**“Advanced Beamforming Networks and Antennas Using Synthesized Transmission Lines”**

## IEEE MTT/AP Orlando Chapter Meeting

## **DATE/TIME: Tuesday, Oct. 12th, 2015 (5:00PM-6:00 PM)**

**SPEAKER:** Dr. Tzyh-Ghuang Ma

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**ABSTRACT:**

This talk mainly covers a new thought to integrate the feeding networks of multiple phased arrays as a whole. With multi-operational modes (abbreviated as multi-mode hereafter) synthesized transmission lines, the feeding networks of several phased arrays with various functionalities could be integrated together without using active switches. The multi-mode line functions equivalent to its conventional counterpart with a specific characteristic impedance and electrical length in one of the given bands, but resembles an open or short circuit in the others. With the aid of synthesized lines, the direction of signal flows in the feeding network can be controlled with high degrees of freedom, and hence fulfill the design goal. As a proof of the concept, three heterogeneous integrated phased arrays, eventually could serve as the RF front-end in future UAV applications, are developed and introduced. Amphibious antennas using multi-mode synthesized lines will be covered at the same time.

**BIOGRAPHY:**

(S’00-M’06-SM’11) received the B.S. and M.S. degrees in Electrical Engineering from National Taiwan University in 1995 and 1997, respectively, and the Ph.D. degree in Communication Engineering from National Taiwan University, Taipei, Taiwan, in 2005. In 2005, he joined the faculty of the Department of Electrical Engineering, National Taiwan University of Science and Technology, where he is now a full professor. From Aug. 2015 to Feb. 2016, he is with the University of Florida as a visiting scholar.

Dr. Ma was the recipient of the Best Paper Awards at 2008 and 2011 International Workshop on Antenna Technology (iWAT). In 2010, he received the Dr. Wu Da-Yu award from National Science Council, the most outstanding research award for young researchers in Taiwan. In the same year, he listed as the top 10 reviewers of IEEE transactions on Antennas and Propagation (2009-2010). He is also the advisor of the honorable mention winner in the student paper competition at IEEE AP-S 2011. In 2012, he received the Excellent Young Engineer Award from the Chinese Institute of Electrical Engineering and the title of distinguished professor from National Taiwan University of Science and Technology. He is now an associate editor of IEEE antennas and wireless propagation letters.

His research interests include miniaturized microwave circuit designs, innovative phased arrays, ultra-wideband antennas, and radio frequency identification (RFID).

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