UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY

Distinguished Lectures on Microelectronics

HIGH-EFFICIENCY RADIO FREQUENCY POWER AMPLIFIERS

Date and Time: 19th July 2011 (Tuesday), Part I: 10:00 - 12:00
Part II: 15:00 - 17:00

Venue: J207, Silver Jubilee Building, University of Macau

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Abstract: Nowadays, mobile and wireless communications systems are experiencing a huge improvement in terms of supplied services and data rates. As a consequence transmitted RF signals have both phase and amplitude modulation which leads to a higher data rate with a more efficient spectrum occupancy.
The power amplifier component is always the higher power consumer block of an entire transmitter system. For that reason power efficiency is a concern. Linearity is also very important because the RF signal has no constant envelope and large amplitude variations can occur.
Unfortunately, in a power amplifier, linearity and efficiency increase in opposite directions. A great effort is being made to solve this dilemma by the industry and academic communities.
The main objective of this seminar is to present several power amplifiers architectures for radio frequency applications that achieve a good efficiency and linearity trade-off. A review of high-efficiency power amplifier classes like the D, E and F will be performed. The polar, EER, Doherty and LINC architectures will be presented. Power combining techniques will be addressed. Some examples of designed power amplifiers in CMOS technologies will be shown. All the presented material is oriented toward a RFIC implementation, especially in CMOS. Finally some aspects about power amplifiers implementation at microwave and millimeter wave frequencies will be presented.

João Caldinhas Vaz, (SM´91,M´98), received the Licenciatura, the MsC and PhD degrees in Electrical and Computer Engineering from the Instituto Superior Técnico, Technical University of Lisbon, Portugal, in 1982, 1991 and 1998, respectively. In 1989, he joined the Electronics Scientific Unit of the Electrical and Computer Engineering Department, Instituto Superior Técnico, where he is currently an Auxiliary Professor. He is a researcher of Instituto de Telecomunicações, which is an Associate Laboratory of the Portuguese Ministry for Science and Technology, since it foundation in 1991. Dr. Vaz research interests are radio frequency, microwave and millimeter waves integrated circuits design, namely, power amplifiers and synthesizers, for mobile and wireless communications.

The lectures are open to the public

For enquiry:
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