

Bandwidth Efficient Modulation over Fiber

**Date: March 24, 2010
(Wednesday)**

**Time: 6.00 -6.30 pm -
Networking/
Refreshments**

**6.30 - 7.30 pm -Talk
7.30 - 8.00 pm - Q&A**

**Place: CoRE 538
Busch Campus
Rutgers University
96 Frelinghuysen Rd
Piscataway, NJ 08854**

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SPEAKER: DR. KAMRAN AZADET

Abstract:

We present the results of a research project at Bell Laboratories on bandwidth efficient modulation over fiber optics. In this presentation we use as a case study the example of a 40Gb/s electrical transmission scheme used in an optical system based on sub-carrier multiplexing (SCM). The proposed bandwidth efficient modulation reduces the signal bandwidth to 14GHz. This enables implementation in lower cost silicon technology and allows the use of optical components developed for 10Gbps digital transmission. The talk is composed of three parts, optical system, baseband digital signal processing, and analog/RF circuit implementation.

In the first part of the talk, we present the overall system, in particular, the optical channel and components used and associated optical impairments. In the second part of the talk derive digital signal processing techniques and architectures that relax analog specifications and alleviate linear channel impairments. We finally review the implementation of a test-chip in standard 0.14mm CMOS process, validating the most challenging circuits.

Speaker Bio:

Kamran Azadet received the engineering degree from Ecole Centrale de Lyon in 1990, and the PhD degree from ENST Paris in 1994. From 1990 to 1994, he was a research engineer with Matra MHS in Saint Quentin en Yvelines, France, where he was involved in the design of video filters for acquisition systems. In 1994 he joined Bell Laboratories in Holmdel/NJ, where he worked in the area of color digital CMOS cameras, and high speed transceivers. He was a member of the IEEE 802.3ab Gigabit Ethernet 1000BASE-T standard, and the IEEE Ethernet high-speed study group 10 Gigabit Ethernet. Since 1999 he has lead research and development in the area of wireline communication – copper and optical – for Telecom and Datacom applications. He is currently director of PHY architecture at Agere Systems (now LSI), Networking division.

Dr.Azadet was a co-recipient of the 1998 IEEE Journal of Solid State best paper award for a paper on a color digital CMOS camera. He is serving in the committees of the IEEE Symposium on VLSI circuits and the VLSI-TSA conference in Taiwan, and has been an associate editor of the IEEE transactions on Circuits and Systems.

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