

# IEEE SCV Signal Processing Society Jointly with Communications Society

**Date:** March 21st 2007  
**Title:** A Simulation Model for IEEE 802.11n  
**Speaker:** Thomas Paul, Electrical Engineering, Santa Clara University

**Location:** National Semiconductor (north end of Building E - see maps on the Chapter web site <http://www.ewh.ieee.org/r6/scv/sps/>), 2900 Semiconductor Dr., Santa Clara, CA 95051 (Near the intersection of Lawrence and Central Expressway);

**Directions:** Take 101 to Lawrence Expressway. Head south on Lawrence to Kifer (past Central). Turn right on Kifer. Turn right on Semiconductor Dr. and drive all the way back to north end to Buldg E. Entrance is on the West side of the building.

**Time:** 6:00pm: Fast Food & drinks (\$2 Donation Recommended towards Refreshments)  
6:30pm: Announcement  
6:35pm: Talks starts

## **Abstract:**

In an effort to improve the performance of Wireless LAN (WLAN) devices, the IEEE (Institute of Electrical and Electronics Engineers), in late 2003, formed a task group, TGN, to work on a new specification: 802.11n. The goal was to deliver speeds of at least 100Mbps, which would more than double the existing maximum rate of 54Mbps provided by the 802.11a and 802.11g amendments. Currently, the 802.11n draft (standard still under development) offers rates up to 600Mbps through the use of MIMO (multiple-input, multiple-output) antenna structures.

In this presentation, we discuss the signal processing techniques used to achieve these rates over indoor wireless environments. Techniques discussed include space-time coding, channel estimation, beamforming, and MIMO detection, including linear and ML detectors. A simulation model developed using Matlab/SIMULINK implementing the transmitter-receiver system is also presented.

## **Biography:**

**Thomas Paul** has worked in the communications industry since 1996. Most recently, he worked at Atheros Communications on the development of Wi-Fi phone products. Prior to that, at Ralink Technology, he worked on development of a low-cost version of the 802.11b WLAN chipset. Earlier, at PC-TEL Inc., he worked on the maintenance and improvement of their V.92 software modem product, attaining the position of Project Lead – Product Enhancement. He also holds a U.S. Patent regarding dynamic block processing in software modems. He earned his B.A.Sc. degree at the University of Toronto, Canada in 1996. He is currently a graduate student in Electrical Engineering at Santa Clara University.