



Volume 57 – Issue 7

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Section Chair's Message

Section Chair's Message:



Wavelengths and e-Wavelengths:

Why do I get two editions? Well, the answer is they serve slightly different purposes. This Wavelengths newsletter focuses on chronicling our Section, Chapter and Affinity Group events along with articles of general interest and is sent just to all members of IEEE SEM. E-Wavelengths announces upcoming events of interest to technically minded individuals in our section. You will note that e-Wavelengths carries announcements of events of other organizations, educational institutions and companies that are thought to be of interest to its readership. Advertising in Wavelengths will reach IEEE members in SEM. Advertising in e-wavelengths will reach a diverse group technical people in Southeastern Michigan.

Expense Reimbursement:

Our Treasurer, Xinhau Xiao, has continued the procedures placed into effect by our past Treasurer. If your Chapter, Affinity Group or Committee are pre-approved in the 2016 SEM Budget you may spend the money and submit an expense report with receipts to our treasurer. The approved budget is available in the On-Line Community (OLC) in the Financial

Committee folder. If you need access to the OLC, please enter your request at the login page.

We had 2 Phishing attempts last month. Both were reported to the US Internet Crime Complaint Center (IC3), Google Gmail Abuse Center and IEEE. Several other IEEE Sections have had similar fraud attempts. We have procedures in place to catch and prevent such attempts. One of the main procedures is that only document expenses submitted through the OLC will be reimbursed.

Funding Requests:

If your Chapter, Affinity Group or committee did not respond during the Oct/Nov budget process, you do not have a pre-approved expenditure amount and the budget will show \$0 for your meetings budget. You must submit a proposal requesting approval of an expenditure that is not pre-approved or is over your pre-approved limit. This request must be accompanied with an explanation and justification for it. Nevrus Kaja is the chair of the Finance Committee. If the Committee approves, it then goes to the ExCom. Only the ExCom can approve spending the Section's money. A PowerPoint/PDF slide explanation is available in the OLC Finance Committee folder.

I look forward to hearing from you & seeing you at our events. As always, your ideas and suggestions are encouraged and welcome.

Robert Neff
IEEE SEM Section Chair
RLNeff1@gmail.com

Cool Power

The following press release has been reprinted with kind permission from the John Hopkins Applied Physics Laboratory.

Originally published at <http://www.jhuapl.edu/newscenter/pressreleases/2017/1706211.asp>
You can follow them on social media, via Twitter @JHUAPL, via Facebook: <https://www.facebook.com/JHUAPL/>, on LinkedIn at <https://www.linkedin.com/company-beta/7251/> and on the regular web at <https://www.jhuapl.edu>.

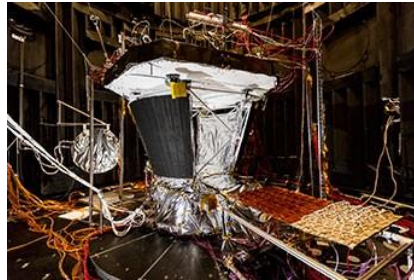
As NASA's Parker Solar Probe spacecraft begins its first historic encounter with the sun's corona in late 2018 — flying closer to our star than any other mission in history — a revolutionary cooling system will keep its solar arrays at peak performance, even in extremely hostile conditions.

Every instrument and system on board Parker Solar Probe (with the exception of four antennas and a special particle detector) will be hidden from the sun behind a breakthrough thermal protection system (TPS) — an eight-foot-diameter shield that the spacecraft uses to defend itself against the intense heat and energy of our star.

Every system will be protected, that is, except for the two solar arrays that power the spacecraft. When the spacecraft is closest to the sun, the solar arrays will be receiving 25 times the solar energy they would while orbiting Earth, and the temperature on the TPS will reach more than 2,500°F (1,370°C). The cooling system will keep the arrays at a nominal temperature of 320°F (160°C) or below.

“Our solar arrays are going to operate in an extreme environment

that other missions have never operated in before,” said the Johns Hopkins Applied Physics Lab's Mary Kae Lockwood, spacecraft system engineer for Parker Solar Probe.



*The solar array cooling system for the Parker Solar Probe spacecraft — one element of which is the large, square black radiator visible at center, one of two that will be installed — is shown undergoing thermal testing at NASA Goddard Space Flight Center in Greenbelt, Maryland, in late February.
Credit: NASA/JHUAPL*

New Innovations to Survive the Inferno

The very outermost edges of the solar arrays are bent upward, and when the spacecraft is closest to the sun, these small slivers of array will be extended beyond the protection of the TPS in order to produce enough power for the spacecraft's systems.

The incredible heat of our star would damage conventional spacecraft arrays. So, like many other technological advances created especially for this mission, a first-of-its-kind actively cooled solar array system was developed by APL, in partnership with United Technologies Aerospace Systems (UTAS) in Windsor Locks, Connecticut (which manufactured the cooling system), and SolAero Technologies of Albuquerque, New Mexico (which produces the solar arrays).



*At left: William "Chip" Delmar and C. Jack Ercol of the Johns Hopkins Applied Physics Laboratory; on right, Mike Micciolo of NASA Goddard and APL's Eric Wallis.
Credit: NASA/JHUAPL*

“This is all new,” Lockwood said of the innovations related to the actively cooled solar array system. “NASA funded a program for Parker Solar Probe that included technology development of the solar arrays and their cooling system. We worked closely with our partners at UTAS and SolAero to develop these new capabilities, and we came up with a very effective system.”

The Parker Solar Probe cooling system has several components: a heated accumulator tank that will hold the water during launch (“If water was in the system, it would freeze,” Lockwood said); two-speed pumps; and four radiators made of titanium tubes (which won't corrode) and sporting aluminum fins just two hundredths of an inch thick. As with all power on the spacecraft, the cooling system is powered by the solar arrays — the very arrays it needs to keep cool to ensure its operation. At nominal operating capacity, the system provides 6,000 watts of cooling capacity — enough to cool an average-sized living room.

Somewhat surprisingly, the coolant used is nothing more than regular pressurized water — approximately five liters, deionized to remove minerals that could contaminate or harm the system. Analysis showed

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that, during the mission, the coolant would need to operate between 50°F (10°C) and 257°F (125°C) — and few liquids can handle those ranges like water. “Part of the NASA technology demonstration funding was used by APL and our partners at UTAS to survey a variety of coolants,” said Lockwood. “But for the temperature range we required, and for the mass constraints, water was the solution.” The water will be pressurized, which will raise its boiling point above 257°F.



*The solar panels are shown here on this artist rendering of Parker Solar Probe; they are the black squares with gray rectangles on the center of the spacecraft.
Credit: NASA/JHUAPL*

The solar arrays feature their own technical innovations. “We learned a lot about solar array performance from the [APL-built] MESSENGER spacecraft, which was the first to study Mercury,” said Lockwood. “In particular, we learned how to design a panel that would mitigate degradation from ultraviolet light.” The cover glass on top of the photovoltaic cells is standard, but the way the heat is transferred from the cells into the substrate of the panel, the platen, is unique. A special ceramic carrier was created and soldered to the bottom of each cell, and then attached to the platen with a specially chosen thermally conductive adhesive to allow the

best thermal conduction into the system while providing the needed electrical insulation.

From Ice to Fire: Launch Challenges

While the extraordinary heat of the sun will be the spacecraft’s most intense challenge, the minutes immediately following launch are actually one of the spacecraft’s most critical early performance sequences.

When Parker Solar Probe launches on board a ULA Delta IV Heavy rocket from Cape Canaveral Air Force Station, Florida, in summer 2018, the cooling system will undergo wide temperature swings. “There’s a lot to do to make sure the water doesn’t freeze,” said Lockwood.

First, temperatures of the solar arrays and cooling system radiators will drop from that in the fairing (about 60°F, or 15°C) to temperatures ranging from –85°F to –220°F (–65°C to –140°C) before they can be warmed by the sun. The pre-heated coolant tank will keep the water from freezing; the specially designed radiators — designed to reject heat and intense temperatures at the sun — will also survive this bitter cold, thanks to a new bonding process and design innovations.

Less than 60 minutes later, the spacecraft will separate from the launch vehicle and begin the post-separation sequence. It will rotate itself to point at the sun; the solar arrays will release from their launch locks; the arrays will rotate to point to the sun; a latch valve will open to release the warm water into two of the four radiators and the solar arrays; the pump will turn on; the spacecraft will rotate back to a nominal pointing orientation, warming up the two coldest and unactivated radiators; and power

from the cooled solar arrays will begin recharging the battery. In another first, this complex and critical series of tasks will be completed autonomously by the spacecraft, without any input from mission control.

The water for the two unactivated radiators will remain in the storage tank for the first 40 days of flight; after that, the final two radiators will be activated.

“One of the biggest challenges in testing this is those transitions from very cold to very hot in a short period of time,” Lockwood said. “But those tests, and other tests to show how the system works when under a fully heated TPS, correlated quite well to our models.” Thanks to testing and modeling, the team studied data and increased the thermal blanketing on the first two radiators to be activated, in order to balance maximizing their capacity at the end of the mission, and further reduce the risk of water freezing early in the mission.

Keeping Cool, Autonomously

When Parker Solar Probe is hurtling past the sun at some 450,000 miles an hour (724,000 KPH), it will be 90 million miles from mission controllers on Earth — too far for the team to “drive” the spacecraft. This means that adjustments to how the spacecraft is protecting itself with the TPS need to be handled by Parker Solar Probe’s onboard guidance and control systems. These systems use new and effective autonomous software to allow the spacecraft to instantly alter its pointing to maximize protection from the sun. This autonomous capability is critical to the operation of the spacecraft’s solar arrays, which must be constantly adjusted for optimal angle as Parker Solar Probe hurdles through the sun’s harsh, superheated corona.

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“During solar encounters, very small changes in the wing angle of the solar array can vastly change cooling capacity needed.” Lockwood said that a one degree change in the array angle of one wing would require 35 percent more cooling capacity.

The constant challenge is to make sure the spacecraft and the arrays are staying cool.

“There’s no way to make these adjustments from the ground, which means it has to guide itself,” Lockwood said. “APL developed a variety of systems — including wing angle control, guidance and control, electrical power system, avionics, fault management, autonomy and flight software — that are critical parts working with the solar array cooling system.”

Added Lockwood: “This spacecraft probably is one of the most autonomous systems ever flown.” That autonomy, along with the new cooling system and pioneering solar array upgrades, will be crucial to ensuring that Parker Solar Probe can perform the never-before-possible science investigations at the sun that will answer questions scientists have had about our star and its corona. Learn more about those questions at <http://solarprobe.jhuapl.edu/The-Mission/index.php#Science-Objectives>.

For further information or follow up

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geoffrey.brown@jhuapl.edu

The Applied Physics Laboratory, a not-for-profit division of The Johns Hopkins University, meets critical national challenges through the innovative application of science

and technology. For more information, visit www.jhuapl.edu.

*Reformatted by **Sharan Kalwani** for publication in the IEEE SE Michigan section Wavelengths Newsletter and its members reading pleasure.*

Chapter 7 Activities

Chapter 7: Power and Energy & Industrial Applications

The electric grid is often thought of as the world's largest machine and that machine is changing faster than society has ever seen. At the grid level natural gas and renewable energy technologies are replacing traditional base load units. At the local level there is a push for resiliency through distributed energy and microgrids. These moves are creating new and interesting problems for engineers to solve and solving these problems is what Chapter 7 is all about.

Chapter 7 consists of two parent Societies, the Power and Energy Society (PES) and the Industrial Applications Society (IAS). PES provides the world's largest forum for sharing the latest in technological developments in the electric power industry, for developing standards that guide the development and construction of equipment and systems, and for educating members of the industry and the general public. IAS focuses specifically on the unique needs of industry and commerce. Combined, the two Societies represent over 50,000 members across 6 continents.

The local PES/IAS Chapter has received several awards including being designated a High Performing Chapter by the Power and Energy Society in both 2015 and 2016. We've also held several international conferences including the PES General Meeting, the IAS General Meeting, and the IAS Industrial & Commercial Power Systems meeting. In the past year we've held Technical Meetings on:

- Bladeless Wind Turbines
- Trends in Smart Grid Development

- Grid Reliability and Its Vital Signs
- Calculating Real-Time Emissions of Generators
- IEC 61850

We'd like to event everyone to attend our next Technical Meeting "The Art of Science of Designing and Testing Grid Grids" held in Jackson, MI on July 13th. The Speaker is the President of Commonwealth Associates, Mr. Dennis F. DeCosta. He has over 40 years of experience which includes many years of managing and designing HV/EHV substation and underground transmission line projects. The meeting includes dinner and registration can be found at: <https://meetings.vtools.ieee.org/m/45582>

We are always looking for new members whether your interests are in volunteering, networking, maintaining a Professional Engineering license, or simply learning something new. Please don't hesitate to contact me if you have any questions!

David Mindham
Chair Southeastern Michigan
PES/IAS Chapter
dmindham@ieee.org

Chapter 8 Activities

SEM IEEE EMC Society (Chapter 8)

The EMC Society exists to spread news and information related to Electromagnetic Compatibility issues to IEEE members around the globe (and specifically here to Southeastern Michigan and Southwestern Ontario). The official mission statement of the society is:

The IEEE Electromagnetic Compatibility Society is the world's largest organization dedicated to the development and distribution of information, tools and techniques for reducing electromagnetic interference.

The society's field of interest includes standards, measurement techniques and test procedures, instrumentation, equipment and systems characteristics, interference control techniques and components, education, computational analysis, and spectrum management, along with scientific, technical, industrial, professional or other activities that contribute to this field.

An elevator pitch for EMC would be: “Making sure that when you pack a lot of electronic devices together, they all play nice with each other.” As such, information about EMC can be useful for all electrical engineers, not just for EMC specialists.

The SEM EMC Chapter seeks to provide information to a wide audience through its speaker events. As described in the June

2017 issue of Wavelengths, its annual EMC Fest is attended by more than 300 engineers and 20 vendors, specialists and non-specialists alike. This year's keynote speaker was EMC consultant Ken Wyatt, who packed a lot of practical advice into a four hour presentation with plenty of breaks for food, wandering the vendor tables, and networking—all followed by an ice cream reception. Other recent speakers at the chapter's monthly meetings have included Scott Niemiec of test equipment manufacturer Rohde & Schwarz and Ed Hare (W1RFI) from the Amateur Radio Relay League (ARRL). Niemiec's talk covered what exactly the “pre-select” function on an EMI receiver does, and Hare's very well attended talk discussed some of the many types of mayhem that one can find in the ARRL headquarters' lab.

Upcoming meetings this year will be held in locations in Livonia and Canton (all include meals), and will cover topics such as Radio Astronomy, a “Maker” meeting on current probes, and an EMC Society distinguished speaker from Israel, Elya Joffe—an expert on grounding topics and EMC applications in aerospace, amongst others. The international EMC Society subsidizes local chapters to bring in experts from around the country and the globe to speak on their topics of specialty, and the SEM EMC Chapter takes full advantage of those opportunities.

We hope you'll take a look at the events on the schedule for our EMC Society chapter, and take some time to drop by. With luck you'll find good food, good company, and some information that might help

you in whatever design, manufacturing, or testing applications you're working on. You can find more information at the Chapter's website: <http://www.emcsociety.org/wp/> or through the SEM IEEE website: <http://sites.ieee.org/sem/>

Women in Engineering

Affinity Group – Women in Engineering (WIE)

IEEE Women in Engineering (WIE) is one of the largest international professional organizations dedicated to promoting women engineers and scientists and inspiring girls around the world to follow their academic interests to a career in engineering.

Our goal is to facilitate the recruitment and retention of women in technical disciplines globally. We envision a vibrant community of IEEE women and men collectively using their diverse talents to innovate for the benefit of humanity. IEEE WIE strives to:

- Recognize the outstanding achievements of women in electrical and electronics engineering through IEEE Awards nominations
- Organize receptions at major technical conferences to enhance networking and to promote membership in WIE
- Advocate women in leadership roles in IEEE governance, and career advancement for women in the profession
- Provide assistance with the formation of new WIE Affinity Groups, and support ongoing activities
- Promote IEEE member grade advancement for women to the membership grades of Senior member and Fellow
- Facilitate the development of programs and activities that promote the entry into, and retention of, women in engineering programs
- Administer the IEEE Student-Teacher and Research

Engineer/Scientist (STAR) Program to mentor young women in junior and high schools

Your IEEE SEM WIE group is currently comprised of 68 members. In 2017, we have held 2 successful social/networking events at the Farmhouse Coffee & Ice Cream with support from Society of Women Engineers (SWE). A cooperation agreement with the Detroit SWE chapter was created in 2017 for collaborative efforts on future events, offering non-SWE IEEE members (not just WIE members) prices at SWE member rates for certain events. This includes the ongoing efforts to create such a collaborative agreement at the national level. The most recent collaborative event was the Coalition of Minority Professional Engineering Societies (COMPES) Professional Development Conference (PDC) held on May 20th at Ford. Another upcoming event WIE is jointly organizing and sponsoring is the upcoming IEEE Picnic with the IEEE SEM Computer Society (Chapter 5) on July 23rd at the Kiwani Pavilion in Rochester Park.

While your local WIE officers are doing a great job with these collaboration efforts and social/networking gatherings, there are always opportunities for more volunteers. We actually have open the Chair and Webmaster positions for any IEEE SEM WIE member interested in becoming more active. Along with open positions, we are always searching for other volunteers looking to lead or support activities as we expand and increase our presence within Southeastern Michigan. If you or anyone you know is interested, please have them reach out to Amanda Mohan (Amanda.fairbairn@gmail.com) or Alex Roche (acroche@mtu.edu).

We invite all and any IEEE members to any WIE event and look forward to meeting you there!

July 2017 Picnic Alert:

SUMMER POTLUCK PICNIC!

The IEEE SEM Computer Society (chapter 5) and the WIE (Women in Engineering) Affinity Group invite all IEEE members & their families, to join us for a Summer Potluck Picnic.



(In other words, we engineers also know how to play and are not all work all the time!!)

Plan to join us on Sunday, July 23rd, 2017 from 11:30 AM to 5:30 PM (EDT) at:

Kiwanis Pavilion
400 Sixth Street
Rochester, Michigan
United States 48307



There is no charge for the gathering but, please register so we know **who** and **how many** to expect.

Register at:

<https://events.vtools.ieee.org/m/45207>

The event is open to all IEEE SEM members. Please email the sponsors with what dish you will be bringing to share, approximately what time and how many members are expected to join in the fun (RSVP by July 17). We will provide the napkins, plastic ware, paper plates, water, table covers, etc. Feel free to also let the organizers also know if you are bringing a board game, music, or group activity item, etc. As engineers we too know how to spend a relaxing

day with family together! We look forward to seeing you on the 23rd.

About the Municipal Park

The City of Rochester's park system offers a wide variety of recreational opportunities. At Rochester Municipal Park, the recreation opportunities include:

- Open air shelter (the Kiwanis Shelter) - has electrical outlets, so we can use crockpots, etc.
- Duck Pond
- Over a mile of paved walkway
- Restrooms
- Sand volleyball
- Two tot lots (one at the north end off Ludlow Street and one at the south end at the end of Pine Street)

Do come join us!



Chapter 13: Welcome Letter

Welcome Letter from Chapter 13 Chair

To all the IEEE members in our Southeastern Michigan section – a warm (it is July after all) welcome from your newly appointed Chair. Perhaps some of you may not be aware: Chapter 13 represents the IEEE Education Society. I would like to take this opportunity to first introduce the larger society and then turn to more specifics about our local chapter. The official mission statement of the society is:

The IEEE Education Society is an international organization that promotes, advances, and disseminates state-of-the-art scientific information and resources related to the Society's field of interest and provides professional development opportunities for academic and industry professionals.

While in the most recent past 2+ years or so, not much activity has been happening at the local SE Michigan level, one of the prime objectives of your skeleton administrative crew will be to rectify this apparent dormancy right away. Along with your **Vice Chair – Kenji Aono**, we plan on introducing opportunities for our members to participate in at least 1 meeting, where we can all meet and share individual, as well as larger, experiences. In addition to having this meeting, we also hope to learn more about the desired interests of our members, expectations, and perhaps coming together to contribute towards the overall rejuvenation of this chapter in our neck of the woods.

Speaking of which, we could use some help and invite volunteers to

fill a post in the super slim Administrative committee of our chapter.

We are looking for anyone who can perform the role of Chapter Secretary.

To quote Kimball Williams, this is a key and very pivotal role as it is the “conduit” or “*visible connection of record*” (emphasis mine) to all the other nodes of our SE Michigan section.

Essentially the Secretary records and publishes minutes of all our meetings. Also, the Secretary is viewed as crucial since if the Chair or Vice Chair are unavailable, they have the power to preside at meetings in their absence. And as the recording Czar, they would also file the electronic official IEEE L31 meeting reports for the 2 ~ 3 chapter meetings each year [This activity takes less than a minute for each meeting]. Of course, I will personally assist and guide the secretary thru the entire tenure, so “no worries mate!” (An Australian technical phrase).

The SEM Education Society Chapter is planning to provide information seminars in whatever time is left in the 2017 calendar year to a wide audience through its technical speaker events. We also seek locations that members can suggest, and will cover topics such as modern day tools for the EE engineer, students and educators.

Other potential plans we have are perhaps joint activities with other societies such as study groups towards certification, etc. We hope you can participate in some of these events, take some time to strike up a conversation, and perhaps contribute as well. With only the tiniest sliver of luck, you'll actually find good food, good company, and some information that might help you in whatever

engineering education domain you may be exploring at the moment.

**Sharan Kalwani,
Senior Member
Chair, Education Society
(Chapter 13)**

*For further correspondence,
contact Sharan via his email:
sharan.kalwani@ieee.org*

PACE – Welcome Letter

Welcome Letter from the SE Michigan PACE Chair

To all the IEEE members (including students, senior, life, fellow) in our Southeastern Michigan section – greetings from your newly appointed Chair. It is quite likely (at least for many of our new members) that perhaps some of you may very well ask: what is PACE? Well, the *Professional Activities Committee for Engineers (PACE)* is a grassroots network of IEEE volunteers and committees organized at the section, chapter and regional level in the United States specifically. The PACE is one of many targeted efforts of the IEEE-USA, with support from their respective regions, sections and of course the IEEE-USA, located in Washington DC, to further the professional interests of IEEE-USA members. First a little bit of history for our new members, so a refresher is clearly warranted.

The IEEE-USA was first established in 1973 to promote the interests of USA based IEEE members. We are all too familiar with the after effects of globalization, shifting economies and unpredictable political winds of change. Through years of record layoffs and bleak employment prospects for U.S. engineers, IEEE-USA organization set about trying help protect and create jobs for the IEEE's 235,000 U.S. members and all U.S. electrical, electronics and computer engineers. One of the ways to improve your professional cladding (or bullet proof a little better) is to boost one's proficiencies.

Technical proficiency is only one part of becoming successful in today's world. PACE assists members by providing activities

that improve professional development or soft skills. PACE also promotes the profession as well as pre-college activities. Though some of these projects address general things, such as educating the public about the profession, primarily they are to improve the member's professional skills. The IEEE-USA thru PACE encourages professional activities in addition to increasing awareness of existing programs such as Professional Development Seminars.

So, what is a Professional Development Seminar?

A Professional Development Seminar is a method to share/convey professional awareness in a structured manner that addresses members' concerns. These events/seminars consist of non-technical topics such as career strategy, career makeover, leadership and communication skills, ethics, project management, soft skills, etc. Professional Development Seminars usually are a half day and involve one or more speakers/experts.

As your Chair, one of my primary activities shall be to organize and hold a few professional development events right away, as this is something which has tangible ROIs. Hopefully in the month of August 2017, during Saturdays, we will be looking to conduct a few seminars of direct interest to both new and veteran members. In 2017, so far we have had 1 major PACE Activity – ably organized by David Mindham - which was the Government & Engineering Conference. The theme of this event was very much in keeping with the major goals of PACE – such as immigration

concerns, USA workforce competitiveness, and government policy regarding drones and autonomous vehicles. It also featured speakers on topics such as: Intellectual Property, Aerospace Policy, Immigration, Federal Policy and Autonomous Vehicle Policy. The event had 32 registered attendees, which speaks volumes for the high degree of interest in this aspect of IEEE-USA, PACE and SE Michigan engineering community interests. Look for more such pertinent events in the near future.

Of course, such activities cannot be done as a solo effort. To this end, the PACE committee is counting on the support of volunteers. While we have a solid crew of David Mindham, Randy Boone, Harry Hill, Michael Kent and recently joined Marcelo Xavier, we are looking for just 1 more able bodied person to assist us – namely a Secretary. Basically, the Secretary records and publishes minutes of all our meetings. And as the recording Czar, they would also file the electronic official IEEE L31 meeting reports for the 3 ~ 4 events we plan this year. [An activity which takes less than 120 seconds for each event].

I very much look forward to serving the community and invite you to get in touch with any of the PACE committee with suggestions, ideas or thoughts of encouragement.

**Sharan Kalwani,
Senior Member
SE Michigan Section PACE Chair**

For further correspondence, contact Sharan via his email: sharan.kalwani@ieee.org

Election Alert:

Spring and summer and a young engineer's fancy turns to

IEEE Elections,...of course!

Well, perhaps that is not the first thing on everyone's mind as the pale of winter gives way to the bright sunny skies, and mowing lawns and gardening become the regular maintenance functions around the home and vacations, conferences, family outings and picnics provide a welcome relief from months of cabin fever.

Somewhere along the way, after a great picnic lunch and a nap in the sun shine, we might wake up and consider...."How can I enable the next step in my career and professional growth?"

One answer is picking up and honing those soft skills that form the non-technical side of a well-rounded engineering career.

Organization, Team Building, Public Speaking, Effective Writing, Running Meetings, Delegating and Follow up, Coaching Team Members, etc...

Yes, those are all the topics we avoided when we were in school, only to discover as we began working in the 'real world' how vital they can be to a successful engineering career.

The difficult news is that all those skills are similar to learning a sport or how to play a musical instrument. You can't 'get it' by reading about it. You need to practice them.

Unlike learning a musical instrument, these skills cannot be practiced by yourself in a sound proof room. These all require interaction with others and direct involvement with situations that

require action on your part that effect the eventual outcome.

The problem is that such actions also carry with them a risk of failure while you are on the learning curve. In an employment situation, such a failure may have disastrous consequences.

When trying to learn these skills "on the job", that risk might be to a project, a product launch, a department, and / or your continued employment.

Fortunately there are alternatives to learning these skills at your work.

Volunteering with a professional organization as a team member, Committee member or organizational Officer will afford the opportunity to engage with others in ways that permit the development of those skills that can help you become a more effective engineering leader within your organization.

Succession:

Many young engineers want to take on the 'Top Jobs' immediately, without building the background of experience and perspective needed to fully grasp all aspects of a situation. Thus we often see someone who has never volunteered or held an office making a bid to take on the position of Chair of a major committee or Chapter. We also see many of those fail or give up.

The concept of succession, i.e. building up to a position, is one that has proven effective time and again, and still holds true today.

A Chair recognizes the value of understanding the job and function of all of the other officers that work with them. Usually that experience and knowledge is gained by having performed that function themselves in times past. Thus, most first time

volunteers are cautioned to seek a supporting role where they are able to learn and hone one or more of the skills that will serve them in the future.

Elections 2017:

The coming elections within the IEEE Southeastern Michigan Section offer a great many opportunities for learning and engaging with other professionals working to further the goals and objectives of the IEEE.

Executive Committee:

2017 will see us vote for candidates for (Secretary and Treasurer) 'Elect'. This is a 1 year training position to prepare to take over the office the following year for a 2 year term.

Affinity Groups:

All 4 of our Affinity Groups will elect officers, along with all 17 of our:

Technical Chapters:

Chair, Secretary, Vice-Chair and Treasurer are all elected each year.

Standing Committees:

Positions on Standing Committees and their sub-committees (of which we have 15 are all appointed. There is no need to wait for an election to become involved in the work of our Standing Committees. Simply contact the current Committee Chair, and offer to help. Most Committees can find meaningful tasks for a volunteer right away.

For details on the current officers and volunteers, the Geo-units and Standing Committees, see the current SEM Officer Roster on the SEM On-Line-Community:

http://sem.oc.ieee.org/committees/nominations_committee/sem-officer-roster/officers_roster_ieee_sem_6.27.2017

Other Coming Events:

We try to publish IEEE events in several places to ensure that everyone who may want to attend has all the available relevant information.

SEM e-Wavelengths:

www.e-wavelengths.org

This is our 'Active' event listing site where everyone should look first to see what events are scheduled for our Section in the near future.

SEM Web Calendar:

<http://sites.ieee.org/sem/>

Select "SEM Calendar" button in the top row of the website.

SEM Web Meetings:

<http://sites.ieee.org/sem/>

Select "SEM Meeting List" button in the left-hand column.

vTools Meetings:

<http://sites.ieee.org/vtools/>

Select "Schedule a Meeting" button in the left-hand column of buttons.

Other IEEE Local Meetings:

<http://www.e-wavelengths.org/>

Other Happenings

However, since IEEE members tend to have eclectic interests, we want to give everyone a heads up for some of the non-IEEE events that may be of interest.

Let us know if you have a special interest in a field that encourages technical study and learning, and wish to share opportunities for participation with members of the section.

Send the particulars to

k.williams@ieee.org

karen.burnham@gmail.com

sharan.kalwani@ieee.org

An announcement may be placed in the newsletter.

.....

Links:**Michigan Institute for Plasma Science and Engineering:**

Seminars for the 2017-2018 academic year:

<http://mipse.umich.edu/about/seminars.htm>.

Below are links to local SEM Clubs engaged in technical hobbies as well as links to sites that may be useful for locating clubs in the area.

Amateur Radio Clubs in Southeastern Michigan

(This is a fairly comprehensive listing of all the 'Ham' clubs in SEM.)

<http://www.wa2hom.org/ham-radio-clubs-in-se-michigan/>

Model RC Aircraft

<http://www.skymasters.org/>

Model Rocketry

<http://team1.org/>

Astronomy

<http://www.go-astronomy.com/astro-clubs-state.php?State=MI>

Experimental Aircraft Association

<https://www.eaa.org/en/ea/ea-chapters/find-an-eea-chapter>

Robots

<http://therobotgarage.com/about-us.aspx>

Science Fiction Conventions

<http://www.conclavesf.net/>

<https://2018.penguicon.org/>

<http://2018.confusionsf.org/>

Mad Science

<http://www.madscience.org/>

ESD PE Review Class

www.esd.org

Makers Faire:

<http://www.thehenryford.org/events/makerFaire.aspx>

Executive Committee

The SEM Executive Committee is the primary coordination unit for Southeastern Michigan (SEM) IEEE operations. The basic organization chart below shows the 2017 arrangement of communications links designed to provide inter-unit coordination and collaboration.

The SEM Executive Committee meets in a teleconference each month on either the first Wednesday or first Thursday at noon. The specific meeting days, times, phone or WebEx numbers and log in codes are published on the IEEE SEM Website calendar: <http://sites.ieee.org/sem/> Click on the “Calendar” button in the top banner on the first page of the web site.

If you wish to attend, or just monitor the discussions, please contact David Mindham, the section secretary at: dmindham@ieee.org and request to be placed on the distribution list for a monthly copy of the agenda and minutes.

More meeting details are available on the next page of this newsletter.

Other Meetings:

About half of our members maintain memberships in one or more of the IEEE technical societies, which automatically makes them members of the local chapter which is affiliated with that society. As a result, they should receive notices of the local chapter meetings each month.

However, members of the section may have multiple technical interests and would like to have meeting information of other

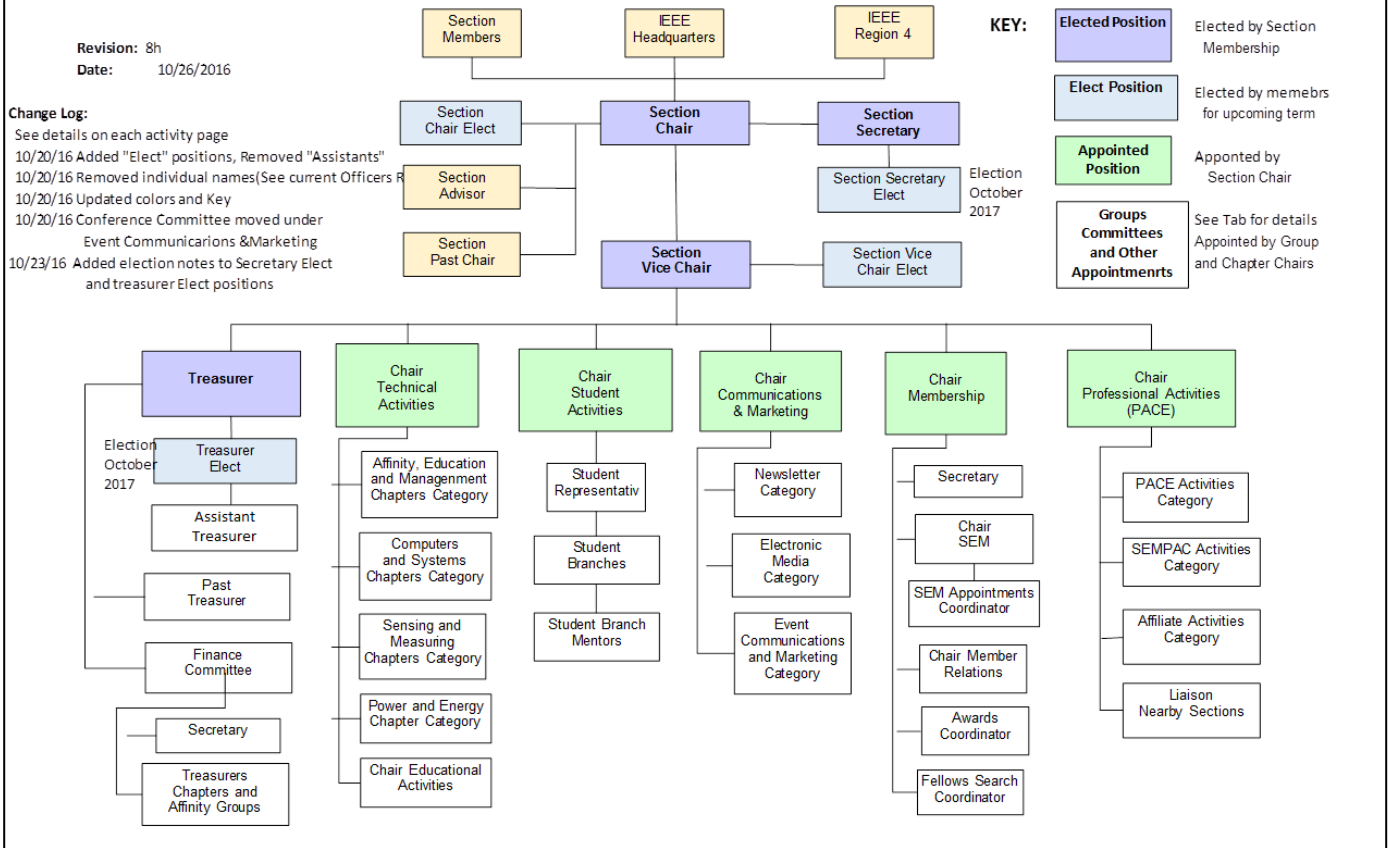
chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to send meeting information to our webmasters for posting on section’s calendar.

More detailed information on meetings may be found by using the IEEE meetings site. This may be found through the IEEE SEM Website: <http://sites.ieee.org/sem/> and clicking on the **SEM meetings list** button near the bottom of the left hand banner.

Automatic e-mail notification of web updates may be received using the “**Email Notifications**” button at the top of the **SEM Tools/Links** side banner.

David Mindham - SEM Secretary

Current Organization - IEEE Southeastern Michigan Section (SEM)



Download the [complete SEM Organization Chart](http://www.ieee-sem.com), in PDF format, from the SEM Website at: www.ieee-sem.com Then, click on “**About SEM**” Tab, followed by, click on “**Current Officers**”

ExCom Meeting Schedule:

Below is the 2017 remainder schedule for the Section ExCom meetings with links to add the events to your calendar. It is important that at least one person from each Chapter/Affinity Group attends the meetings. Information on each Face to Face Meeting will be sent out once the venue is confirmed.

Please mark your calendars for the meeting.

July 12, Wednesday, Face to Face, 5:30 – 8:00 P.M. <https://events.vtools.ieee.org/m/42558>

August 3, Thursday, Teleconference, 12:00 – 1:00 P.M. https://meetings.vtools.ieee.org/feed/meeting_ical/42554

September 6, Wednesday, Teleconference, 12:00 – 1:00.M. https://meetings.vtools.ieee.org/feed/meeting_ical/42555

October 5, Thursday, Face to Face, 5:30 – 8:00 P.M. https://meetings.vtools.ieee.org/feed/meeting_ical/42559

November 1, Wednesday, Teleconference, 12:00 – 1:00 P.M. https://meetings.vtools.ieee.org/feed/meeting_ical/42556

December 7, Thursday, Teleconference, 12:00 – 1:00 P.M. https://meetings.vtools.ieee.org/feed/meeting_ical/42557

**David Mindham
SEM Secretary**

Note: All IEEE SEM Members are welcome at any IEEE meeting, at any time but, please register so we can be sure to accommodate you.

**David Mindham
SEM Secretary**

Section Mission & Goals

Section Focus:

The IEEE SEM Section Officers have reaffirmed the Mission and Goals of the section with the guidance of the Region 4 leadership. The Mission and Goals conform to those of IEEE worldwide.

You have probably seen the Mission and Goals before. However, it is important to keep these clearly in mind and remind ourselves often that this is what we are about and what we are trying to accomplish.

Section Mission

Inspire – Enable – Empower and Engage Members of IEEE at the local level.

For the purpose of:

- Fulfilling the mission of IEEE (...**foster technological innovation and excellence for the benefit of humanity.**),
- Enhancing the members' growth and development throughout their life cycle, and
- Providing a professional home,

Section Goals

- Increase member engagement,
- Improve relationships with and among members,
- Increase operational efficiency and effectiveness, within the section and its interfaces,
- Enhance collaboration – serve as the local face of IEEE to the community,
- Increase membership, and
- Ensure the collection of appropriate information necessary to assist the IEEE to become a data driven organization.

It is now the task of the section leadership to guide and coach all section officers and elements to focus their activities on achieving those goals.

The regular meetings of the SEM Leadership (Executive Committee) are scheduled well in advance to allow everyone to place them in their personal planning calendars, and then defend those dates against encroachment. (*Not always possible.*)

Two types of Monthly meetings are normally scheduled:

Monthly Teleconference / WebEx as well as:

Quarterly Face-to-Face (F2F). See schedule on the page above:

Note: All IEEE meetings are 'Open' for all members to attend.

The only caveat is that you please register using the specific meeting form on the vTools site at:

<https://meetings.vtools.ieee.org/main>

Registering will ensure there is sufficient space, refreshments and support for attendees.

Teleconference Schedule
(Held from 12-1 p.m.):

F2F Meeting Schedule:

More information for F2F meetings will be emailed to all officers, (and any members requesting the schedule), in a timely manner before the meeting dates.

Contact **David Mindham** the SEM Section Secretary at: dmindham@ieee.org for more information.

Additional information may be found at (<http://sites.ieee.org/sem/>).

The links to the SEM Facebook or LinkedIn pages on the SEM website may also be checked for updates.

All the normally scheduled meetings of each of the other section chapters, affinity groups etc. are listed each month in the vTools area of our SEM website at:

http://ewh.ieee.org/r4/se_michigan/calendar1.php

The information is for:

Standing Committee Meetings
Affinity Group Meetings
Technical Chapter Meetings
University Student Branch Meetings
University HKN Chapter Meetings

Calendar Schedule:

Meetings are also announced on the SEM Calendar web page

<http://sites.ieee.org/sem/>

(Select the "SEM Calendar" button in the top row.)

Note: Often meetings of the Executive Committees of Chapters and Affinity Groups (and standing committees, of course) are listed only in the SEM Calendar page, since it is felt that most members would not wish to sit through administrative meetings.

However, if this type of meeting is just your 'cup of tea', then contact the officers of the unit that is conducting the meeting, and ask to be 'linked' into their teleconference, SKYPE, Google Hangout, or WebEx meeting. They will be happy to have you as a participant.

Many volunteers become interested in section activities when they get a chance to attend a monthly meeting and 'peek under the hood' to find out how the machinery of the section actually runs. It can be a rewarding experience.

David Mindham
SEM Section Secretary.
dmindham@ieee.org

SEM Monthly Meetings

Scheduled Meetings:

Editors Corner

Previous editions in this series may be found on the IEEE SEM website at: <http://sites.ieee.org/sem/>. Click on the “Wavelengths” button in the top row of selections.

Comments and suggestions may be sent to the editor at k.williams@ieee.org
sharan.kalwani@ieee.org
jrwoodyard@gmail.com
karen.burnham@gmail.com

We also recommend a cc to the chair of the Communications and Marketing Committee, Ravi Nigam at: ravi.nigam@ieee.org

We rely on our officers and members to provide the ‘copy’ that we finally present to readers of the newsletter. The **Wavelengths Focus Plan and Personal Profiles** plan shown in the

matrix below is presented to ensure coverage of section activities and events.

We try to complete the newsletter layout a week before the first of the month to allow time for review and corrections. If you have an article or notice, please submit it two weeks before the first of the month or earlier if possible.

The plan below relies on the contributions of our members and officers, so please **do not be shy**. If you have something that should be shared with the rest of the section, we want to give you that opportunity.

Editors:

We are always looking for members interested in helping to edit the newsletter. The process is always more fun with more members to share

the duties, and help keep the newsletter alive and lively by providing alternative points of view.

Heads Up

We are contemplating making the submissions of articles and events for the Wavelengths, a little easier and a little more inviting. Ideas are of course welcome and to this end, we are toying with setting up a little “newsletter portal”. Stay tuned for some news on that end!

Join the Team:

If you feel you might like to join the team, or would like to train with us, please contact one of us at:
karen.burnham@gmail.com
sharan.kalwani@ieee.org
jrwoodyard@gmail.com
k.williams@ieee.org

Wavelengths Annual Publication Plan for Articles

| Month | AG's | Ch's | Ch's | SB's | Special Notice | Reporting Events | Monthly Focus | Awards |
|-------|------|------|------|--------|----------------------|-------------------|---------------------|---------------|
| Jan | | 1 | | OU | Future Cities Judges | Election Results | Resolutions | |
| Feb | Cons | 2 | | MSU | Science Fair Judges | Officer's Welcome | Surviving Winter | Future Cities |
| Mar | | 3 | 13 | EMU | Spring Conf. Flyer | Spring Conference | Spring Conference | Science Fair |
| Apr | | 4 | | U/M-D | National Engrs Wk. | Future Cities | Chapter Focus | ESD - GOLD |
| May | Life | 5 | 14 | | Outstanding Eng Awd | Science Fair | Elections - Prep | New Fellows |
| Jun | | 6 | | | IEEE-USA Apmts. | ESD Banquett | Leadership Skills | SEM Awards |
| Jul | | 7 | 15 | | Nominations Call | MD-Webcasts | Students Issues | Region 4 |
| Aug | WIE | 8 | | | MGA - Apmts. | Tech-Webinars | Womens Issues | |
| Sep | | 9 | 16 | LTU | Region 4 Apmts. | Engineers Day | Professional Skills | |
| Oct | | 10 | | U/M-AA | Fall Conf. Flyer | | Fall Conference | |
| Nov | YP | 11 | 17 | WSU | ELECTIONS! | | Humanitarian | |
| Dec | | 12 | | U/D-M | IEEE-Com Apmts. | Fall Conference | Happy Holidays | |

| Month | Profiles | Profiles | Committees |
|-------|-----------|--------------|----------------------|
| Jan | Chair | New Officers | |
| Feb | V-Chair | Secretary | Communications |
| Mar | Treasurer | Sect-Adviser | Conference |
| Apr | Stud-Rep | | Education |
| May | | Sr Officers | Executive |
| Jun | | | Finance |
| Jul | | | Membership |
| Aug | | | Nominations |
| Sep | | | PACE Activities |
| Oct | | | Student Activities |
| Nov | | | Technical Activities |
| Dec | | Editor-WL | |

Wavelengths Annual Publication Plan for Personal Profiles



Web & Social Sites

SEM Website

<http://sites.ieee.org/sem/>

Each of the sites below may be accessed through the SEM Website:

Section Website Event Calendar

(Select the “SEM Calendar” button - top row.)

SEM Facebook Page

(Select the “” button under the top row.)

SEM LinkedIn Page

(Select the “” button under the top row.)

SEM Officers:

For a complete listing of all - Section - Standing Committee - Affinity Group - Chapter and Student Branch Officers, see the SEM Officers Roster on the SEM web page under the “About SEM” button and select “Current Officers”.

SEM On Line Community

<http://sem.oc.ieee.org>

Section Officers

Section Chair

Robert Neff

Section Secretary

David Mindham

Section Vice-Chair

Nevrus Kaja

Section Treasurer

Xinhua Xiao

Standing Committees:

Section Adviser

Don Bramlett

Chair Communications & Marketing

Ravi Nigam

Chair Educational Activities

Michael Kent

Chair Finance

Nevrus Kaja

Chair Membership

Aisha Yousof

Chair Nominations & Appointments

Kimball Williams

Chair Professional Activities (PACE)

Sharan Kalwani

Chair Student Activities

Hashim Abdul

Student Representative

Mehdi Mohammadi

Chair Technical Activities

Kimball Williams

Past Section Chair

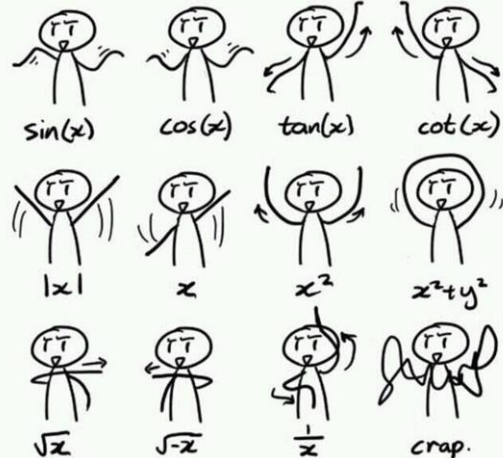
Kimball Williams



IEEE Southeastern Michigan

Visit Us on the Web at:
<http://sites.ieee.org/sem>

Dance lessons for Engineers



Leadership Meetings

All IEEE members are welcome to join us at any regularly scheduled meeting:

Advertising Rates

SEM Website & Newsletter
 Advertising is coordinated through
 our e-Wavelengths website at

http://www.ieee-sem.org/ewavelengths/?page_id=181.

Please see the information listed on
 the site, and contact our web editor
 of e-Wavelengths, Ben Doerr for
 arrangements.

SEM Executive Committee Monthly Teleconferences:

- 1st Wednesday or Thursday of Each Month @ Noon
- Check the Section Web Calendar at:
<http://sites.ieee.org/sem/sem-calendar/>
 (Select the "SEM Calendar" button in the top row.)

SEM Executive Committee Face-to-Face Meetings:

- 1/Qtr. Find the location, and Registration at:
<https://meetings.vtools.ieee.org/main>

SEM Standing Committee Meetings:

SEM Affinity Group Meetings:

SEM Society/Technical Chapter Meetings:

SEM University Student Branch Meetings:

- Meeting schedules are announced on SEM Web Calendar
<http://sites.ieee.org/sem/>
 (Select the "SEM Calendar" button in the top row.)
- Registration for all at:
<https://meetings.vtools.ieee.org/main>