



IEEE MTT/AP Orlando Chapter & Raj Mittra Distinguished Lecture Program

“Everything You Can Do with Vector Nonlinear Microwave Measurements”

DATE/TIME: Thursday, November 29, 2018 (4:30 PM-5:30 PM)

SPEAKER: Prof. Patrick Roblin

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ABSTRACT:

The advent of nonlinear vector network analyzers (NVNA) has stimulated the introduction of new paradigms in microwave engineering for (1) the measurement, (2) the modeling and (3) the design of nonlinear microwave circuits such as microwave power amplifiers and oscillators.

First the various types of NVNA architecture available, the procedure used to calibrate them and the calibration traceability will be presented. Then the various behavioral models used for the data representation will be reviewed. Circuit-based nonlinear microwave models of transistors can also be directly extracted from large-signal measurements. NVNA's can further be used to verify the nonlinear embedding device model which predicts from the desired internal PA mode of operation, the required amplitude and phase of the multi-harmonic incident waves at the transistor package reference planes. Example of design of power amplifiers (PA) such as Class F, J, Doherty and Chireix amplifiers will be presented.

BIOGRAPHY:



Patrick Roblin was born in Paris, France, in September 1958. He received the Maitrise de Physics degree from the Louis Pasteur University, Strasbourg, France, in 1980, and the M.S. and D.Sc. degrees in electrical engineering from Washington University, St. Louis, MO, in 1982 and 1984, respectively. In 1984, he joined the Department of Electrical Engineering, at The Ohio State University (OSU), Columbus, OH, as an Assistant Professor and is currently a Professor. His present research interests include the measurement, modeling, design and linearization of non-linear RF devices and circuits such as oscillators, mixers, power-amplifiers and MIMO systems. Starting 2016 he has been serving for three years as DML for IEEE-MTT.

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