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Pasco, Pinellas, Polk, and Sarasota
Counties



IEEE

**THE
SUNCOAST
SIGNAL**

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://ewh.ieee.org/r3/floridawc>

Volume 46 - No. 12

December 2003

Celebrate Engineering 2004

You are invited!

VENUE (Mark your calendar today!)

Date: Friday, 13th February 2004
Time: Social, Registration: 5:30 – 7:00 pm
 Dinner, Events: 7:00 – 10 pm
Place: A LA CARTE EVENT PAVILION, Dana Shores Road,
 West of Tampa Airport. Check their website for directions
 and pictures of elegance! <http://www.alacarteeventpavilion.com/>
Cost: \$25 per person (What a bargain – subsidized by **your** Society!)

Reservations **must** be made in advance for planning purposes – no reservations taken at the door! Contact John Conrad at 813-926-4004 for tickets or reserve online at: <http://weiquality.com/celebrate2004> Credit cards are accepted!

DON'T DELAY - RESERVE NOW - WE WANT TO SEE YOU THERE!

Join us for the **LARGEST GATHERING** of engineering professionals, companions, and guests! South from Naples, North to Inverness, East of Lakeland and Winter Haven!

If you attended one of the last three year's Celebrate Engineering Banquets, you already know what an uplifting experience it was! If you haven't attended one of our banquets yet, you don't know the opportunities you have missed out on. Don't let this happen again this year!

What is the Celebrate Engineering Banquet about? Five major engineering societies in the Tampa Bay area joined forces to promote engineering awareness within our own societies and the local community, in conjunction with the promotion of National Engineers Week, co-sponsored by **your** society and many other engineering societies during early February.

Please join us for an unforgettable and festive evening of events and food planned specially for you and your companion/spouse.

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Chair's Comments

By John Conrad

As the year draws to a close, I look back on my nearly completed year as Section Chair. I discover with some surprise that I really enjoyed guiding the Section through the many issues that have arisen during the year. These issues, some big, most quite small, all contribute to the direction in which we are going. It sounds a little antiseptic "guiding the Section" when in reality it is just helping other EXCOM members, one at a time, to do their job in a way that is rewarding to themselves and to the membership.

I thank every member of EXCOM for the work that they have done and for the tremendous support that they have given me. As members you are very lucky to have so many dedicated volunteers willing to give so much time and talent.

The Florida West Coast Section is one of the most active sections in IEEE providing interesting and informative speakers at dozens of meetings and seminars throughout the year. We also hold regular conferences, which not only help the section financially, but also greatly enrich the lives of attendees and organizers alike.

I am very excited that the attendance at the monthly EXCOM meetings has been unprecedented, averaging over twenty attendees, for the last eleven months. Some people think it is the quality of the free food that keeps bringing everyone back, but I believe that it just a desire in everyone to be part of something that is successful. Success breeds success. I have said many times that FWCS is a service organization and we must be doing something right, as you, our customers, keep coming back for more.

Thank you.

Four U.S. IEEE Members to Receive Nation's Top Technology Medal

WASHINGTON (4 Nov. 2003) - Four U.S. IEEE members, all involved with LED technology, will be awarded the National Medal of Technology on 6 November. President George W. Bush will make the presentations in a White House ceremony.

Nick Holonyak, Jr., an IEEE Fellow who built the first LED (light-emitting diode), will receive the award along with two of his former graduate students, M.George Craford and Russell Dean Dupuis. Calvin H. Carter, whose work in silicon carbide advanced LED technology, will also receive the medal.

Visit: [http://www.ieeeusa.org/releases/2003/110403pr\(1\).html](http://www.ieeeusa.org/releases/2003/110403pr(1).html)

Celebrate Engineering 2004 (Contd.)

AWARDS TO HEROS!

Each society will recognize outstanding officers and members for their contributions and accomplishments in the engineering community and profession, for engineering and technical achievement. Join us in congratulating them for their accomplishments!

Kim Lignell awards will be presented to three outstanding teachers. This award is given annually in memoriam to Mr. Lignell, an IEEE officer who dedicated his support to promoting engineering education in the schools, to a science/math/physics teacher from Hillsborough, Pinellas, and Pasco Counties. These teachers are selected by vote from their peers, and are outstanding examples of the quality of education our future engineers and scientists are receiving in high school. Again, join us in congratulating them for a job well done, and offer your individual/corporate support to help them and their peers in their educational efforts!

ENTERTAINMENT!

For your most memorable experience of the year we have lined up a complement of entertainment to enhance your enjoyment of the evening! Start out with a musical serenade by local musicians to put you in the mood throughout the evening. Wander over to the caricaturist, to have your face emblazoned on canvas in a silly pose!

A locally renowned personality will be our MC for the evening! He will not only pace the meeting, but also keep us all in stitches with his stories and anecdotes, plus hand out many **DOOR PRIZES!**

GUEST SPEAKER!

Our Keynote Event will be a presentation by Dr. Robin Murphy, Director, USF Center for Robot-Assisted Search & Rescue! A video and robot demonstrations will be highlights of the evening. Don't miss this presentation! You can find out more about Dr Murphy's accomplishments at her website <http://www.csee.usf.edu/~murphy/>

SPONSORS/VENDORS!

A number of vendors and sponsors have again graciously agreed to support our Celebrate Engineering Banquet. Because of their generous support, the Committee is able to provide this elegant event to our members at a **significant discount (50%)** over what it actually costs us to provide it to our members!

Many vendors will have tables set up at the banquet featuring their engineering services and products. We encourage all attendees to visit their exhibits and thank sponsors personally for helping to support **your** Celebrate Engineering Banquet. Without their dedicated support the Committee would not be able to provide you the elegance you will experience at such an affordable and reasonable cost!

New vendors/sponsors who would like to participate in our wonderful venue should contact Richard Beatie at r.beatie@ieee.org or John Chevalier at ChevalierEngCon@aol.com. All contributions are tax deductible!

USF 9th Mini-Circuits EE Projects Poster Presentation

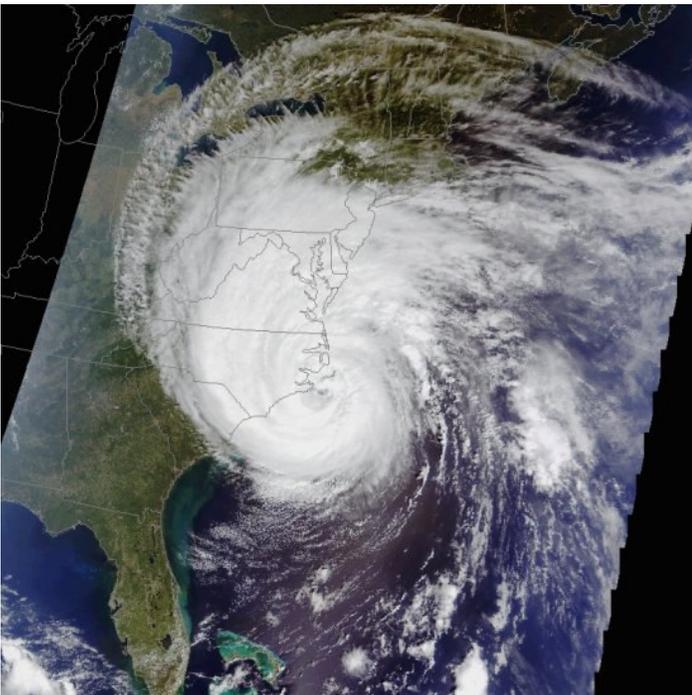
The Electrical Engineering Department of University of South Florida cordially invites you to attend and/or be a judge at the 9th Mini-Circuit Project Poster Presentation made by the graduating seniors on, Friday, the 5th December 2003 in the Hall of Flags, ENB Building, from 1:00 to 3:15 pm. Judges should notify Dr. Henning of their intent in advance by E-Mail or telephone and plan to attend a briefing meeting at 12:30 pm. For more details, contact Dr. Rudy Henning (henning@eng.usf.edu) or 813-974-4782.



Power System Restoration After Hurricane Isabel



- Speakers:**
- **David Sweat**
Manager of Engineering and Operations
Tampa Electric's Western Operations Center
 - **Roy Lumsden**
Senior Engineer
Tampa Electric's Central Service Area
- Date:** Thursday, 11th December 2003
Time: 11:45 A.M.
Location: TECO Hall, TECO Plaza, 702 N. Franklin St., Tampa, FL
Cost: Members \$10, Non-members \$15, Students \$5 includes lunch.
Registration: Pre-registration is required.
Register online <http://www.weiquality.com/fwcs-meetings/>
Limited to 35 participants.
- Parking:** Metered street parking is available. Reasonably priced parking is also available at the Ashley Street Garage next to the Public Library, on Ashley Street approximately two blocks from TECO Plaza.
- Questions?** Contact Art Nordlinger, a.nordlinger@ieee.org



Long-lived hurricane Isabel began as a westward moving tropical depression over the eastern tropical Atlantic on the September 6th. It became a tropical storm later that day...and a hurricane on the 7th as it turned west-north westward. Isabel made landfall on the North Carolina coast near Drum Point on the 18th as a category 2 hurricane. Isabel brought hurricane conditions to portions of eastern North Carolina and southeastern Virginia...and tropical storm conditions to much of the rest of the region from North Carolina northward to New York. Isabel was directly responsible for at least 13 deaths...with at least 17 more indirectly related to the storm. Isabel caused extensive wind and water damage in eastern North Carolina and southeastern Virginia and eastern Maryland. Damage from Isabel may eventually be assessed in excess of one billion dollars.

In the aftermath of Isabel, David Sweat and Roy Lumsden led Tampa Electric's crews to assist Dominion Resources' restoration efforts in eastern North Carolina. They will relate their experiences and lessons learned restoring power to customers over a 10-day period this past September.



Complete Conference Information & Registration Form are available at www.southcon.org

Southcon Exhibit Hours			10-5		10-4			
Day Planner			Tues. 1/13		Weds. 1/14		Thurs. 1/15	
			AM	PM	AM	PM	AM	PM
Southcon Conference Hours			9-4		9-5		9-5	
Keynote Luncheon (Noon to 2:00 pm)								
K1	What Lies Ahead for the Electronics Industry?, Susan Mulcahy, Vice President and Director of Research, Reed Electronics Group	\$25						
Special Events								
SP1	Workshop in a Box: An Introduction to Designing with PICmicros using the PICKIT1 Starter Board	\$50						
SP2	Take the Low Power Challenge: Develop Ultra Low-Power Embedded MCU Application	\$50						
Design and Manufacturing Tutorials (Lunch Included)								
SC1	Analog Electronic Design	\$310						
SC2	Advanced Signal Conditioning Design	\$310						
SC3	BGAs - Layout Techniques, Routing, PCB Stackups and Rework Issues	\$310						
SC4	EMC Printed Circuit Board Design Practices	\$310						
SC5	FPGA Design with VHDL - Basics for Design Engineers	\$310						
SC6	FPGA Design with VHDL - Advanced Topics	\$310						
SC7	FPGA Design with VHDL - Test Benches and Design Verification	\$310						
SC8	Grounding, Bonding and Shielding	\$310						
SC9	Opto-Electronic Design Considerations	\$160						
SC10	Reflow and Wave Soldering with Emphasis on BGAs	\$310						
SC11	Thermal Aspects of Electronics Cooling	\$160						
SC12	Troubleshooting the SMT Manufacturing Line - Defect Causes & Solutions	\$310						

CEUs will be awarded for all tutorials.

Register Early – Prices above are effective through December 23, 2003. Beginning on December 24, the cost of each course increases by \$50.

Conference Hours	
Tues., Jan. 13	9 AM – 4 PM (9-Noon & 1-5 PM)
Weds., Jan. 14	9 AM – 5 PM (9-Noon & 2-5 PM)
Thurs., Jan. 15	9 AM – 5 PM (9-Noon & 2-5 PM)

Special Assistance - If you require special assistance covered under the Americans with Disabilities Act, please contact us at (310) 524.4100, Ext. 218 by December 24.

Reminder to REGISTER for **Southcon/2004**

For complimentary admittance to Southcon, complete this form and Fax to (310) 643-7328 prior to January 9th or bring this completed form to the show for complimentary admittance.

DO NOT MAIL

For complete CONFERENCE registration, visit our website at www.southcon.org

(Form may be duplicated)



Exhibition Hours

Wednesday, January 14
9:30am - 4pm

Thursday, January 15
9:30am - 4pm

Save \$25

Registration Form

1. General Information: Persons under 18 years of age not admitted. Students 18 or older admitted on Thursday, January 15, 2004 only.

First Name _____		Last Name _____	
Job Title _____		E-mail _____	
Company _____			
Mailing Address _____		Mail Stop _____	
City _____	State _____	Zip _____	Country _____
() _____	() _____		
Telephone _____		Fax _____	

How to Register

FAX Deadline - January 9, 2004

310-643-7328

Please do not both fax and mail

Electronically www.southcon.org

Your badge will be held for pick-up at the Orange County Convention Center.

On-Site

Bring this form with you to Southcon/2004 for FREE admittance. (Save \$25.)

2. Principal Job Function

(check only one)

- AA Engineer - Design
- AB Engineer - Manufacturing
- AC Engineer - Quality/Test
- AD Engineering Services
- AE Engineering Management
- AF Corporate/General Management
- AG Press
- AH Purchasing/Procurement
- AJ Marketing/Sales
- AK Student/Educator
- AL Other

3. What is the Primary End

Product at this Location
(check only one)

- CA Communication Systems
- CB Components/Materials/Hardware Supplies
- CC Computers/Systems and Sub-systems
- CD Consumer Products, Automotive & Appliances

4. Product Interest - Which of

the following do you specify, recommend, approve, purchase or influence the purchase of?
(check all that apply)

- CE Contract Services-Design/Manufacturing/Test/IC Foundry etc.
- CF Controls
- CG Military/Government/Avionics
- CH Medical Electronics
- CJ Semiconductors/ICs
- CK Test/Measurement/Inspection
- CL Distributors
- CM Other
- BA ASICs, PLDs, FPGAs
- BB Board Level Products
- BC Semiconductors/ICs
- BD Components other than IC's
- BE Computers/Peripherals/Software

5. Years Involved in Industry

- BF Contract Services - Design/Manufacturing/Test
- BG EDA Tools & Engineering Software
- BH Interconnection Devices
- BJ Laser & Electro-Optical Devices
- BK Microwave Components
- BL Packaging Hardware/Enclosures
- BM Power Sources
- BN Production Equipment
- BP Production Tools & Supplies
- BQ Sensors & Transducers
- BR System Boards
- BS Test & Measurement Equipment
- BT Other
- DA 1 - 2
- DB 3 - 5
- DC 6 - 9
- DD 10 or more

6. Size of your organization

- | | | |
|---------------|-----------------------------|-----------------------------|
| | At Your Location | In Entire Company |
| 1 - 49 | <input type="checkbox"/> EA | <input type="checkbox"/> EB |
| 50 - 99 | <input type="checkbox"/> EC | <input type="checkbox"/> ED |
| 100 - 499 | <input type="checkbox"/> EE | <input type="checkbox"/> EF |
| 500 - 999 | <input type="checkbox"/> EG | <input type="checkbox"/> EH |
| 1,000 or more | <input type="checkbox"/> EI | <input type="checkbox"/> EJ |

GA I would like to receive show and conference updates via e-mail

I am a member of IEEE
(or referred by) ERA



January 14 - 15, 2004
Orange County Convention Center
Orlando, Florida

9-90110

**FOR UPDATED SHOW INFORMATION, VISIT
www.southcon.org**

**2004 Review Seminars For
PE Electrical & Computer and EIT/FE
APRIL 16 and 17 Examinations**

Review seminars for the PE (Electrical and Computer) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will be held: Mondays, January 19 through March 22 for the EIT/FE Exam & Thursdays, January 8 through March 25 for the EE Exam. Seminars are conducted from 7-10 P.M. (Monday or Thursday) for ten weeks for the FE and twelve weeks for the EE. The registration fee is \$395 and includes text. The seminars will be held on the USF main campus in Tampa and **will also be available via Internet.**

To register, contact: Edward Scott, P.E., PO Box 14042, (EC37), St. Petersburg, FL 33733.

Email: Edward.Scott@pgnmail.com; Phone (727) 384-7544, FAX (727) 384-7865

Pinellas Chapter, Florida Engineering Society

Two U.S. IEEE Members to Receive Nation's Top Science Medal

WASHINGTON (4 November 2003) - Two U.S. IEEE members will be honored by President George W. Bush with the National Medal of Science in a White House ceremony on 6 November. The medal is the nation's highest scientific honor.

Leo. L. Beranek, an IEEE Fellow and acoustic specialist whose company helped create the Internet, was awarded the medal for engineering. Richard L. Garwin, an IEEE Life Senior Member whose work helped pave the way for magnetic resonance imaging (MRI) systems, won the physical sciences medal.

Beranek began working in acoustics early in World War II, helping develop microphones that could be used in conjunction with oxygen masks used before cockpits were pressurized. After the war, he co-founded the acoustics lab at the Massachusetts Institute of Technology, working with architects who built the United Nations' building.

Beranek began a business, "Bolt, Beranek and Newman," which developed mufflers for jet engines, among other jobs. He worked with authorities to establish rules forcing aircraft manufacturers to use mufflers, drastically reducing noise levels. "That did more good for people of the world than anything else I've ever done," Beranek said.

Recognized for acoustics, Beranek's company helped create a technology that has had an impact on many people throughout the world. "BBN had the best software people, and we beat out everyone for an ARPA contract, so we were the founders of the Internet," Beranek said. (ARPA is the forerunner of DARPA, the Defense Advanced Research Projects Agency.)

Garwin, an IBM Fellow Emeritus, began working with magnetic resonance shortly after he joined IBM in 1952. Though the technology didn't work for its original application "computer memory" magnetic resonance is now a mainstay of the medical field. Garwin also did extensive work in superconductors, gravity waves and particle physics, and with both liquid and solid helium. He also helped develop laser printers, touch screens and satellite reconnaissance techniques.

IEEE-USA is an organizational unit of The Institute of Electrical and Electronics Engineers, Inc., created in 1973 to advance the public good, while promoting the careers and public-policy interests of the more than 235,000 electrical, electronics, computer and software engineers who are U.S. members of IEEE. The IEEE is the world's largest technical professional society. For more information, go to <http://www.ieeeusa.org>.

Calling All Science Fair Volunteers

By Carlomagno B. Dionson

IEEE members are encouraged to help out as judges in the local science fairs. Most of the fairs will be held around the end of January or early February. Updates will be posted via the science fair website located at: <http://www.dionson.com/ieeefair>. Interested members can go to the website for more information. Alternatively, members may contact Carlo at 813-621-5935 or carlomagno@ieee.org.

Science Fair FAQ:

1. **Is IEEE actually setting up these science fairs?** *No. We are merely trying to provide judges for these fairs by asking our members to volunteer their time.*
2. **Do I need to pay anything?** *No. There is no fee to sign up.*
3. **What do I do after I sign up?** *I will compile all the names and send them to the county's science fair coordinator. The county's coordinator will then send the judges a letter of confirmation and further instructions.*
4. **What do I do after the fair?** *You can do several things: fill out a survey about your experience and send pictures that you took at the fair. The survey will be used to improve future science fair coordination. Selected pictures will be displayed in this newsletter.*

Students' Corner

IEEE Student Branch Chapter, USF

It's Senior Banquet Time! Join the E.E. Faculty and Staff and your IEEE Student Branch in celebrating the achievements of the 2003 Fall Graduating Seniors. This year, the Banquet will be held on Friday December 5th at 7:00 pm at the Holiday Inn on Fowler Avenue. The Banquet is open to all students, all graduating seniors will be admitted free of charge, however there will be a small fee involved for all others, students: \$10.00, individual: \$15.00, corporate sponsorship (includes 4 tickets): \$150.00. To purchase tickets or for more information, call 813.974.4776 or email the student branch at ieee@eng.usf.edu.

In addition to recognizing the ten best design projects, IEEE Student Branch will also be presenting an award "Student of the Semester" at this year's event. This award will be presented to either an Electrical or Computer Engineering and Science major. It is open to all students and they will be judged on their academic as well as extra-curricular activities. For more information on this award or to submit a nomination, call 813.974.4776 or email us at ieee@eng.usf.edu.

The IEEE Student Branch would like to thank all the students for supporting our events all semester long, especially the welcome back picnic in September, which was sponsored by the FWCS Section and well attended by our student members, faculty, and staff. To see pictures or view upcoming events, please visit the IEEE Student Branch Website at <http://org.eng.usf.edu/IEEE-EE/>. Good luck on finals everyone!



IEEE Computer Society Student Branch Chapter, USF

October has been an eventful month for IEEE-CS student chapter at USF. We called the **Tampa F.B.I office CART** (Computer Analysis and Response Team) on-campus, to talk to the students about data recovery, digital forensic evidence, investigations, and careers with the FBI. They gave a presentation on the methods and the software they use to track Cyber-Crime. The participants were so enthusiastic that the presentation became an interactive session and went beyond the stipulated time. More than 60 students attended the presentation.

IEEE-CS in collaboration with ACM and American Mentors Program (AMP), actively participated in the USF Homecoming. We had put up a float titled "Hack the World," showing networking across the world and making it well connected. We passed on candies and CD-Rs. We also participated in a Fundraising event at the Raymond James stadium during the homecoming.

The upcoming events of IEEE-CS include a presentation by "USF Center for Biological-Defense," on 13th November 2003 and an educational trip to Lock-Heed Martin Orlando office during the third week of November.

Brain Teaser Challenge Column

By Butch Shadwell

November BTC Solution If you feel like last month's BTC was a little non sequitur, don't blame yourself. Sometimes I just can't bring the story and the problem together. This month I received many good answers. As I recall I asked, "If we have a voltage source of 1 volt p-p at 159kHz, fed through a non-reactive resistance of 1000 ohms into a capacitive load of .001 uF, what is the phase difference between the current and the voltage waveform across the capacitor? Then what is the peak to peak voltage of the signal at that node?"

You know it is really a lot of pressure to make sure that I calculate these things correctly every month. I don't think I have made any errors in the ten plus years I have been doing these things. That must be some kind of record. So here goes... First you probably realized that the capacitive reactance at the frequency I selected was 1000 ohms. When we do the vectors, we see that this series network has a total reactance of $1000-j1000$, or 1414 ohms at -45 degrees, that is the current leads the voltage by that amount. Even though the current-voltage phase difference through the network is 45 degrees the current-voltage phase angle at the capacitor is 90 degrees (a little tricky). The voltage across the capacitor is equal to the $V_{in} * (X_c/X_t)$, where X_c is the capacitive reactance of 1000 ohms and X_t is the total impedance of $1000 * \sqrt{2}$, or 1414 ohms. Since the input voltage was 1 volt the voltage across the capacitance is 0.707 volts p-p, but I bet you already knew that. Also, my special thanks to Dean Edmonds of the Daytona Section for doing his usual outstanding job of sending me the best and most detailed answers.

December BTC My calculator is overheated from the last two BTCs, so this time let's do a little trivia. In my younger days, I had an occasion to visit one of my Arkansas cousins who was trying to make a killing, selling surplus military equipment. You younger folks may not know, but it was a common practice in those days for the military to sell expensive electronic parts and equipment for pennies per pound. It was amazing the good deals you could find. Well my cousin Otis, had just scored 317 pounds of little glass bulbs with five wires protruding radially around the outside of each one. The thing looked like it could have been the hub and spokes of a very tiny spinning wheel.

Anyway, Otis wanted me to help write the ad for the ham swap meet that was coming up and wasn't sure how to describe his bounty. I gave him a hint that these vacuum tubes were named for the fruit/nut of a common tree. With just this much information, can you tell me what the common name for this type of tube was? And to really impress me, what were the five leads connected to inside the envelope?

Reply to Butch Shadwell by December 20 at b.shadwell@iee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution

December 2003 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 5:30pm IEEE FWCS EXCOM Meeting TECO Hall	3	4	5 1-3:15pm USF 9 th Mini- Circuits EE Projects Poster Presentation; USF Tampa Campus	6
7	8	9	10	11 11:45am PES/IAS Talk: Power System Restoration After Hurricane Isabel, TECO Hall	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

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



Sections Congress 2005 is coming to Tampa!

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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