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ELECTRICAL & COMPUTER ENGINEERING
TEXAS A&M UNIVERSITY

S E M I N A R

Room 1020 ETB

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Smart Modulators

by

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Abstract: This talk will review some properties of digital communication signals, including peak to average power ratio and the so-called cubic metric, that lead to inefficiencies in power amplifiers. Advantages and disadvantages of traditional techniques to mitigate these issues will then be covered. Finally we propose a technique whereby small perturbations are added to the underlying constellation points in order to greatly reduce PAPR and CM. This technique has shown substantial promise when applied to typical 4G-LTE type signals and has the significant advantage that its use does not require any change to existing standards. We will then discuss efforts to applying machine learning techniques to greatly reduce the computational complexity of this scheme, thereby producing "smart" modulators.

Scott L. Miller received the B.S., M. S., and Ph. D. degrees in electrical engineering from the University of California at San Diego (UCSD). In 1988, he joined the Department of Electrical and Computer Engineering at the University of Florida, where he was an Assistant and Associate Professor from 1988 through 1998. In August 1998 he joined the Electrical and Computer Engineering Department at Texas A&M University where he is currently the Debbie and Dennis Segers '75 Professor of Electrical Engineering. He has also held visiting positions at Motorola Inc., University of Utah and UCSD. His current research interests are in the general area of wireless communications and signal processing. He is a fellow of the IEEE and is a past chair of the IEEE Communications Theory Technical Committee.