



MEETING NOTICE **Buenaventura MTTs/COMSOC Chapters**

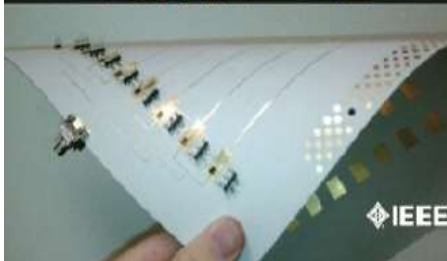
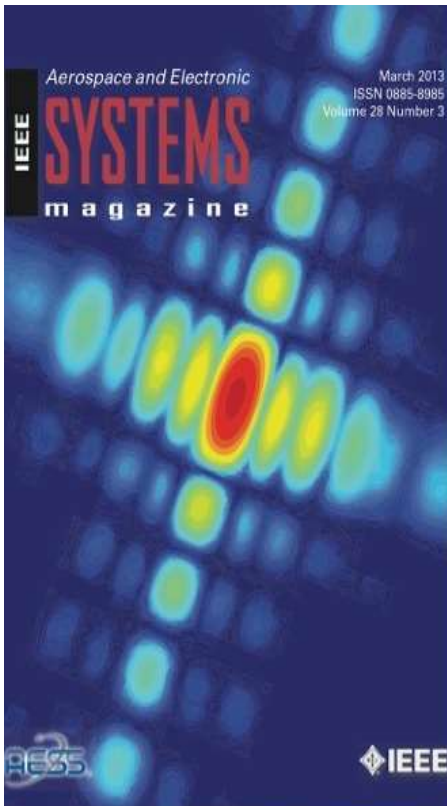
Date and Time: Thursday, April 19th, 2018 (6:30PM)

Location : Skyworks (Conference Room)
649 Lawrence Drive, Newbury Park, CA 91320

Agenda: 6:30PM Reception & Networking;
7PM Presentation

Presenter : Dr. David Boutte

AKELA Inc.
Santa Barbara, CA



Exotic Radar from Multi-statics to Ultra-wideband, Applications to Aero Ecology, Ground Penetrating Phenomenology, and Through-the-Wall Imaging

Topic: Christian Huelsmeyer ignited a wide range of innovation and research when he patented the Telemobiloscope in 1904, though he likely did not foresee it. While it took contributions of many people and the invention of the magnetron during the Second World War to kick off the golden age of radar, ideas first explored by Huelsmeyer and the Telemobiloscope are at the forefront of remote sensing research and development. Bi-static or multi-static radar systems, where the transmitter and receiver are spatially separated as with Huelsmeyer's Telemobiloscope, were once considered a niche subject area but are now a rich and complex field of remote sensing research. One of the major advantages of a multi-static system is the diversity of available scattering angles. These multiple target views can provide significantly more information than a single backscatter angle. Efficient exploitation of this effect is not without challenges, however, the two most important being limits on receiver dynamic range caused by direct transmitter to receiver transmission and coherence loss due to local oscillator frequency drift. Ultrawideband technology can mitigate these challenges by allowing for super resolution in range as well as careful waveform synthesis. This talk reviews the fundamentals of frequency domain radar while focusing on challenges and issues specific to multi-static and ultra-wideband systems, loosely defined as those with $> 25\%$ bandwidth. Discussion features ultra-wideband waveform synthesis techniques along with the impact of local oscillator phase noise on both mono-static and multi-static system performance. In addition, this presentation explores salient points of system design and considerations unique to multi-static and near field radar systems. Highlights include illustrative examples of ground penetrating radar, aero ecology and through the wall imaging.

BIO

Dr. David Boutte is a Senior Electrical Engineer responsible for ultra-wideband radar development, explosive hazard detection and multi-static systems at AKELA Inc. in Santa Barbara, CA. He received B.S. and M.S. degrees in Electrical Engineering from The University of New Mexico in 2001 and 2005, respectively. In 2009 Dr. Boutte received a Ph.D. in Electrical Engineering from The University of New Mexico with emphasis on signal processing for radar and signals intelligence. He joined the Mind Research Network in Albuquerque, NM in 2010 as a post-Doctoral Research focusing on large data fusion of genetic, functional magnetic resonance imaging and psychological diagnostic data sets. In 2012 Dr. Boutte joined AKELA Inc. where he oversees ultrawideband radar development and remote sensing systems. His research interests include low phase noise signal synthesis, ground penetrating radar phenomenology, through-the-wall radar imaging, radio frequency electronics, mm-wave radar, radar imaging, passive radar and multi-static phenomenology. Dr. Boutte has authored or co-authored over 20 publications.