDMA/CDMA/OFDMA, which, in my opinion, is mainly determined by the signal bandwidths used in the communications systems. The signal bandwidth in the current 4G is 20MHz and the corresponding modulation scheme is OFDM. One might be interested to ask what modulation scheme might be in the future standards with higher signal bandwidths. In this talk, I will first briefly overview the past and current standards in terms of signal bandwidths and adopted modulation schemes. Then, I will talk about what might be needed for the future standards in my own opinion. Finally, I will talk about single antenna vector OFDM (V-OFDM) that treats OFDM and single carrier systems as two extreme cases and serves with a good tradeoff between bandwidth, OFDM symbol length, and cyclic prefix (CP) length, and complexity.

**Bio:** Xiang-Gen Xia received his B.S. degree in mathematics from Nanjing Normal University, Nanjing, China, and his M.S. degree in mathematics from Nankai University, Tianjin, China, and his Ph.D. degree in electrical engineering from the University of Southern California, Los Angeles, in 1983, 1986, and 1992, respectively. He is currently the Charles Black Evans Professor, Department of Electrical and Computer Engineering, University of Delaware, Newark, Delaware, USA. Dr. Xia was the Kumar’s Chair Professor Group Professor (guest) in Wireless Communications, Tsinghua University, during 2009-2011, the Chang Jiang Chair Professor (visiting), Xidian University, during 2010-2012, and the WCU Chair Professor (visiting), Chonbuk National University, during 2009-2013. Dr. Xia’s current research interests include space-time coding, MIMO and OFDM systems, digital signal processing, and SAR and ISAR imaging. He has over 270 refereed journal articles published and accepted, and 7 U.S. patents awarded and is the author of the book Modulated Coding for Intersymbol Interference Channels (New York, Marcel Dekker, 2000).

Dr. Xia received the National Science Foundation (NSF) Faculty Early Career Development (CAREER) Program Award in 1997, the Office of Naval Research (ONR) Young Investigator Award in 1998, and the Outstanding Overseas Young Investigator Award from the National Nature Science Foundation of China in 2001. He also received the Outstanding Junior Faculty Award of the Engineering School of the University of Delaware in 2001. He is currently serving and has served as an Associate Editor for numerous international journals including IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Transactions on Mobile Computing, and IEEE Transactions on Vehicular Technology. Dr. Xia is Technical Program Chair of the Signal Processing Symp., Globecom 2007 in Washington D.C. and the General Co-Chair of ICASSP 2005 in Philadelphia. He is a Fellow of IEEE.