Analog and Mixed-Signal Center
3128 TAMU
College Station, TX 77843-3128
Tel. (979) 458-4114
Fax. (979) 845-7161
E-mail:spalermo@ece.tamu.edu

ELECTRICAL & COMPUTER ENGINEERING
TEXAS A&M UNIVERSITY

S E M I N A R

Room M309 ANIN

March 1, 4:10 - 5:10 P.M.

Image Rejection Theory and Mitigation Approaches

by

John Khoury
Silicon Laboratories, Inc.
Austin, TX

Abstract: This seminar will review the problem of image rejection in wireless receivers and discuss the numerous approaches to mitigate its effect. Classical super-heterodyne receivers achieve image rejection with high-selectivity front-end RF tracking filters and careful choice of the IF frequency. In contrast, modern Integrated Circuit CMOS receivers typically use a low-IF complex architecture and either have a one-time calibration with a test signal or an autonomous DSP-based calibration that continuously adapts in the background to reject the image. Several examples are presented of the various approaches. The talk will emphasize an image cancellation technique that downconverts both the desired and image channel to baseband and uses a LMS-based signal separation algorithm. Simulation and experimental results will be presented.

John Khoury is an Engineering Fellow at Silicon Laboratories and currently works in the area of mixed-signal CMOS IC design for short range wireless IoT systems. He has held various engineering and management positions at Silicon Laboratories, Bell Laboratories and Multilink Technology. He was also an Associate Professor of Electrical Engineering at Columbia University from 1995 to 1998. John's research and product development work has included TV tuners, 10 Gbps transceivers, Class D amplifiers, sigma-delta modulators, and numerous wireless and wireline systems. He has served on the ISSCC technical program committee and also on the VLSI Symposium program.