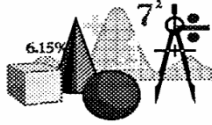




SPARKS

Daytona Section Newsletter
September 2021



<https://r3.ieee.org/daytona/>

SECTION MEETING

Thursday September 23rd
7:00 – 8:30 PM

MicaPlex Building in Embry-Riddle Research Park
1511 Aviation Center Pkwy
Daytona Beach

NEW MEETING VENUE

Our Section has a new meeting place for the September meeting. It is in the MicaPlex building which is located just south of the campus of Embry-Riddle. The venue and our options for future meetings will be discussed at the September meeting.



The new location being near Embry-Riddle makes it easier for students to participate in our meetings and provides a more private atmosphere. There are ample meeting rooms for our needs, and parking is not a problem at that time of day.

Below is a screenshot of the MicaPlex, which is located at the intersection of S. Clyde Morris Blvd and Aviation Center Pkwy (the other side is Bellevue Ave)

just south of the ERAU campus.

We need to use the building entrance at the north east side of the building, shown in the area of the light green circle in the map shown below. There are ample parking spaces at the south side of the building, indicated by the small red arrow, if you cannot find one close to the entrance. Dr. Liu or Dr. Rojas will be at the entrance to open the door before the meeting as it is normally locked.

For those planning to attend, because of security requirements, attendees are asked to notify us with their names so a list can be provided to facilitate the process. You can register at the door, but letting us know beforehand will speed up the process.

You can respond by email or phone to: Al Jusko, a.jusko@ieee.org or 386-671-3706



CHAIR'S REPORT

As we write this Shawn and his family are down with the COVID. They seem to be coping and we hope they will be well and he will be able to attend the Sept. 23 meeting.

SEPTEMBER'S MEETING / MEMBER ASSEMBLY

Rather than our usual presentation by a speaker, the title "Member Assembly" captures the nature of this meeting more accurately. It will be more of a "What have we done recently and where are we going" meeting. We are looking for feedback and ideas from the membership.

We will have a couple of issues to discuss:

- Dr. Hugh Ward and Dr. Liu will give a short presentation regarding the current status of the SRT and future work.
- Ron Gedney will give a presentation regarding the tremendous changes underway in the electrical and electronic industries leading to a proposal for future meeting programs. The NEW IDEAS AND PROGRAMS section below contains our ideas.
- Other topics.

For those wanted to attend virtually, we will Zoom the September meeting. You can join the Zoom Meeting at:

<https://erau.zoom.us/j/94869950225> Meeting ID: 948 6995 0225

Time: Sep 23, 2021 07:00 PM Eastern Time (US and Canada)

NEW IDEAS AND PROGRAMS

In the August Newsletter we talked about changing our technical programs to look at the electrical and electronic programs of the future. Our whole industry is undergoing the most dramatic change we have seen since the integrated circuit was introduced to production some 60 years ago.

IEEE has formed a committee specifically to address new technologies, especially when they fall across Technical Society boundaries. “The IEEE Future Directions Committee (FDC) seeks to identify, develop, and promote projects that are value-added for IEEE and its members, bringing together multiple Societies and Councils to provide broad and deep perspectives on a particular topic, application, or technology. These projects range from short-term activities to reach a specific goal to Future Directions Initiatives seeking longer-term cross-collaborative engagement among industry, academia, and government striving to develop and deploy various future technologies.”

The FDC lists 12 conferences, seminars or technical “events” that will be held by various IEEE bodies between now and Dec. 31, 2021, to address future technologies like “Smart Cities”, Blockchain, massive MIMO (multiple-input multiple-outlet), Healthcare, and 5 G.

The Electronic Packaging Society (EPS) lists six major markets in the introduction to their Roadmap:

1. The Internet of Things (IOT) leading to the Internet of Everything (IOE)
2. Smart Mobile everywhere with powerful cell phones (containing outstanding cameras)
3. Migration of logic, data and applications to the Cloud
4. Artificial Intelligence and Autonomous Vehicles
5. Wearables and Healthcare
6. Defense and Aerospace

We believe that Section meetings that could provide us with some insight into these new technologies – without going into great depth - would be of broad interest to our members. We also hope to attract more student interest – particularly from ERAU and Bethune Cookman students, where we have active student chapters. If we are successful, the presentations will be of interest to both you, our members, your significant others, and sufficiently challenging to get more members to attend the meetings and see what we are all about.

Ron Gedney, LF
Secretary

BURNS SCI-TECH HIGH SCHOOL GROUND BREAKING

Because of our Section's involvement with our small radio telescope at the Burns Sci-Tech Charter School in Oak Hill, we were honored to be invited to a ceremony on August 27th celebrating its 10th anniversary and the ground breaking for its new High School. Ron Gedney, Dr. Hugh Ward and Al Jusko represented the Section for the ceremony. Dr. Liu was unable to attend due to conflict with his teaching duties.

The school currently has about 800 students in grades 1 through 10 and a waiting list of over 1400 students wanting to get in. They are adding grade 11 this year and grade 12 next fall.



ANOTHER TALE FROM THE OLD PROFESSOR

THE BOSS AND THE BARN GANG

It's 1909 and a half dozen or so moonlighting engineers, known as the "Barn Gang", are working evenings and weekends in a Dayton, Ohio barn on improvements to the automobile to make it safer and more drivable.



The barn where the gang worked was saved from the wrecking ball and moved to its current location at Moraine Farms, the home of DELCO's co-founder Edward Deeds

In 1909, automobile engines were started using a hand crank. If the spark was not retarded enough, which was a manual control, the engine could misfire and essentially try to run in reverse. The crank had a mechanism that when the engine started, the crank would automatically be disconnected from the engine. But if the engine ran in reverse, the crank would not disconnect and rotate with the engine. A misfired engine would only run a half revolution or so because the reverse running engine would not intake fuel to keep it running. However, even a half revolution of the crank would be enough to injure the motorist; usually breaking a forearm. The Barn Gang was working to create a self-starting engine and eliminate the crank.

Various ignition systems were used in 1909-era automobiles. Many used a magneto but magnetos were not the best choice for engines using hand-cranking to start. The Ford model T used a rather unique ignition system using a buzzer-like device called a trembler that fed a transformer and generated high voltage for the spark plug. Each of the 4 cylinders had its own trembler which were usually run by dry cells during cranking. A magneto would take over the task of providing pulses for the transformers once the engine started. But the switchover was manual, not automatic. Unless the dry cells were disconnected after the engine started, they would quickly discharge. Even used only during cranking, the lifespan of the dry cells was short. Allowing the dry cells to discharge would leave the motorist with a car that couldn't be started. An improved ignition system was the second project the Barn Gang was tackling.

The third project the Barn Gang was engaged in was electrical lighting for automobiles. Even though many homes and businesses were electrically illuminated in 1909, miniaturizing the conventional Edison lamp of the period for automotive use wasn't going to work. The bulb would not survive the harsh environment of an automobile. Instead of electrical lighting, automobiles used oil and acetylene lamps, both of which were fire hazards. Edison-style bulb filaments were sintered tungsten which was brittle. Kettering and the Gang used extruded tungsten which was ductile and would survive automotive use. A low voltage power source using a generator and storage battery would provide the car with power for the self-starter and the ignition and lighting systems. This is an example of the wide range of talents of the Gang.

The Barn Gang was receiving high interest in their projects and knew it was time to find a company name and eventually incorporate and sell stock. The Gang became, officially, The Dayton Engineering Laboratory Company or DELCO.

The leader of the Barn Gang was Charles Kettering known by his colleagues as "The Boss", or "Boss Kettering", a moniker he kept for the rest of his life.

Many readers will recognize the name DELCO which was a part of the General Motors (GM), Company for many years and some readers may recognize the name “Kettering” associated with the Sloan-Kettering Cancer Institute. Academics like your humble correspondent, will also connect The Boss to Kettering University, a highly-ranked school in Flint Michigan and was once owned by GM.

Not all of The Boss’s endeavors were successful. In 1917 the US Army requested Kettering to devise a flying bomb also known as an aerial torpedo. In conjunction with DELCO’s co-founder, Edward Deeds and Orville Wright, the latter as a consultant and the use of his name, the Dayton-Wright Company was formed to produce and manufacture the flying bomb dubbed the “Kettering Bug”.



The Kettering Bug

The prototype was completed in the Fall of 1918 and demonstrated to the US Army but the demonstration did not go well. One observer, COL (temporary) Hap Arnold, who would become one of the five 5-star generals of WWII, commented:

“After a balky start before the distinguished assemblage, it took off abruptly, but instead of maintaining horizontal flight, it started to climb. At about 600 to 800 feet, as if possessed by the devil, it turned over, made Immelmann turns, and, seeming to spot the group of brass hats below, dived on them, scattering them in all directions. This was repeated several times before the ‘Bug’ finally crashed without casualties.” NCR World Magazine, SEP-OCT 1970, AF Magazine SEP 2013.

It was Hap Arnold that gave the flying bomb the title of “Bug”.

Kettering rose to the rank of vice president of GM and was one of the wealthiest men in the world and very charitable. Kettering lost both his sister and his wife of 41 years to cancer. Kettering, along with Alfred Sloan, created the Sloan-Kettering Cancer institute of New York’s Memorial Hospital in 1945. Who was Alfred Sloan? He was the president and CEO of GM; the Boss’s boss.



We can’t end our discussion of the Boss without invoking one of his many notable quotes. In my teaching career I have used this quote often as a preface to a course.

“Knowing is not understanding. There is a great difference between knowing and understanding: you can know a lot about something and not really understand it.”

Dr. Al Helfrick, a.k.a. The Old Professor

PE CORNER

IEEE Needs You!

Our local IEEE section and its affinity groups is unique in terms of the number of seminars, tours and other educational opportunities that are offered. Some of these allow professional engineers to earn continuing education hours that are required by most states for license renewal. With the wide variety of companies and industries in our area comes a vast pool of expertise in so many areas of engineering. Many of you are experts in your particular field, and IEEE has opportunities for you to share your expertise.

You may be aware of the continuing education requirements for PEs, but you may not be aware that, in general, a course with sufficient technical content to qualify for granting continuing education hours to participants need not be taught by a PE. Section 61G15-22.002 of the Florida Administrative Code defines what educational activity can qualify for credit: “*Any qualifying course or activity with a clear purpose and objective which will maintain, improve, or expand the skills and knowledge relevant to the licensee’s area of practice.*” However, a licensee need only take four hours of continuing education in their area of practice. The remaining twelve hours “...*may relate to any topic pertinent to the practice of engineering...*” (61G15-22.001(1)). IEEE puts on many educational opportunities that easily meet these requirements.

You may be thinking that your area of expertise is very specific and that it won’t qualify for continuing education since it’s not many people’s “area of practice”. For one, area of practice is generally widely defined. For example, though your area of expertise may be LEDs used in zero gravity environments, your area of practice can be broadly defined as electrical engineering. Lots of engineers may be able to count a course that you are teaching as applicable to their area of practice. And second, even if they can’t, they can count it toward the twelve hours they must take in a pertinent engineering topic.

There is an added bonus, in addition to the satisfaction of sharing your expertise with your colleagues, if you are a PE teaching a qualifying seminar. The first time you teach the seminar, you get double the number of continuing education hours that are awarded to the students!

As I previously noted, IEEE does a lot in terms of continuing education and with your help, we could do a lot more. Please contact your IEEE officers for more information on how you can share your expertise with your colleagues by teaching an IEEE seminar.

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs.

Art Nordlinger, PE, Senior Member

DAYTONA SECTION SHIRTS



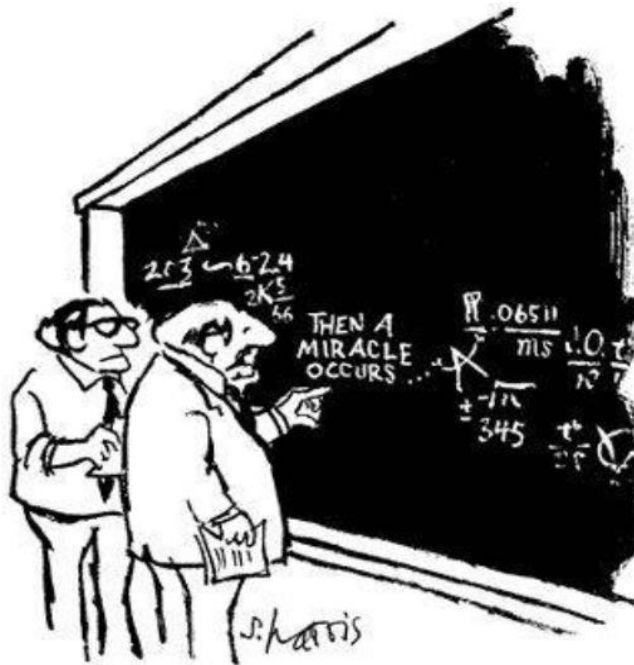
We are pleased to offer Daytona Section polo shirts for our Section members. The shirts are embroidered with the IEEE Logo and DAYTONA SECTION on the left and your name and grade, if desired, on the right. The shirt is a high quality 5 oz, 65/35 poly/cotton pique in Royal Blue with white embroidery. Available in S - 2XL in men's as well as ladies' sizes. Price is \$35, including tax, for S-XL size's, 2XL size is \$3 additional. For more information or to order shirts contact: Allan Jusko 386-671-3706 or a.jusko@ieee.org

FUTURE MEETING DATES

2021 Section meetings, depending on the coronavirus situation at the time:

Fall semester: Oct 28, Dec 2

ENGINEERING HUMOR



"I think you should be more explicit here in step two."

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