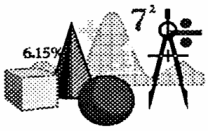

SPARKS

Daytona Section Newsletter
NOVEMBER 2013

NOVEMBER/DECEMBER 2013 MEETINGS

MONTHLY SECTION MEETING
Thursday December 5th at the Halifax River Yacht Club, 6:00 PM
331 South Beach Street, Daytona Beach, Florida 32114

PRESENTATION TOPIC **–** Engineering the Holidays
*****

TECHNICAL MEETING
Friday December 6th at Embry-Riddle Aeronautical University, 12:30 PM
Lehman Bldg, Rm 170, 600 S Clyde Morris Blvd, Daytona Beach, FL

PRESENTATION TOPIC **–** Electric cars
*****

COMPUTER SOCIETY PRESENTATION
Tuesday November 26th at Embry-Riddle Aeronautical University, 12:45 PM
Lehman Bldg, Rm 170, 600 S Clyde Morris Blvd, Daytona Beach, FL

PRESENTATION TOPIC - Sacred Cows in Video Game Design
*****

MEETING NOTE – Our section meeting schedule has been changed.
See the last page of the newsletter for times.

CHAIRMAN'S REPORT
Well, attendance at our regular meetings hasn't changed much, even with a profound talk on beer. But I, for one, and all the others who were there, had a good time. The point being, why should those of us who attended have all the fun, what about the rest of our members? We'd really like to see more members attend our meetings. It's not just because we like you, but really, engineering is supposed to be fun. Think back to your college days, doesn't it seem unreasonable to be sitting home when other engineers are partying?

Seriously, the talk on beer and its history last month was very interesting. Maybe it is not something you would put on your resume, but if you are not looking, you would have picked up facts that would make you the guru the next time you share a pitcher with your colleagues. This is very important if you do field tests. After a hard day or adjusting instruments, aligning antennas and starting recorders, all engineers need beer.

Our next meeting is another opportunity to experience the fun of your engineering talents. Our Vice Chair has raised the issue of Holiday Technology, a field which desperately needs further analysis. I myself am planning an in depth investigation of the optimum wavelength of Rudolph's "red" emissions. While we all know that it was originally chosen to penetrate fog (3 to 30 micron water droplets) we must consider CO_2 and O_2 scattering. In the Arctic there may be ice crystals creating diffractions. There is much to be considered and analyzed. Still another major consideration is whether Santa uses night vision goggles. Assuming that Santa needs to navigate this may be a factor but in this age of GPS all one needs is the LAT, LON of each little kid. Then all we need is to keep from running into other things like airplanes and LEO satellites. Can we leave it up to Rudolph to avoid collisions? All of these issues need some serious research.

If you want something less seasonal come to the meeting on electric cars the next day. I think it would be worthwhile just to get a ride in a Volt. Last year Professor Liu gave a very interesting talk on electric propulsion. Here is a chance to see it in action. Come out, come out wherever you are. You may have fun and you may learn something.

Tracy

NOVEMBER/DECEMBER PROGRAMS

ENGINEERING THE HOLIDAYS

Our holiday meeting on December 5th is meant to be an enjoyable social get together with some light hearted presentations applying engineering principles and/or solutions to some holiday topics such as those presented below.

For the meeting, each member is encouraged to provide Jeanette Barott (barottj@erau.edu) with a short summary for a brief (five minute) presentation on engineering the holidays. Topics are along the lines of the following: Santa's Sleigh and NextGen, bioflourescence and Rudolph's nose, the micro-economics of elvish labor, travelling salesman and the three wise kings, green energy for holiday lights, etc.

Noteworthy presentations may be published in the January issue of the prestigious Engineering publication, SPARKS – Daytona Section Newsletter. This could be a definite resume enhancement item.

TECHNICAL PROGRAM

ELECTRIC CARS

A technical program will be held on December 6th at Embry-Riddle. The presentation will discuss electric vehicles, including battery electric cars, plug-in hybrids, and extended-range hybrids, which are a growing segment of automotive markets worldwide. This talk discusses the energy storage and drive train systems of several electric vehicles including the Tesla Model S (battery electric) and Chevrolet Volt (plug-in hybrid). Demonstration rides in the Model S and the Volt will accompany the talk.

Contact Jeanette Barott, Daytona Section Vice Chair at barottj@erau.edu for information.

TECHNICAL PROGRAM SPEAKERS

Christopher Hockley holds a B.S. in Aerospace Engineering and an M.S. in Mechanical Engineering and is currently working towards a Ph.D. in Aerospace Engineering. He has been an active member of the Robotics Association at Embry-Riddle since its inception and has led and advised teams involved in all AUVSI competitions. Christopher has also been principal investigator in multiple design contracts with the Boeing Company, and has had his work on a digitally manufactured monocopter featured in multiple magazines. Christopher's current research interests focus on multi-disciplinary optimization of direct

digitally manufactured unmanned aerial vehicles, sense and avoid techniques using fused radar and multispectral imaging with target classification, and the development and testing of ERAU's Maritime RobotX Challenge entry.

Dr. Terry D. Oswalt, an astronomer, is Chair of the Physical Sciences Department at the Daytona Beach campus of Embry-Riddle Aeronautical University (ERAU). He earned his Ph.D. in Astronomy at The Ohio State University specializing in studies of binary star systems, late stages of stellar evolution, minor planets, and comets. During his career Dr. Oswalt has taught a wide variety of physics and astronomy courses and served in several administrative posts, while continuing his primary research interest in studies of collapsed stars called white dwarfs.

Dr. Oswalt is the founding Chairman of the Southeast Association for Research in Astronomy (SARA), a consortium of 12 universities that operates remote-access telescopes at Kitt Peak National Observatory near Tucson, Arizona and Cerro Tololo Interamerican Observatory in Chile. In 2014 SARA will assume operations of an additional telescope in the Canary Islands, enabling nearly 24-hour access to the entire night sky.

The Daytona Beach campus of ERAU has recently been elected the new administrative institution for SARA. Dr. Oswalt also has been director of the SARA summer internship program, which brings undergraduate students from around the U.S. to do research at the SARA facility at Kitt Peak each summer. In recognition of his astronomical research and work in founding the SARA consortium, Dr. Oswalt was named the 2010 Florida Academy of Science Medalist.

Dr. Oswalt is a Harlow Shapley national lecturer for the American Astronomical Society and has been an elected councilor for the Physics and Astronomy Division of the Council on Undergraduate Research for over ten years. He has been a program officer for Stellar Astronomy & Astrophysics at the National Science Foundation. Dr. Oswalt has written over 200 scientific articles and edited nine astronomy books, most recently a six-volume series of astronomy reference books "Planets, Stars & Stellar Systems," which was released in January 2013 by Springer as part of the Major Reference Works series.

Mack McKinley is an environmental engineer in the Maitland, Florida office of ARCADIS, an international company that provides consulting, design, engineering, and management services in the infrastructure, water, environment, and building fields. He currently serves as resident project representative for ARCADIS infrastructure and building construction projects in Tavares, Florida, and he has been design engineer on potable water treatment and distribution, and wastewater collection and treatment projects. He received his bachelor's degree in environmental engineering from the University of Central Florida in 2004. Mr. McKinley has long had an interest in novel automotive technologies, and he is currently the owner of a 2012 Chevy Volt.

COMPUTER SOCIETY PRESENTATION

SACRED COWS IN VIDEO GAME DESIGN

Video games are now a major pastime and a great deal of time, effort, and money are spent in the design of those games. Yet the bins of many businesses are filled with failed games that followed tried and true methods. This talk focuses on a framework for game design and how that framework leads to some industry common practices that impact behavior and gameplay both in positive and negative directions. Discussions of mechanics, design, and aesthetics will be applied to specific examples in various gameplay genres to illustrate concepts and the talk will conclude with some suggestions for how to induce behavior in alternate directions that will move away from the common practices in design.

Presenter- Shawn Doherty, Department of Human Factors & Systems

Information Contact- Dr. Keith Garfield at garfielk@erau.edu

ANOTHER TALE FROM THE OLD PROFESSOR

THE HAUNTED HOUSE

Way back when I was a teenager my good friend and ham radio buddy Don and I decided to operate a radio contest on the weekend. We needed another antenna for the 80 meter amateur radio band which is 132 feet in length. The only way to fit this rather long antenna on Don's small lot was to go from a tree in the back yard over his house and to a tree in the front yard. The reason Don didn't have an 80 meter antenna is his parents would never approve of such an installation. Fortunately Don's parents were away for the weekend so we climbed the trees and put up a temporary antenna that passed over the house.

We started the contest at 0000 UTC which is before sunset during the summer months in New Jersey. The 80 meter band is a night time band so we didn't start using the new antenna until dark. Don and I were sharing the operating and logging chores from the basement radio shack and after a while I needed to use the "facilities". We had been in the basement from the start of the contest and it was now dark and I turned on the kitchen light as I emerged from the basement and continued on to the second floor bathroom. Strangely, the light at the top of the stairs was on so I continued without throwing any switches. Half way up the stairs the light went out. The handrail guided me to the top of the stairs but by the time I got there the hallway light was back on again. I could see the bathroom at the end of the hallway and I was able to make it there. But there was a strangeness of the light; it was not only going off and on but there was a strange flickering of the light. It was downright ghostly. The place must be haunted was my thought. Haunted or not I needed to use the bathroom; which I did.

On my way back to the basement the ghostly light seemed to know when I needed the illumination the most. As I descended the stairs, after a few seconds of taunting flickering the light went out half way down. Back in the basement I told Don of my experience and he went upstairs as I operated the equipment and reported the same experience but he noted that only the stairway light was flickering. After some discussion Don and I came up with a theory; the old house had "knob and tube" wiring. It was typical to have one side of the line go up one side of the house from the fuse box in the basement and the other side of the line goes up the opposite wall. To connect a load such as a ceiling lamp, a wire would go from one side of the house through the rafters or floor to the fixture where it would be joined by a wire from the opposite side of the house to complete the circuit. But, the switch for the stairway light was a "two way switch" one at the bottom of the stairs and another at the top. Therefore there was a wire that went from the bottom of the stairs from the open pole of the switch through the closed pole of the upper switch and to the bulb which would be an "off" position of the switches. The other side of the bulb went to the back of the house to the other side of the line. The bulb was connected to a dipole antenna which was oriented from front to back of the house just like the temporary 80 meter antenna which was only 15 feet above the second floor hallway light.

We were running the maximum legal power for the contest, maybe a little more than legal, which was 1000 watts to the final amplifier but we were using amplitude modulation back in those days which would have peaks of 4000 watts. Sufficient power was being induced into the bulb to light it to near full brilliance and the modulation produced the flickering. Of course that power was being wasted lighting the lamp and not radiating. We fixed that problem very easily by simply throwing the switch at the top of the stairs and disconnect the bulb from one half the dipole and breaking the circuit and our ghosts left us.
We finished the contest with pretty good results and got the antenna down the next morning before mom and dad got home.

Epilogue: Exposure to this level of RF power is not healthy and the FCC now has regulations limiting RF exposure from amateur radio stations. Don and I were safe in the basement two floors down and no one was in the house but us. The antenna had to come down before his parents returned so no harm was done and Don and I learned another valuable lesson on antennas.

Al Helfrick, Ph.D

DAYTONA SECTION SHIRTS

We are pleased to offer Daytona Section polo shirts for our Section members. The shirts are embroidered with the IEEE Logo and DAYTONA SECTION on the left and your name and grade, if desired, on the right. The shirt is a high quality 5 oz, 65/35 poly/cotton pique in Royal Blue with white embroidery. Available in S - 2XL in men's as well as ladies sizes. Price is $28, including tax, for S-XL size's, 2XL size is $4 additional.

For more information or to order shirts contact
Allan Jusko
3706 Longford Circle
Ormond Beach, FL 32174
386-671-3706 or a.jusko@ieee.org

Indicate shirt size and name and grade if desired. Shirts must be paid for before ordering, typical turn around time is 2 weeks. Arrangements can be made to pick up shirts or have them shipped to you.

DAYTONA SECTION COFFEE MUGS

The Daytona Section has available coffee mugs with the IEEE Daytona Section Logo and are available for $7.00. Purchase one or more to show you support and pride in our Section.

Contact Roger Grubic at 386-441-8958 or roger_grubic@ieee.org for more information.

EDITORS NOTES
The **SPARKS** newsletter is also available on our website **http://www.ieee.org/go/daytona**

Region 3 website	**Melbourne Section website**	**Orlando Section website**
http://www.ewh.ieee.org/reg/3/	www.ieeemelbourne.org	www.ieee.org/orlando

FUTURE MEETING DATES:
The remaining meeting dates for the 2013-2014 sessions are: Jan 23rd, Feb 27th, Mar 27th and Apr 24th.

2013 SECTION OFFICERS

Chair – Tracy Wichmann
386-673-2753 tracy@alum.mit.edu

Vice Chair - Jeanette Barott
386-226-7405 barottj@erau.edu

Treasurer - Charlie Husbands
386-760-7163 chusbands@ieee.org

Secretary – Allan Jusko
386-671-3706 a.jusko@ieee.org

Membership Development – Dr. Ilteris Demirkiran
386-226-6988 demir4a4@erau.edu

Publicity/Media – Roger Grubic
386-441-8958 roger_grubic@ieee.org

PACE Representatives –
Dr. William Barott
386-226-8973 barottw@erau.edu

Jeanette Barott
386-226-7405 barottj@erau.edu

Awards - Dr. Jianhua Liu
386-226-7713 liu620@erau.edu

Life Member Chair – Ron Gedney
386-478-1204 r.gedney@ieee.org

Computer Society Chair – Dr. Keith Garfield
386-226-7081 garfielk@erau.edu

Student Activities, ERAU - Dr. William Barott
386-226-8973 barottw@erau.edu

ERAU Student Chapter Chair- Justin Weltmer
weltmerj@my.erau.edu

Student Advisor, BCU- Dr. Xiaohe Wu
386-481-2673 wux@cookman.edu

BCU Student Chapter Chair- John Gibson
678-497-7993 john.gibson@students.cookman.edu

Webmaster – Charlie Husbands
386-760-7163 chusbands@ieee.org

SPARKS Editor - Allan Jusko
386-671-3706 a.jusko@ieee.org

NOVEMBER/DECEMBER 2013 MEETING

Thursday December 5th at the Halifax River Yacht Club
331 South Beach Street, Daytona Beach, Florida 32114
Just south of the Fire Station at the corner of Beach and Orange

*****NEW TIMES*****

AGENDA
5:30 PM Cocktails
6:00 PM Dinner
7:00 PM Program

TOPIC – Engineering the Holidays and social gathering

December 5th Dinner Menu

Rosemary Pork Tenderloin

Roasted Turkey Breast with dressing and cranberry sauce

Salmon with cucumber dill sauce

All entrees served with whipped sweet potatoes, vegetable du jour rolls and butter, house salad, coffee and tea

Unless noted, dinner entrées are $20.00 each. Students $10.00 each

A Veggie plate is available on request for $10

Please contact Allan Jusko with your dinner selections or for program information.

Selection's must be in by Wednesday the 4th at noon so the club has time to order and prepare

Allan Jusko Secretary/Editor 386-671-3706 a.jusko@ieee.org

If you make reservations and are unable to attend, call at least 12 hrs prior to the event to cancel. The Section is charged for all dinners ordered, please let us know if your plans change

---