



SPARKS

Daytona Section Newsletter
JANUARY 2014



MONTHLY SECTION MEETING

Thursday January 23rd at the Halifax River Yacht Club, 6:00 PM
331 South Beach Street, Daytona Beach, Florida 32114

PRESENTATION TOPIC – Quantum information systems and adaptive control

MEETING NOTE – Our meeting schedule can be seen
on the last page of the newsletter

CHAIRMAN'S REPORT

Happy New year to you all! I hope your holiday was a happy as mine. My resolution, continuing from 2013, is that if it is not broken I shall not fix it. Now our Section is not broken. Thanks to Janette our meetings seem to be better attended and the topics are enjoyed. We are in good financial shape thanks to the Safety Workshop. Our Radio Telescope project is doing well thanks to Charlie, Al, Hugh and all the others that worked on it. We engineers do a thing called "tweaking". It's that compulsive urge to optimize. So although I don't plan to fix anything here are a few tweaks I might consider.

First we need to strengthen our member development. There are data available on new or silent members in our section and we need to make better contact. We need to get them involved.

With the construction of the new Museum Planetarium, plans seem vague and so what we need to do about the telescope needs to be determined.

Maybe we could find out and maybe we could invite some of the Museum people to one of our meetings - Zack and Seth in particular.

With respect to meetings, I like the ERAU programs. The electric vehicle one was very interesting. I wish I had the time to see the cars. I was not at the last Yacht Club meeting in December but I did send a video. I heard it was well attended and It seemed to be starting well when I stopped in (I was in the building on the way to a conflicting meeting) before it began.

As those who saw my video can attest, it was not very professional. In fact I threw it together rapidly. I had downloaded a video editor and used it to put this brief movie together from clips taken with my camera. The clips don't have to be taken in order and can be retaken if they turn out really bad. The video editor is very good. You can insert still images and put fancy transitions between clips. You can add music or voice over and really make a production of it. Clearly I did none of that. If I ever do it again I must learn how to focus the camera when I bring it in close to my computer screen and how to move my pointer while filming.

Now the tenor of that last December meeting was, I think, a good thing. It was mainly a social/party meeting and when I left, people seemed to be enjoying themselves - in the holiday spirit. So maybe

Jeanette is on to a good thing. We have some mainly social meetings and some mainly technical meetings. I went to the electric vehicle meeting the next day and it was well attended and very interesting. Maybe the pizza had something to do with it.

The best to you all,

Tracy

JANUARY PROGRAM

Many control systems are inherently infinite dimensional when they are described by partial differential equations. Currently there is renewed interest in the control of these kinds of systems especially in flexible aerospace structures and the quantum information field. Since the dynamics of these systems will not be perfectly known, it is especially of interest to control these systems adaptively via low-order finite-dimensional controllers. When systems are subjected to unknown internal delays, they are also fundamentally infinite-dimensional in nature. In our work, we have developed direct model reference adaptive control and disturbance rejection with very low-order adaptive gain laws for large-scale finite dimensional systems as well as infinite –dimensional systems.

This talk will focus on the effect of infinite dimensionality on the adaptive control approach. To illustrate the utility of the control law, I will mention some applications in partial differential equations for unstable linear diffusion and aerospace structures. But then I would like to go on and consider some issues in the control of quantum mechanical systems, in particular the Schrodinger wave equation and Dirac symmetric hyperbolic systems for relativistic fields.

The topics here may sound highly technical, maybe even forbidding, and to some extent they are. But I hope to give you a version of them that will be reasonably accessible and will still remain as exciting and attractive to you as they are to me.

OUR SPEAKER

Dr. Mark Balas is presently distinguished faculty in Aerospace Engineering at Embry-Riddle Aeronautical University. He was the Guthrie Nicholson Professor of Electrical Engineering and Head of the Electrical and Computer Engineering Department at the University of Wyoming. He has the following technical degrees: PhD in Mathematics, MS Electrical Engineering, MA Mathematics, and BS Electrical Engineering. He has held various positions in industry, academia, and government. Among his careers, he has been a university professor for over 35 years with RPI, MIT, University of Colorado-Boulder, and University of Wyoming, and has mentored 42 doctoral students. He has over 300 publications in archive journals, refereed conference proceedings and technical book chapters. He has been visiting faculty with the Institute for Quantum Information and the Control and Dynamics Division at the California Institute of Technology, the US Air Force Research Laboratory-Kirtland AFB, the NASA-Jet Propulsion Laboratory, the NASA Ames Research Center, and was the Associate Director of the University of Wyoming Wind Energy Research Center and adjunct faculty with the School of Energy Resources. He is a life fellow of the AIAA and a life fellow of the IEEE. Probably he will be most well known for the fact that his daughter Maggie is the prominent Denver drum and bass DJ known as Despise.

ANOTHER TALE FROM THE OLD PROFESSOR

IF IT MOVES PICK IT UP....IF IT DOESN'T PAINT IT

I had, what I often describe as, “a very short but intense military career”. I was a member of the Army of the United States, which is different than the United States Army. (It is left as an exercise for the reader to research this distinction.) I spent 13 months in Viet-Nam and thus the intense descriptor.

One very valuable lesson I learned while serving in the Army is who you know is more important than what you know. Most members of the Army figure this out but what was often overlooked is the list of who you know is not so obvious. For example, knowing the commanding officer is OK but the supply sergeant is better. The mess sergeant is another good person to know.

In 'Nam I served in a small detachment of 4 soldiers of which I was the NCOIC, the non-commissioned officer, (sergeant), in charge. We ran an HF radio station which was located at an Army Corps of Engineers brigade headquarters. Our company was several miles away. We kept a low profile and were essentially forgotten by our company. (which is good)

The brigade commanding general had monthly lunches for the officers in the area to discuss various matters. Our company commanding officer, CO, attended these luncheons. On one occasion our brand-new CO decided to pay a visit to the forgotten detachment before continuing on down the road to the general's luncheon.

I was off duty and lying on a couch reading a magazine when he arrived and he introduced himself as my new CO and we had a short chat about what we did at the radio station. Then he pointed out the building needed painting and left for lunch.

But here was a big problem. The building was not the property of the signal corps but the engineering brigade and our CO cannot order the engineer's building painted. However, I called my good friend the supply sergeant and told him of my situation." No problem", says the supply sergeant. It happened that he had a bunch of local Vietnamese workers with not much to do so he sent no less than 10 people with cans of green paint, (green, of course, it's the Army), and they climbed all over my Quonset hut hardly using ladders and within a half hour or so the building had a new coat of paint.

Shortly after the painters left I heard the screeching of tires and looked out to see my CO, returning from the luncheon, directing his jeep driver to "stop now!". Then "back up!". He could see me through the screen door still on the couch reading a magazine. It was clear from his facial expression that he couldn't believe the building was sporting a new coat of paint in the time it took him to eat lunch.

A few weeks later our first sergeant, Top, as they are called also stopped by for a visit and he admired the new paint job. Then he told me what happened a few weeks before. The CO related to Top his experience with the painted building and asked Top how I did things like that. Top was amused by this question from his young, new lieutenant but refrained from laughing and said, "I don't know how he does it but my advice to you is don't mess with him".

Apparently the CO took Top's advice as I never saw the CO again. Oh, I would see his jeep going to the general's dining room every month but he just quietly passed by, which was OK by me.

Al Helfrich, 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

<http://www.ewh.ieee.org/reg/3/>

Melbourne Section website

www.ieeemelbourne.org

Orlando Section website

www.ieee.org/orlando

FUTURE MEETING DATES:

The remaining meeting dates for the 2013-2014 sessions are: Feb 27th, Mar 27th and Apr 24th.

ENGINEERS WEEK 2014

ERAU Engineers Week Keynote Address, Tuesday, February 18, 2014



Dan Korte was President of the Rolls-Royce Defense business and was responsible for the strategy and performance of the \$4 billion global defense aerospace business, encompassing 5,500 employees at operations in 17 countries. The business serves 160 customers in 103 countries with over 18,000 engines in service around the world. Dan joined Rolls-Royce in August 2009 and was based at the North American corporate headquarters in Reston, VA.

Dan has more than 20 years of experience in design and systems engineering, integrated product team leadership, as well as supplier, procurement and program management experience.

Prior to joining Rolls-Royce, Dan was Vice President and General Manager for Global Strike Systems, a division of the Boeing Military Aircraft business.

Dan first joined Boeing in 1985 as an electronics engineer. Since then he has held a series of increasingly senior positions to include: V-22 Program Manager and Vice President- Supplier Management & Procurement.

Dan has a BS in Electrical Engineering from Southern Illinois University and an MBA from Lindenwood University, Missouri. He is also a graduate of the Strategic Thinking and Management for Competitive Advantage Program at the University of Pennsylvania's Wharton School of Business. Dan is an active member of the community, serving on the board of directors for United Way of Greater St Louis, on the College of Engineering Industrial Advisory and Foundation boards at SIU Carbondale; and as a member of the board for the St. Louis University Masters of International Business program.

In light of Engineering week, Dan will discuss what has made technical professionals successful in transition from the academic to the corporate world, including insights into successful areas of focus while still in college, how to set oneself apart in a job search and then the factors that can help lead to a successful career. In leading organizations of thousands of engineers, Dan will discuss what sets some apart as leaders in technical and business settings and conversely what are potential career derailers.

The presentation will attempt to be "*PowerPoint Light*" and instead "*Discussion Heavy*". Thus, interactive dialog will be encouraged.

Contact Jeanette Barott at barottj@erau.edu for more information.

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JANUARY 2014 MEETING

Thursday January 23rd 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

AGENDA

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

TOPIC – Quantum information systems and
adaptive control

SPEAKER - Dr. Mark Balas

January 23rd Dinner Menu

Beef Tips with roasted potatoes and veg du jour

Chicken Parmesan over linguini and veg du jour

Fried Shrimp with sweet potato fries and veg du jour

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 22nd 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**
