
Electrical & Computer Engineering
S E M I N A R
Louisiana State University

**Multicarrier Wireless Systems: Enabling Studies on Carrier
Frequency Offset and Multipath Channel Estimation**

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Abstract—Multicarrier (MC) systems are being proposed and tested for wireless data transmission in applications such as broadband wireless networking and digital broadcasting of audio and video. Modulation and demodulation use local oscillators at the transmitter and receiver that are not perfectly synchronized. It is necessary to estimate carrier frequency offset at the receiver and compensate. For a free running receiver local oscillator, the MC system performance rapidly deteriorates when the carrier frequency offset between transmitter and receiver is greater than a small fraction of the intercarrier spacing. Therefore, high resolution and low variance estimators are necessary. On the other hand, it is desirable to perform carrier offset estimation without bandwidth and power consuming pilot signals. For power loading to improve spectral efficiency and coding in MC communications, multipath channel information is required. In this talk, novel blind carrier frequency offset and channel estimators for OFDM and MC-CDMA to increase bandwidth and power efficiency are presented. The performance of carrier offset estimator under different scenarios is analyzed the system sensitivity to perturbations is examined. These analytical studies are supported by real experimental data obtained on our software radio testbed. The extension of this work to the analysis of the uplink system performance loss due to carrier offset will be addressed.

When: Tuesday, 4 April 2000, 13:30 - 14:30

Where: Room 117 EE Building

Info: <http://www.ee.lsu.edu/seminar>