



The Suncoast Signal

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Volume 42 - No. 12

December 1999

Joint Section & PES/IAS Chapter Meeting “Lightning Protection Systems: An Update and a Discredited System Vindicated” Don Zipse - Distinguished IA Lecturer

DATE/TIME: Tuesday, December 7, 1999 - 12 Noon

LOCATION: TECO Plaza, 702 N. Franklin
Tampa, Florida - TECO Hall North

COST: \$10.00 per person – Members
\$5.00 per Student Members
\$20.00 per person - Non-Members

RESERVATIONS: Paul Leal, 813-635-1411
Reservations must be made no later than noon, Friday,
December 3, 1999

The end may be near for the two hundred year old method of using a Franklin rod to collect, control and convey to earth the awesome and destructive power of lightning. Replacing it may be the Charge Transfer System of preventing lightning strikes. This concept is a valid replacement for the Franklin rod method. The changes that are occurring in lightning protection technology include the renewed debate over sharp pointed versus blunt rods. The advent of a method for the detection and measuring of the magnitude of lightning strikes is replacing the old isokeraunic level charts. Promulgation of a standard for Early Streamer Emission, prevented by what can be considered an act of restraint of trade, has resulted in legal action being taken against the National Fire Protection Association and other. Mr. Zipse will be discussing these and other areas of lightning protection. Don't miss this rare opportunity to hear and discuss the advances in lightning protection with one of the few experts in the field.

Chair's Comment

by Al Rosenheck

With this issue of the Signal my term as Chairman comes to an end. For me it has been a rewarding and successful year and I would like to extend my gratitude and thanks to all the section and chapter officers who have made it so. I hope you agree that we have had an outstanding array of programs to meet our professional needs.

Please come join us for our annual awards banquet to meet and recognize those individuals who have volunteered their time and effort to make this such a great year. In addition, we will present awards to the outstanding high school science and math teachers as well as to award IEEE Millennium Medals to selected section members.

The awards banquet will be held Saturday evening, January 22, 2000, aboard the Starlite Princess, where we will cruise in elegance on the Inter-coastal Waterway. Join us for an evening of fine dining and dancing to a live band. Reserve the date for an evening of fun and by your presence demonstrate your appreciation of the contributions made by those being honored by the society.

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Students' Corner

USF IEEE Student Branch Chapter

by Brian Zilka

It has been another busy month, but with the end of November came finals and then the long awaited Christmas Break. We have given our web page a make over this past month to keep up with the changing time. We invite you to visit it at <http://org.eng.usf.edu/IEEE-EE/>.

We would like to wish everyone a Happy Holiday season and best wishes in the New Year. To all the students, we will be rejuvenated and ready to study hard in January.

Thank you for all your support.

USF IEEE Computer Society

by Steven Smith

The student chapter of the IEEE CS has had another busy month. Over the past four weeks, we've had speakers from Andersen Consulting, Publix, Engineering Computing, and Lucent Technologies. Upcoming speakers include representatives from Raytheon and Netwolves Incorporated. There has been an enthusiastic turnout to all of our meetings this month and we are proud to boast a regular attendance record of at least 50 members.

Over the past month, our branch also held a drawing for a brand new 19' Panasonic television set. The drawing generated over \$200 of profit for our branch. Congratulations goes out to Al Rosenheck, Chairman of the Florida West Coast Section, for having the winning ticket! I would like to extend my appreciation to all of our officers for their diligent selling efforts. They were essential in making the draw a success.

We invite you to observe our activities and progress by visiting our web site at: <http://www.csee.usf.edu/ieee-cs/>

Thanks for your attention have a great Christmas everyone!

Thanks for your time and I'll let you know how everything went next month!

IEEE-Florida West Coast Section

Nominating Committee Report

by John Twitchell

The Nominating Committee reports that the following Florida West Coast Section members are being recommended for offices during the year 2000:

Chair - Al Rosenheck

Vice-Chair - Quang Tang

Secretary - Jules Joslow

Treasurer - John Conrad

In accordance with the bylaws, these members shall be voted on by a voice at our December Joint Section meeting with PES/IAS Chapter (see page 1).

December Joint PES/IAS & ISA Chapter Meeting Forum - PC's & Electronic Communications-Discipline, Netiquette and Security

DATE/TIME: Monday, December 13, 1999
5:45 to 6:45 PM Social/Restaurant dining available
7:00 to 8:00 PM Program

LOCATION: Sheraton Inn Four Points Hotel Tampa East, 7401 E. Hillsborough Ave., Tampa
(813) 626-0999 (Off I4 exit at Orient Road)

SPEAKER: Dean Koulogianes
Sales Engineer with Key Controls, Inc., Tampa, FL

RESERVATIONS: Paul Leal, 813-635-1411

Coming in January!!!

IEEE-FWCS Section Meeting & Awards Banquet Starlite Princess Riverboat Saturday, January 22, 2000

Picture of Starlite Princess

Make one of the first entries in your year 2000 calendar the Saturday, January 22 meeting of the Florida West Coast Section. We will dine on smooth inland waters, dance, and honor our outstanding area high school math and science teachers, as well as our outgoing and incoming officers. The meeting will be held on the popular Starlite Princess, which will cruise the calm, peaceful inter-coastal waterway. Our good ship is fully enclosed and air-conditioned, so no matter on the weather, we shall travel in comfort and style.

All of the details will be in next month's Signal, including a very attractive door price! Please join us aboard the Starlite Princess for an evening of fun.

IEEE MTT/AP/ED December Meeting

"The Realization of Large Inflatable Array Antennas"

DATE/TIME: Tuesday, December 7, 1999 6:00 PM

LOCATION: Raytheon Systems Company St. Petersburg,
1501 72nd Street North, St. Petersburg, Gill Robb Conference Room

RESERVATIONS: Leave name & country of citizenship with Greg Bonaguide at (727) 302-3367.
Join us for dinner after the meeting. Bring a guest; non-members welcome!

SPEAKER: Dr. John Huang, Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive, Pasadena, California 91109 USA

ABSTRACT:

Large mechanically deployable antennas have been in great demand over the past two decades for a variety of space applications, such as satellite/mobile communications, radiometry, synthetic aperture radar (SAR), very-long-baseline interferometry, microspacecraft, etc. Investigators in these fields identified the need for antenna sizes up to tens of meters, and operations in both microwave and millimeter-wave spectra. The selection criteria common to all of the users are low cost, small mass, high reliability, and acceptable surface precision. A unique class of structure, namely the inflatable antenna, has recently emerged that offers the potential of satisfying all the above criteria.

The first inflatable type of antenna that has been studied is the curved parabolic reflector. It offers the advantages of design simplicity and wide electrical bandwidth. However, it suffers from difficulty in maintaining its specifically curved parabolic surface, especially over a long period of time in the space environment. Any uneven force formed in space will cause the large thin-membrane surface to distort. The second inflatable type, a more recent product, is the inflatable microstrip array antenna. The microstrip array antenna allows its array elements to be printed on thin membrane materials for inflatable structure formation. Since the microstrip array's flat aperture is known as a "natural surface," it is much more reliable to maintain this flat inflatable surface in space with the required surface tolerance. This is the primary reason, despite its well-known narrow bandwidth (<10%) characteristic, that the microstrip array is being studied for inflatable antenna applications. In addition, an array antenna allows the potential for wide-angle beam scanning, which is not easily achievable by a parabolic-reflector antenna. Two different kinds of inflatable array antennas have recently been developed at JPL. One is a 3.3 m x 1.0 m L-band dual-polarized SAR array, and the other is a one-meter X-band circularly polarized microstrip reflectarray. The mechanical characteristics, RF measurement results, and future challenges of these two types of inflatable array antennas will be presented in this lecture.

BIOGRAPHY:

John Huang received his BSEE degree from the Michigan Technology University in 1970, the MSEE degree from the University of California at Berkeley in 1971, and a Ph.D. in Electrical Engineering from the Ohio State University in 1978. He worked a total of six years at the Naval Weapons Center, China Lake, California, from the period of 1971 to 1980. At China Lake, his primary duties were design and development of conformal antennas, and RCS analysis by the GTD technique. Since 1980, Dr. Huang has been with the Jet Propulsion Laboratory, where his antenna research activities involve microstrip antennas, mobile vehicle antennas, spacecraft antennas, and phased arrays. He has pioneered the development of several innovative mobile antennas, printed microstrip antennas, and the microstrip reflectarray antennas. He is currently initiating the development of space-borne inflatable array antennas. Dr. Huang, an IEEE senior member, has published more than sixty journal and conference papers, three book chapters and articles, and received three US patents, and more than fifteen NASA Certificates of Recognition Awards. He has also been the invited speaker in various international symposia and short courses.

RESERVATIONS:

Leave name, number and country of origin with Greg Bonaguide at:
Phone: 727.302.3367
e-mail: gmba@eci.esys.com

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 the 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. The meeting will be held in the GILL ROBB WILSON CONFERENCE ROOM - 2ND FLOOR - ENGINEERING

Brain Teaser Challenge Column

by Butch Shadwell

November BTC Solution

Of course Todd's soda pop express was to be propelled using Newton's Third Law of Motion, "For every action there is an equal and opposite reaction". Number one says that "A body at rest remains at rest unless acted upon by some force, and a body in motion will remain in motion at the same speed and direction unless acted upon by some force", and number two says that "That the acceleration of a body is equal to the force applied divided by the mass of the object". However, Newton may be better known for his thoughts on gravity, and recipes for apples.

December BTC

I promised that this month would include a math problem, so here it is.

Little Johnny Freebish lived in a community that had been insulated from the evil in the world. Neighbors left their doors unlocked, there was no graffiti on the local high school, and ladies underwear was rarely missing from the clothesline when left out over night. Life seemed idyllic, and Johnny and his parents had nothing to be afraid of until, the carnival came to town.

For those of us who pay attention to such things, it is known that carnies do not necessarily have small hands. But, it is a little known fact that they all have six toes on their left foot. A constant source of embarrassment for them when they attend grape stomping events.

After just two days, the word had gotten around that the carnival had a crooked ring toss game. Johnny had a theory that when the authorities came to check it out, the carnie operating the game would push a button that would activate a mechanism to quickly replace all of the soda bottles with some that had smaller necks. And then when the regular folk came by, they would have the large neck variety in place. Johnny figured the switch must occur very quickly and he needed a device to create a very short time signal. The solution was an RC timer with a voltage threshold comparator. Johnny only had some 1megaohm resistors and a .1 uF capacitor. Johnny would press and hold a button and when the comparator saw the capacitor voltage rise from zero to 2 volts, an LED would light. The power supply was 5 volts. What is the simplest configuration of resistors with this capacitor that would give Johnny an 80 Millisecond timer (+/-1%)? This is what I call a brain teaser!

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.

2000 Review Seminars For PE Electrical and EIT/FE April 14 & 15 Examinations

Review seminars for the PE (Electrical) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will begin:

Tuesday, Jan. 11 for the EIT/FE Exam

Thursday, Jan. 13 for the EE Exam

Seminars are conducted from 7-10 P.M. (Tues or Thurs) for ten weeks. The registration fee is \$200 and includes text. The seminars will tentatively be held at the University of South Florida Bayboro campus.

To register, contact: Alan M. Keith, P.E., PO Box 14042, (EC51), St Pete, FL 33733.

Alan.M.Keith@fpc.com

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December 1999 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1		1	2	3	4
5	6	7 EXCOM Mtg TECO Data Ctr 6:00 PM PES/IAS Mtg MTT/AP/ED Mtg	8	9	10	11
12	13 Joint ISA & PES/IAS Meeting Sheraton Inn Four Points Hotel 5:45PM	14	15	16	17	18
19	20	21	22	23	24	25
26	27	29				

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