The Florida West Coast Section of the IEEE
Serving over 2,300 members in Charlotte, Citrus, DeSoto, Hardee, Hernando, Hillsborough, Lee, Manatee, Pasco, Pinellas, Polk, and Sarasota Counties

THE SUNCOAST SIGNAL

IEEE Networking the World

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

April Signal Processing/Comm Society Meeting
"Introduction to Wireless Modem Design"

DATE/TIME: Tuesday, April 20, 1999 at 6:30 PM

LOCATION: Raytheon E-Systems
1501 72nd Street North, St. Petersburg 33710

RESERVATIONS: Leave name and country of citizenship with Joe Winner at (727) 302-3162
Light refreshments will be served.

SPEAKER: Dr. Donald R. Stephens

ABSTRACT:
The demand for wireless services exceeds the available frequency spectrum in many locations. Designers of wireless communication systems must maximize the spectral efficiency of their systems and simultaneously make them robust against interference. Today's digital signal processors possess the computational power to implement algorithms and waveforms that help wireless modem designers achieve these goals. This brief lecture will provide an overview of the techniques used to maximize spectral efficiency and signal-to-noise performance in state-of-the-art wireless modems.

BIOGRAPHY:
Donald R. Stephens is President and Chief Scientist of CommLargo, Inc., a consulting firm providing technical services to the wireless communications industry. Dr. Stephens has a Ph.D. in electrical engineering from the University of Missouri-Rolla, and MSEE / BEE degrees from Georgia Tech. Most recently, Dr. Stephens has been developing waveforms and the complementary modems to optimize spectral efficiency for the wireless communications industry. One such waveform has been adopted for MIL-STD-188-181B which doubles the user data rate without requiring additional transmitter power. He has a textbook just published, Phase-Locked Loops for Wireless Communications, Kluwer Academic Publishing, 1998.

Dr. Stephens has taught a short course on phase-locked loops for the UCLA extension center and is scheduled to teach two additional courses this year. While an employee of companies such as E-Systems, McDonnell Douglas, Emerson Electric, and Scientific Atlanta, Dr. Stephens has participated in the development of over seven communications and radar receivers. These systems have included technology such as spread spectrum waveforms, wavelet video compression, and multi-spectral signal processing. He participates in a joint government/industry MILSATCOM working group on Demand Assigned Multiple Access (DAMA). He has previously taught Electromagnetic Theory and Digital Signal Processing as an adjunct professor at Southern Illinois University, Edwardsville.

Continued on page 3

Chair's Comment

by Al Rosenheck

Last December our Section had the good fortune to participate in the IEEE worldwide review program for Member upgrade to Senior Member status. The review is one of twelve held around the world each year to consider upgrade applications. At a recent executive committee meeting while discussing the IEEE program to encourage more upgrades to Senior Member, I was surprised to learn many of our members are not aware of the differences in the IEEE membership grades. So here is a very brief summary of the five membership grades: Student, Associate, Member, Senior Member, and Fellow. Note they are ranked by increasing professional experience and competence.

The grade of Student member is available to registered undergraduate or graduate students enrolled in a regular course of study in IEEE designated fields.

Associate membership is designed for technical and nontechnical applicants who do not meet the qualifications for Member grade, but would benefit through membership and participation in the IEEE.

The grade of Member is conferred to those who have demonstrated professional competence in IEEE-designated fields.

Senior Member is the highest grade for which an application may be made and requires experience reflecting professional maturity. For admission or transfer to the grade of Senior Member, a candidate shall be an engineer, scientist, educator, technical executive, or originator in IEEE-designated fields. The candidate shall have been in professional practice for at least ten years and shall have shown significant performance over a period of at least five of those years.

The grade of Fellow recognizes unusual distinction in the profession and is conferred only by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in IEEE-designated fields, and who has made important individual contributions to one or more of these fields. The candidate must hold Senior Member grade at the time the nomination is submitted.

In addition to the Membership grades there are Membership categories consisting of Recent Graduates, IEEE Life Members and Graduates of the Last Decade (GOLD). Are you in the right grade for your experience? Want to upgrade? For more information, contact our Section membership chairman, John Conrad at (813) 926-4004 and check the web site: www.ieee.com/membership/.

THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues.

All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month. Address all correspondence to: **Quang Tang**
Seminole Electric Cooperative, Inc.
P.O. Box 272000
Tampa, Florida 33688-2000
Voice: (813) 963-0994 Fax: (813) 264-7906
E-MAIL: q.tang@ieee.org

April Brain Teaser Challenge

by Butch Shadwell

Marvin Freebish was accustomed to eating in the same diner every day at 7pm. Everyone knew him and his route was always to enter at the same time, hang his coat on the rack by the door and shout "The usual Rosy!" as he sat in his regular seat next to the rest room. Not withstanding the fact that not of the wait persons in this diner was named Rosy, Marvin always got pretty good service.

The one speck on this perfect picture was the fact that Marvin always had to wash his hands before eating. Unfortunately, watching the regular patrons of the rest room consistently exit without washing their hands made touching the door handle seem a risky proposition. Marvin's cousin, having completed an entire 4 hours in the EE program at USF, seemed to be the perfect person to help Marvin solve his problem.

After dozens of iterations on an electric door opening device, the cousin ended up using a stepper motor to rotate the door knob. However, the device had very limited space and weight allowance for the power source. So, the young fellow had to think of some way to build a system that would easily rotate the rubber knob grabber to unlatch the door, but would keep the knob from springing back when the power to the motor was turned off. Can anyone describe a mechanical linkage that could be used to accomplish this important sanitary function. I hope some of our robotics students know this one. (Remember, when the motor is run forward or backward the knob will turn in either direction. But when the motor is stopped and de-energized the knob holder is locked.)

Reply with the IEEE Florida West Coast Section Suncoast Signal reference to Butch Shadwell by the 20th at (904)223-4465 (voice), 904-223-4510 (fax), b.shadwell@ieee.org, 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (http://www.ccse.net/~butchs/). Only the names of correct respondents are mentioned in the solution column on the next Signal.

March Brain Teaser Challenge Solution

I received several correct answers this month, including some very good suggestions on how to avoid those nasty static shocks. Folks came up with some really interesting Rube Goldberg type methods to do work without moving charge, but alas when examined closely, either the static charge was not actually doing the work or there was current flow. To the best of my knowledge, and apparently my readers as well, there is no way to extract potential energy from a static charge without moving some of the charge in some fashion. If one thinks about it, such a case would violate conservation of energy laws we would be on our way to a perpetual motion machine.

Continued from page 1:

April SP/COMM Society Meeting
Introduction to Wireless Modem Design

DIRECTIONS:

From Tampa, take I-75 South to I-275 south across Tampa Bay to Exit 12 (22nd Ave N.). From Sarasota, take I-75 North to I-275 north over Sunshine Skyway Bridge to Exit 12 (22nd Ave N.). Turn west on 22nd Ave. past Tyrone Mall to 72nd Street N. Turn left at the traffic light to the Engineering building. Park in the lot farthest south of complex. GILL ROBB WILSON CONFERENCE ROOM - 2ND FLOOR - ENGINEERING BLDG.

USF Engineering Alumni and Family Picnic

DATE/TIME: Saturday, April 24, 1999, 11:00 AM - 2:00 PM

LOCATION: USF College of Engineering - Building II
Hall of Flags and adjacent patio
4200 Fowler Avenue, Tampa

COST: $10 for adults and $5 for children under 12 years

RESERVATIONS: Please call Charlotte at (813) 974-2222 by April 19.

Come on out and join the engineering friends and families for a BBQ luncheon at our own backyard at the University of South Florida Tampa campus. The picnic will be held at the Hall of Flags and adjacent patio of the Engineering Building II.

For more information or reservations, please contact Charlotte at (813) 974-2222. We look forward to seeing you there.

April 1999 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6 IEEE-FWCS Executive Committee Mtg at TECO Data Ctr 6:00PM	7	8	9	10
11	12	13	14	15	16	17
18	19	20 SP/COMM Meeting at Raytheon E-Systems 6:30 PM	21	22	23	24 USF Eng. Alumni & Family Picnic 11:00 - 2:00 PM Eng. Building II
25	26	27	28	29	30	

Institute of Electrical and
Electronics Engineers, Inc.
Florida West Coast Section
3133 W. Paris
Tampa, Florida 33614

NON PROFIT ORG
U.S. POSTAGE
PAID
TAMPA, FL.
PERMIT

DATE SENSITIVE MATERIAL. DO NOT DELAY

MEMBERS: Please post at your workplace!

Send address changes including IEEE member number to: IEEE Member Services
P.O. Box 1331, Piscataway, NJ 08855-1331 or call (800)678-4333