

IEEE Antennas and Propagation Society Distinguished Lecturer Program

Metamaterials-based Antennas (*metantennas*): From Physical Concepts to Engineering Designs

Zhi Ning Chen

PhDs and IEEE Fellow (2007)

Professor of National University of Singapore

Monday September 25, 2017, 15:00-16:00

Technical University of Denmark, building 348, room 227

About the Talk: Metamaterials has been the hottest research topic in electromagnetic community since 2000. This talk updates the progress in developing metamaterial-based antennas at microwave/millimeter-wave bands. First, my own opinion of metamaterials concepts with our R&D strategy is shared. After that, the progress in R&D of metantennas in my group is briefed including zero-indexed superstrate high-gain microstrip patch and Vivaldi antennas, zero-phase shift large-coverage near-field ultra-high frequency radio-frequency identification antennas and horizontally polarized omnidirectional arrays, artificial magnetic conductor-loaded ultra-thin substrate-integrated Fabry-Perot cavity antennas, broadband low-profile planar antennas and so on. Last, as design examples, low-profile metantennas operating at microwave bands, in particular are introduced.



Professor Zhi Ning Chen received his BEng, MEng, and PhD degrees all in Electrical Engineering from the Institute of Communications Engineering (ICE), China and his second PhD degree from University of Tsukuba, Japan, respectively.

During 1988-1995, he worked at ICE as a Lecturer and later an Associate Professor, as well as Associate Professor at Southeast University, China as a Postdoctoral Fellow and later as an Associate Professor. Professor Chen joined the City University of Hong Kong as a Research Assistant and later a Research Fellow in 1995-1997. In 1997, he conducted his research at the University of Tsukuba, Japan supported by the Japan Society for the Promotion of Science (JSPS) Fellowship. In 2001 and 2004, he visited the University of Tsukuba under a JSPS Fellowship Program (senior level). In 2004, he worked at IBM T. J. Watson Research Center, USA as an Academic Visitor. During 1999-2016, he worked with the Institute for Infocomm Research (I²R) (formerly known as Centre for Wireless Communications and Institute for Communications Research) as Member of Technical Staff (MTS), Senior MTS, Principal MTS, Senior Scientist, Lead Scientist, Principal Scientist, Head for RF & Optical Department and Advisor. In 2012, he joined the Department of Electrical and Computer Engineering, National University of Singapore as a Professor and is concurrently holding Visiting/Adjunct/Guest Professor positions at Southeast University, Nanjing University, Shanghai Jiaotong University, Tsinghua University, Tongji University, University of Science and Technology, China, Dalian Maritime University, Chiba University, and City University of Hong Kong. He visited the “Laboratoire des Signaux et Systèmes”, UMR8506 CNRS-SUPELEC- Univ. Paris Sud, in Gif-sur-Yvette as a senior DIGITEO Guest Scientist in 2013 and Tohoku University as a Visiting Professor in 2015.

Professor Chen has been the founding General Chairs of International Workshop on Antenna Technology (iWAT), International Symposium on InfoComm & Media Technology in Bio-Medical & Healthcare Applications (IS 3T-in-3A), International Microwave Forum (IMWF) as well as Asia-Pacific Conference on Antennas and Propagation (APCAP).

Professor Chen is currently interested in engineering electromagnetics and antennas for microwaves, mmW, submmW, and THz systems. He has published 550 technical papers and authored/edited the books entitled *Broadband Planar Antennas*, *UWB Wireless Communication*, *Antennas for Portable Devices*, and *Antennas for Base Stations in Wireless Communications*. He also contributed to the books entitled *UWB Antennas and Propagation for Communications, Radar, and Imaging*, *Antenna Engineering Handbook* as well as *Microstrip and Printed Antennas*. He published Handbook of Antenna Technologies (Springer Reference with 76 Chapters) as an Editor in Chief. He is holding 32 granted/filed patents with 31 licensed deals. He is the recipient of ASEAN Outstanding Engineering Achievement Award 2013, International Symposium on Antennas and Propagation Best Paper Award 2010, the CST University Publication Award 2008, IEEE AP-S Honorable Mention Student Paper Contest 2008, IES Prestigious Engineering Achievement Awards 2006, 2013 and 2014, I²R Quarterly Best Paper Award 2004, and IEEE iWAT 2005 Best Poster Award.

Professor Chen elevated a Fellow of the IEEE for the contribution to small and broadband antennas for wireless applications in 2007. He has served IEEE Council on RFID as Vice President and Distinguished Lecturer since 2016. He served IEEE Trans Antennas and Propagation as an Associate Editor and a Distinguished Lecturer. (www.ece.nus.edu.sg/staff/bio/czn.html)