

*The Electrical and Computer Engineering Program presents
ECEN Seminar Series*

Advanced DSP for Broadband Communications: From Dirty RF to Sparsity Constraints

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Sunday, 20 May 2012, 12 – 1 p.m.

Lecture Hall 143

Light lunch will be served

I will start with a brief overview of my university, department, and laboratory. The technical talk consists of two parts and a single theme: advanced (and practical !) DSP algorithms can significantly enhance the performance and/or reduce the implementation complexity of broadband wireline and wireless communications transceivers.

In the first part of the talk, I will consider the 4G cellular LTE uplink as an example of a broadband wireless system. I will describe a behavioral modeling approach for digital baseband estimation and compensation of RF impairments in the analog front-ends of direct-conversion transceivers. As a case study, I will apply the proposed approach to joint transmit-receive frequency-dependent I/Q imbalance.

In the second part of the talk, I will consider a vectored DSL backhaul link using a 25 copper-twisted-pairs binder as an example of a broadband wireline system. Crosstalk between the pairs severely limits the achievable data rate. I will describe a sparsity-constrained signal processing approach to achieve near crosstalk-free performance using a reduced-complexity sparse digital crosstalk canceller/equalizer.



Naofal Al-Dhahir received his PhD from Stanford Univ. in '94. From '94 to '03, he was a principal member of technical staff at GE R&D Center in NY and AT&T Shannon Lab in NJ. He joined UT-Dallas in '03 where he is currently an Erik Jonsson Distinguished Professor. He holds 32 issued US patents, was a co-recipient of the 2006 IEEE Donald Fink paper award and is a Fellow of the IEEE. More information is available at <http://www.utdallas.edu/~aldhahir>

FOR MORE INFORMATION:

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