

Tutorial 2: Introduction to Linear Photonics (Sending RF/Microwave Over Fiber)

Monday, 14 March 2016, 1:30pm – 4:00pm
Wyndham Orlando Resort, Magnolia Ballroom

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Abstract:

This tutorial talk will begin with an overview of analog microwave photonic link technology with an emphasis on advanced techniques for enhancing system linearity. The distinctions between analog (linear) and digital photonics will be included. A discussion of direct and external modulation techniques, receivers and link performance will be presented, along with typical performance characteristics of readily-available equipment. The requirements of key systems where fiber optics is either actively employed, or remains out of reach for technical or cost considerations will be reviewed. The use of both pre and post distortion linearization and feed forward techniques to improve system performance will be included. The contrast in performance versus requirements will be used to highlight the growth opportunities for next-generation optical links. We will conclude with a review of the activities and techniques for improving the cost and technical capabilities of microwave fiber optic links, and how the growth opportunities will be addressed.

Biography of the speakers:

John MacDonald is Vice President and General Manager of Linear Photonics, L.L.C., a firm specializing in the development and manufacture of microwave and millimeter-wave fiber transmitters and receivers for commercial and government customers. Prior to his current role, he was Engineering and Product Line Manager for Specialty and EDFA Products at JDS Uniphase Corp, and Engineering Manager

for Power Amplifier Products at Lockheed Martin Commercial Space Systems. He has over 20 years experience in RF, microwave, and fiber optics engineering and management. He is the author of numerous publications ranging from fiber optic design to phased array antenna development.

Dr. Allen Katz is a professor of Electrical/Computer Engineering at The College of New Jersey. He is founder and President of Linearizer Technology, Inc, which now includes Linear Photonics, LLC and Linear Space Technology, LLC. He received his doctorate and baccalaureate degrees in electrical engineering from New Jersey Institute of Technology and a masters in electrical engineering from Rutgers University. He holds 17 patents and has written more than 100 technical publications. He received the IEEE's Microwave Society's (MTT) Application Award in 2015 for his work in linearization of power amplifiers, the IEEE Microwave Magazine Best Paper Award in 2010 and the William Randolph Lovelace II Award for outstanding contributions to space science and technology from the American Astronautical Society in 2002. Dr. Katz is a Fellow of the IEEE and a past MTT Distinguished Microwave Lecturer.