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

IEEE Networking the World™

THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

http://ewh.ieee.org/r3/floridawc | Volume 44 - No. 4 | April 2001

Joint PES/IAS Chapter & ASME Meeting

Tour Peerless Fedco Facility

Maker of Automated Bakery Equipment

Date & Time: Wednesday, April 11,2001 from 6:30 PM
Dinner at Tournament Players Club at 7:00PM
Tour the facility after dinner

Location: Tournament Players Club, 5300 W. Lutz Lake Fern Road, Lutz.
Phone Number (813) 949-0090 (Country Club)

Reservations: Call Helen Prince at 727-734-5546 for reservations. Please call as soon as possible.

Cost: $15 Per Person
Buffet Country Style Bar-B-Que, Potato Salad, Grilled Hamburgers, Hot Dogs, Chicken Breast, Baked Beans, Sliced Cheeses, Relish Tray, Assorted Breads, Condiments, assorted Cookies, Coffee, Tea, Decaff. Cash Bar opens at 6:30, Dinner at 7:00, Short Fedco talk 7:45, drive 7 minutes, facility tour begins at 8:15.

Peerless / Fedco - 1920 Gunn Highway, Odessa. Fedco (a division of Peerless) is the leader in the manufacture of highly automated bakery equipment. Fedco specializes in automated depositors, coaters, injectors, conveyors and cooling tunnels. They have a large CNC machine shop, fabrication welding shop, and electrical panel build area. Most of the machinery is PLC controlled. Fedco's engineering department uses ACAD and a Bill of Material process in its release to manufacturing. If you want a Ding Dong chocolate coated, or a Twinkie injected with cream, or nuts sprinkled on your cakes, and you need hundreds done in a minute your probably going to need a Fedco Machine. Come see some of the innovations happening in this competitive industry at this informal gathering.

Inside this issue of the Suncoast Signal:

- *Page 2 – Section Chair's Comment; Students' Corner*
- *Page 3 – PES/IAS Meeting – Cisco Regional Networking Academy at St Petersburg Junior College*
- *Page 4 – IEEE Power Engineering Society Substation Committee Conference, May 6-9, 2001*
- *Page 5 – IEEE-USA Workshop Comes to Tampa Bay; "YES – We Care" Projects; Science Fair winners*
- *Page 6 – MTT/AP/ED Meeting – Generation of Broadband Electromagnetic Response*
- *Page 7 – March In-Service Program; USF's Third Mini-Circuits EE Project Poster Presentation*
- *Page 8 – Lifetime Membership Offer from IEEE*
- *Page 9 – Butch Shadwell's Brain Teaser Challenge Column*

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) 739-1222 Fax: (813) 739-1344
E-MAIL: q.tang@ieee.org

Chair's Comment

By Quang Tang

On behalf of the IEEE Florida West Coast Section, I would like to welcome all IEEE-USA Committees' members and Professional Activities Committee for Engineers (PACE) representatives to Tampa Bay area. Al Rosenheck and Mark McKeage will represent this Section at the workshop, which being held on April 27-29, 2001.

Our In-Service Program served great technology benefits to local high schools after the two successful programs. More than 97% of participants agreed the programs increased their technical knowledge and 100% would definitely apply the concepts, learned from the programs, in their classroom instruction.

2005 Sections Congress selection committee has narrowed down to two cities, Tampa and Tokyo. Florida West Coast Section will make every effort to bring the event to Tampa Bay area.

Students' Corner

By Jason Sanon

This semester has been very good for our IEEE Student Branch. Membership has had a record increase with 54 new members this semester alone. The Engineering Expo was also a great success. We taught students about lasers and showed them a thirteen-minute presentation, sponsored by New Method Laser. Our T-shirt sale is also doing very well. We sold out of our first batch within a day.

The IEEE and Eta Kappa Nu (HKN) Senior Banquet will be held on Friday, April 27, 2001 at 7:30pm. Companies, we need your support, the sponsorship of the banquet is $150.00 per table. We ask that there are no more than two people per table to represent each company. All companies interested in coming to the banquet to represent their company will be given up to 10 minutes to talk about their company. In addition, each senior will be asked to bring their resume to share with the industries represented at the banquet.

For all companies interested in attending the banquet, please contact Jason Sanon at (813) 974-4776 or Email ieee@eng.usf.edu

Upcoming Events:

Motorola Plant Tour -- March 30, 2001
IEEE/Eta Kappa Nu/Motorola Picnic -- April 21, 2001

Upcoming Meeting:

April 2, 2001 in CURT 102
Jim Howard, IEEE Region III Director Elect

April 9, 2001 in CURT 102
Mark McWhorter, SV Microwave

PES/IAS April Meeting

Cisco Regional Networking Academy @ SPJC – Star Center

Tour of Facilities and Orientation

Date & Time:	Tuesday, April 17,2001 from 4:30-6:30PM Registration starts 4:00PM
Location:	Cisco Network Academy St. Petersburg Junior College Pinellas Star Center (Green Pod) Corner of Bryan Dairy and Belcher
Reservations Required:	Contact Arthur Simplina (727-535-6857), acsimplina@hotmail.com (Seating is limited to 25)
Speaker:	Mr. Matthew Basham Program Director SPJC-Cisco Regional Networking Academy
Costs of snack:	$10 IEEE Members $5 IEEE students $20 Non-Members

About the Meeting:

Mr. Matthew Basham will talk about the Cisco's networking academy program, Cisco Certified Network Associate (CCNA) training; Cisco Certified Network Professional (CCNP) training and the up-coming module add-ins (UNIX, security, DSL, wireless) and CCNA in Spanish.

There will be a tour of facilities and classrooms to showcase the Cisco routers and switches and computer equipment used in the training program. Courses in the Cisco Network Academy are instructor-lead supplemented with web-based courses and with emphasis on building skills of the students in the actual cabling, configurations and troubleshooting of routers and switches.

Speaker:

Mr. Matthew J. Basham is serving as the Program Director at SPJC-CISCO Regional Networking Academy since last year. He is with Independent Security and Networking Consultant since 1985. Mr. Basham was the Director of Electronics, Electro-mechanics, Computer Electronics, and Industrial Machinery at PTEC-Clearwater for two years since 1998. At ABC Packaging Machinery, he was the Senior Network Security Engineer/Mechanical Engineer Assistant/Technical Writer 1993-1998. He received his Ph.D. from University of Florida where he also completed in Mass Communications Research/Public Relations (Technical Writing) 1990-1992. Mr. Basham received his BA in Mass Communications from Oakland University in 1989. During the period 1984-1985, he was the Fire Control Technician in the United States Navy.

Direction:

From Tampa Airport, go South on I-275 across Franklin Howard bridge and exit to Ulmerton Road. Continue West past US 19 and head south on 66th street traffic signal. At the third traffic signal, go west at Bryan Dairy Road and continue to Belcher. At the right corner of Bryan Dairy and Belcher is the Pinellas Star Center. The SPJC-Cisco Network Academy is located at the green pod.

IEEE Power Engineering Society
Substation Committee
Annual Meeting 2001

Wyndham Harbour Island Hotel
Tampa, Florida
May 6 – May 9, 2001

The Florida West Coast Section is hosting this major four-day meeting. Take advantage of this unique opportunity to get involved. Either volunteer to help the host committee or register to attend the technical sessions. This meeting, open to all, provides attendees with the unique opportunity to expand their knowledge and expertise by participating in activities of the PES Substation Committee and numerous Working Groups and Task Forces.

Substation Committee Web Site: http://home.att.net/~gengmann/

Location:

The 300 room, four-star Wyndham Harbour Island Hotel (phone: 813 229-5000) is on the north shore of Harbour Island, a 177 acre urban development across Garrison Channel from downtown Tampa. The hotel has a, spectacular, waterfront view. Downtown Tampa, Bayshore Boulevard and the Garrison Channel entertainment and shopping area including the Florida Aquarium is a comfortable stroll or short trolley ride away.

Contact Information:

For more information, or any correspondence regarding meeting administration, contact:

Ken Cooley - Meeting Host Chair
Tampa Electric Company
Phone: 813 630-6346
Fax: 813 630-6297
Email: klcooley@tecoenergy.com

Dates:

Registration and Welcome Reception on Sunday May 6, 2001. Meetings will be held May 7, 8 & 9.

Schedule:

Sunday, May 6 - Registration (all days), Welcome Reception.

Monday, May 7 - Continental Breakfast, Committee Meetings, Luncheon, Technical Tour, and Companion Activities.

Tuesday, May 8 - Continental Breakfast, Committee Meetings, Companion Activities, Dinner Banquet.

Wednesday, May 9 - Continental Breakfast, Committee Meetings, Companion Activities.

Registration:

Advance Registration (before April 1, 2001) for IEEE members is $200 ($80 per day) and non-members is $250. On-site registration for IEEE members is $225 ($90 per day) and a non-member is $300. See Host Committee Web site for registration details.

Non-technical Activities

Besides the informal (business casual) Welcome Reception Sunday evening, May 6, a catered banquet is planned for Tuesday, May 8 at an interesting Tampa attraction. Also, for Sunday afternoon, a Golf outing is in the planning stages.

The host committee is also developing a number of entertaining companion activities that will take advantage of this unique location.

Find out more about this important Annual Meeting from the web site:
http://www.tampaelectric.com/energy/ENIEEEconf.html

Judge Middle and High School Student Projects! April 21st

Tampa Bay 's six Centers of USF's "YES - We Care!" Minority Engineering Program will hold their annual SECME competition on Saturday, April 21 at Lakewood High School in St. Petersburg. Over a hundred middle and high school students from Hillsborough and Pinellas will be competing in events involving Balsa Bridges, Mousetrap Cars, and Egg Drops. Every entry needs to be judged for both operating performance and compliance with its engineering specifications. Judges will be needed between approx. 9 am and 1 pm; Lakewood High School is located a few blocks East of I-275, approx. 15 min. South of the Howard Frankland Bridge.

"YES - We Care!" (also known as "YES") is a 19 year old, voluntarily attended Saturday morning Math/ Science/ Engineering Enrichment Program designed to acquaint its students with the multi-faceted aspects of engineering careers. It is a a member of SECME - a national program headquartered at Ga. Tech, which has a similar mission. The winners of our Tampa Bay competition will travel to Tucson AZ in June to compete in SECME's national event.

To help us plan and staff this event, please reserve the morning of April 21 by volunteering now. Call or E-Mail Dr. Rudy Henning at USF (813-974-4782) or (henning@eng.usf.edu), providing your name, E-Mail and telephone contact information.

Hillsborough County Science Fair Award

By John Twitchell

The Florida West Coast Section again supported the Hillsborough County Science Fair by recognizing an Outstanding Engineering Topic in both the Junior and Senior Divisions. IEEE Judges Al Rosenheck, Richard Beatie, and Quang Tang selected Brent Finklea, of Washington Magnet Middle School, for the Junior Division Award for his project "Building Steam with a Grain of Salt". Pooja Rohatgi, of Hillsborough High School, won the Senior Division for her "Thinking Computers: A Simulation of Alzheimer's Disease". Quang Tang stated that "it was difficult for the judges to make a choice due to the high quality of the projects prepared by all of the students. "Both students received a plaque and a $50 gift certificate to Border's Bookstore from John Twitchell at the evening awards ceremony.

PACE News: IEEE-USA Workshop Comes to Tampa Bay April 27-29, 2001

By Mark McKeage

IEEE-USA committees and PACE (Professional Activities Committee for Engineers) will meet 27-29 April 2001 to discuss Professional Activities skills, services, government relations programs and upcoming projects. This workshop is in place of the annual Professional Development Conference usually held over the Labor Day weekend. I will represent the Florida West Coast Section at the workshop, and will provide the Section with the results. The URL for the workshop is http://www.ieeeusa.org/conferences/2001workshop/index.html

Look for this column next month for additional information!

Introduce a Girl to Engineering Day Contest IEEE-USA and the IEEE Women in Engineering Committee are challenging U.S. IEEE Sections to introduce as many girls to the engineering profession as they can before 1 April 2001. For more on this worthwhile effort, please check out the web site below: http://www.ieeeusa.org/eweek/form.html

MTT/AP/ED April Meeting

"Generation of Broadband Electromagnetic Response From DC to Daylight on Your PC"

Date/Time: Tuesday, April 3, 2001 at 6:00 pm

Speaker: Dr. Tapan K. Sarkar
Department of Electrical & Computer Engineering, Syracuse University

Reservation: Leave name & country of citizenship with Shawn O'Brien at (727) 302-3493
Email: skoa@eci.esys.com or Ed Grimes at 727.784.3998 x158,
Email: edg@xetron.com. Bring a guest; non-members welcome!

ABSTRACT:

In traditional computational electromagnetics analysis is carried out exclusively in either the time or in the frequency domain. Most of the popular methods for performing the analysis in the time domain (finite-difference, finite-element or integral equation) solve either the integral or the differential form of Maxwell¹s equations in the time domain. The way to analyze electrically large problems is to then use a bigger and a faster computer. In the frequency domain, one employs essentially the same way of thinking. Here, the Maxwell¹s equations are solved entirely in the frequency domain by utilizing one of the above popular methods. Unlike in the time domain, here one needs to solve a matrix equation, which becomes large as the electrical dimensions of the structure increases. The methodology for analyzing electrically large problems is to then use a supercomputer, as one needs to solve a large matrix equation. Even though extrapolation techniques like the Matrix Pencil (in the time domain) or the Cauchy method (in the frequency domain) to name a few, have been applied with success, these methods cannot extrapolate the information accurately for all classes of problems. Hence, a new methodology is presented which will be numerically stable and computationally efficient under all circumstances.

Utilizing early time and low frequency data, the complete electromagnetic response of any object, however electrically large it may be, can be generated. The low frequency and the early time data contain mutually complementary information. By using this mutually complementary data, simultaneous extrapolation in time and frequency domains are carried out. It is important to point out that in this procedure no new information is created but existing information is processed in a novel fashion. This simultaneous extrapolation in time and frequency domains is carried out through the use of the Associate Hermite Polynomials. The interesting property of the Hermite polynomials is that they are the eigenfunctions of the Fourier Transform operator. This implies that if the time domain response from any electromagnetic object at a point in space is modeled by an Associate Hermite Series expansion, the frequency domain response at the same point can be expressed as a scaled version of the same time domain representation. Therefore using early time and low frequency domain response data, it is possible to reproduce the missing response in both the domains. Examples will be presented to illustrate the efficiency and accuracy of this methodology.

BIOGRAPHY:

Tapan Kumar Sarkar received the B. Tech. degree from the Indian Institute of Technology, Kharagpur, India, in 1969, the M.Sc.E. Degree from the University of New Brunswick, Fredericton, Canada, in 1971, and the M.S. and Ph.D. degrees from Syracuse University; Syracuse, New York in 1975.

From 1975 to 1976 he was with the TACO Division of the General Instruments Corporation. He was with the Rochester Institute of Technology, Rochester, NY, from 1976 to 1985. He was a Research Fellow at the Gordon McKay Laboratory, Harvard University, Cambridge, MA, from 1977 to 1978. He is now a Professor in the Department of Electrical and Computer Engineering, Syracuse University; Syracuse, NY. His current research interests deal with numerical solutions of operator equations arising in electromagnetics and signal processing with application to system design. He obtained one of the "best solution" awards in May 1977 at the Rome Air Development Center (RADC) Spectral Estimation Workshop. He has authored or co-authored more than 210 journal articles and numerous conference papers and has written chapters in 28 books and ten books including the latest one "Iterative and Self Adaptive Finite-Elements in Electromagnetic Modeling" which was published in 1998 by Artech House.

Continued on next page

MEETING LOCATION: Raytheon Systems Company St. Petersburg, 1501 72nd Street North, St. Petersburg

Gill Robb Conference Room

EXTRA: IEEE members have been invited to attend Dr. Sarkar's 2:00 PM presentation entitled "***A Pragmatic Approach to Adaptive Antennas and Space-Time Adaptive Processing (STAP)*** ", at the University of South Florida, ENB 113. Please reserve with Dr. Rudolph Henning at 813.974.4782, henning@eng.usf.edu or Ed Grimes at 727.784.3998 x158, email: edg@xetron.com.

March In-Service Presentation = Power!

The second educator in-service presentation, sponsored by the Florida West Coast Section, was held on 2 March 2001 at the Anclote Power Plant in Holiday, Florida. Florida West Coast Section volunteer John Twitchell, PE, presented a four hour session focused on the conversion of fossil fuel into electrical energy. The participants learned the basic concepts of electrical energy production, observed the practical application of theory during a tour of the power plant and designed strategies to incorporate energy conversion formulas into their classroom instruction.

Eight science and technology teachers from middle schools and high schools in Manatee County participated in this unique presentation. After an overview of the building blocks of electrical energy production, Norm Peterson of Florida Power Corporation, and John Twitchell, provided attendees with an extensive tour of this fossil fired power plant. The response to the presentation was extremely positive as 100% of the participants indicated they would use the concepts presented in their classroom instruction and 100% of the teachers indicated that the presentation increased their level of technological literacy.

The in-service program is being piloted by the Florida West Coast Section and is promoting technological literacy among pre-college educators. It is a program that may be customized for use by any IEEE Section and it has the potential to impact pre-college educators and their students for years. If you have questions, thoughts, or are willing to help with the in-service program, please email Doug Gorham at d.g.gorham@ieee.org.

Judge USF's Third Mini-Circuits EE Project Poster Presentation

All University of South Florida Electrical Engineering students completing their accreditation-required "capstone" projects must augment their written report with an oral Poster Presentation. This semester it is held on April 27th. USF's E.E. department needs Poster Presentation judges for that Friday afternoon event, when E.E. students who are completing their Senior design (or similar) projects and who are ready for (or very close to) graduation, will be making their presentations to an audience of fellow students, faculty, and visiting industry engineers.

To add professional realism this event is organized along the lines of an IEEE conference's Poster Session; it includes presentations judging by teams of faculty and practicing engineer judges who will use a few, specific criteria. Results will be tabulated and summed to yield a single score for each presentation. Very good presentations will be awarded special recognition. In addition to your formal "judging" you will have the opportunity to meet our students, faculty and fellow judges informally; there will be a relaxed "ambiance" and snacks/refreshments will be available for all.

This Poster Presentation is one of the E.E. department's "Senior Day" events. Climax of that day will be our IEEE Student Chapter's Senior Banquet. (Dan Faria is the chapter's chairman.) We expect to announce award recipients of the Poster Presentations at that Banquet; we hope all judges will be able to stay and also attend the Banquet.

To participate in the Poster Judging contact Dr. Rudy Henning at (813-974-4782) and/or at henning@eng.usf.edu". Provide him with your name, company affiliation, telephone # and mailing address no later than Friday, April 6th. Judges will meet in the ENB Engineering building; plan on 3 hours for this event. Detailed instructions will be available April 6th. Presenters and judging teams will be divided into two groups, each group devoting half its time to presenting / judging and the other half to meeting students, faculty and visitors.

Message from your IEEE Florida West Coast Section
Membership Chairman - Al Rosenheck (rosenheck@aol.com**)**

Best Deals Going in IEEE
Don't miss these Opportunities!

These IEEE Societies are offering
"Lifetime Membership"
For a very attractive fee

Join Now:

IEEE Electron Devices Society
$25.00 Lifetime Membership
www.ieee.org/organizations/society/eds/

IEEE Power Electronics Society
$40.00 Lifetime Membership
www.pels.org/

IEEE Microwave Theory & Techniques Society
$40.00 Lifetime Membership
www.mtt.org/

OR

Call 1-800-678-IEEE to Join any of these Societies

Brain Teaser Challenge Column

by Butch Shadwell

March BTC Solution

Though there is a lot of speculation about "IT" you don't have to wait any longer to understand the phenomenon of static fly-away hair. Last month we asked about why statically charged hair stands on end. It all starts with the fact that like charges repel. This refers to the physical force exerted by virtue of an electric field. If you recall the gold leaf electrometer, as charge is deposited on the insulated leaf structure inside the jar, the leaves move away from each other. In a like fashion, when the hairs on your head each are given a certain amount of charge, positive or negative, they try as hard as they can to get away from each other. If they weren't anchored at one end they would fly off your head. The force between adjacent hairs is directly proportional to the number of elementary charges on each shaft and inversely proportional to the square of the distance between shafts.

April BTC

I'm sure that most of you, like me, find clothes to be an awful inconvenience. Not only is one vexed by having the get the buttons down the front into the correct holes, but clothing must also be cleaned occasionally and, heaven forbid, it may fall out of style. Public nudity is still not acceptable as our society tumbles into depravity, but even if it was, we would have the problem of protecting ourselves from the elements. It does get chilly from time to time. Of course one solution is for all of humanity to move into the tropics of Cancer and Capricorn.

One of my many community service activities is coaching the local high school robot competition team. They are very bright kids. Recently, we were discussing robots in space, and some of the environmental considerations in their design. When I pointed out that terrestrial electronic systems, such as your TV set, typically move damaging heat away from the circuitry by virtue of air vents on the top and bottom, the students quickly grasped the notion that such a scheme would be ineffective away from the planet's surface. Maybe you can contribute to our discussion by telling me all of the basic mechanisms by which heat can get from where don't want it to where you do want it. It may not do much for the nudist movement but our youth definitely need a greater understanding of thermodynamics.

Questions or comments to the Brain Teaser Challenge, please contact Butch Shadwell at 904-223-4465 (v), 904-223-4510 (fax), b.shadwell@ieee.org (email), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. http://www.se.mediaone.net/~butchs/

April 2001 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 *EXCOM Mtg TECO Ctr at 6:00 PM MTT/AP/ED Meeting 6:00PM*	4	5	6	7
8	9	10	11 *Joint PES/IAS & ASME Meeting Tour of Peerless Fedco Facility 6:30 PM*	12	13 *Material Due For Next Month's SIGNAL*	14
15	16	17 *PES/IAS Meeting Cisco Network Academy @ SPJC 4:30 PM*	18	19	20	21 *YES – We Care At Lakewood High School 9:00 – 1:00 PM*
22	23	24	25	26	27 *IEEE-USA Workshop April 27 – 29 Student Senior Banquet 7:30PM*	28 *IEEE-USA Workshop April 27 – 29*
29 *IEEE-USA Workshop April 27 – 29*	30					

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

DATE SENSITIVE MATERIAL. DO NOT DELAY

Change of address? IEEE Web Contact Update http://www.ieee.org/membership/coa.html
Or send address changes including your name, IEEE Member number and all pertinent information to:
IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331 or call (800) 678-4333
Or fax your address changes to (732) 562-5445

.