



# Wavelengths

## Section Chair's Message



### Section Chair's Message:

#### IEEE in Our World:

We live in exciting & scary times. Events like the terrorist attack in England make us all feel concerned. The IEEE logo states "Advancing Technology for Humanity". We are the "World's largest technical professional organization for the advancement of technology". Each of us work, teach, influence and mentor others. We each have a role to play in making this a better world to live in. **What we do professionally and how we behave does matter!** People are being influenced by you whether you are aware of it or not. Your ethics and professionalism are evident.

#### Elected Officers Meeting:

Your elected officers met again in April as a small group to discuss section strategy and issues. Continuing our discussion from our last meeting, the major topic was member involvement, appointed officer engagement, and establishing strategic priority

goals. Your leadership group plans to meet quarterly but are in communication weekly and sometimes daily.

#### Training:

We opted for virtual training for our officers and appointed volunteers because it was hard to find opportunities for everyone to come together for a face day of training. The training modules are brief (3 to 5 minutes), are modular and are posted on the SEM web site at <http://sites.ieee.org/sem/about-sem/training/>.

All SE Michigan Chapter and Affinity Groups elected and appointed officers are requested to attend Virtual Officers Training so you are better able to understand your position and to make you aware of available IEEE support. The virtual format allows you to proceed through the training modules as you have time.

#### Fall Conference:

Fall Conference planning is underway. Please contact Phil Hall to volunteer, and help with the planning. Plans are underway for some great upcoming conferences. Volunteers are welcome and needed. Contact information can be found in the Officers Roster on the "About SEM" page at the SEM web site

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

**Robert Neff**

**IEEE SEM Section Chair**

[RLNeff1@gmail.com](mailto:RLNeff1@gmail.com)

## Volume 57 – Issue 6

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**Wavelengths Team: (1)**

It is my pleasure to introduce everyone to the growing team of 'editors' who contribute to each month's issue of the Wavelengths PDF version of the Section newsletter. We are fortunate to have a wide mix of talent and experience to call on in the diverse members of our team that range from one of the Section's early Wavelengths editors, to relatively recent additions who are enjoying working together to present a monthly update on what is happening in the Southeastern Michigan Section.

Each of these folks brings a unique background and experience to the team effort, and we expect the 'mix' of viewpoints to result in a steadily improving and interesting publication. Keep watching over the next few months to see how our growing team comes together and provides you with our 'window' on Section activities.

Our Team Members are:



**Jim Woodyard:**

Jim is a Senior Member of IEEE and has served in many roles over the years. Currently he is serving as the director of awards for the IEEE SEM EMC Society (Chapter VIII). In the past he has been editor of Wavelengths, IEEE SEM Chair and Wayne State University (WSU) IEEE Student Branch Faculty Advisor. National committee service includes program

committees for Electron Device International Conferences, IEEE National Work Force Committee and a Senior Member review committee.

Jim was a faculty member in the WSU Department of Electrical and Computer Engineering for a number of years and is now a visiting researcher in the WSU School of Medicine. In his spare time he enjoys family activities, bicycling cross-county and sailing on Lake Huron.



**Sharan Kalwani:**

Sharan is an HPC specialist with 20+ years of experience. Sharan has degrees in both Engineering and Computer Science. He has worked in IT architecture, systems deployment, software development, OS kernels, device driver writing, networking and compilers. He has also supported several CAE, engineering, technical & scientific applications. Sharan has worked with several computing vendors such as Cray Research, Silicon Graphics Inc. (SGI), etc. He has managed several very large HPC sites with corporate organizations such as General Motors (GM) and research universities (KAUST). Sharan is a senior member of IEEE/Computer Society, serves as the Vice-Chair of the SE Michigan Chapter V, is an Emeritus member of Michigan!UNIX/user group

(mug.org) and leads the SIG-Linux section of SEMCO.

Sharan has vast writing, editorial, desktop publishing and editing experience. His interest in the printed sheet began back in High School as both writer and newsletter printer, when he first wrote biographies on Indian scientists, engineers and later on recent developments in Nuclear Energy during those days. The printing process used back then was called "cyclo-styling" and many a day was spent with tubes of ink gels, smeared across hands and chins (not to mention clothes, earning the wrath of other family members). Later he was the campus editor of the Wayne State University's Computing student newsletter. He has also been published and delivered many a tutorial and invited guest lectures, is an Adjunct Faculty at academic sites in the Mid-West and internationally as well.

In his spare time (if he has any left), he enjoys watching Formula1 Grand Prix racing, soccer, cricket, movies and documentaries. Lately he has re-kindled his school boy passion for science fiction and is beginning to develop a taste for ham radio.

## Wavelengths Team: (2)

**Karen Burnham:**

Karen Burnham began her career with a BS in Physics in 2001 then became an IEEE member after completing a MSEE in 2009. She started out working for Northrop Grumman in Southern California on radar signal processing. After graduate school in Texas, she worked at NASA's Johnson Space Center. There she decided to pursue EMC engineering as a specialty, and has since become active in the EMC Society.

During her time in aerospace she worked on power systems for the International Space Station, pyrotechnic systems for the Orion spacecraft, and was the lead EMC engineer for the Dream Chaser prototype spaceship. In her other life she has pursued freelance writing as a book reviewer, writing for magazines such as *Strange Horizons* and *Locus*, and publishing a book with the University of Illinois Press on the science fiction author Greg Egan. She moved to Michigan in 2016 and currently works as an EMC engineer at Ford Motor Company. She recently received her Ham radio license (Call sign: KE8GVH).

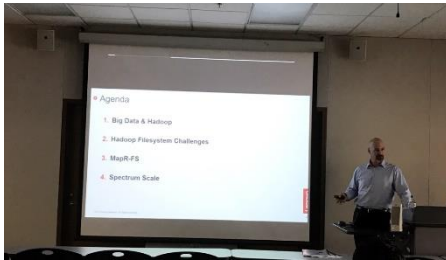
**Kimball Williams:**

Kim retired from DENSO as a "Technical Fellow" in 2012 after 40 years enjoying EMC design, testing and laboratory management. He is a certified Master EMC Design Engineer, EMC Test Engineer and ESD Test Engineer with Lifetime certification from iNARTE. He is an IEEE Senior Life Member and Past Chair of the IEEE Southeastern Michigan Section and an 'Honored Member' of the IEEE EMC Society where he serves as one of the Past Presidents Emeritus and current Director of Professional Activities.

Kim is a licensed private pilot, PADDY certified scuba diver, licensed amateur radio operator (Call sign: N8FNC) and plays classical guitar in his 'spare' time.

## Chapter 5 May Meeting:

Recently at the University of Michigan's Dearborn campus (affectionately known as UMD) inside the Professional Education Center (PEC) building in room 1330 on May 10th, the section chapter held its **4th technical** meeting of the year. At this event, we hosted Brian Finley, Principal Architect, from Lenovo's Big Data division. The theme of the technical session was all about how to deal with challenges when designing an architecture to deal with Big Data problems.



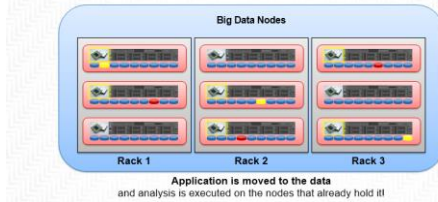
### Big Data Talk Outline

We were indeed fortunate to have Brian as our speaker, even though an artist by training, he has gone on to conquer many computational problems and worked for Argonne National Labs for a number of years before joining IBM, then transferring to Lenovo as their HPC expert and now solutions architect for Big Data, given his background in this arena.

After the customary pre-meeting networking, during which pizza and soda pop were generously provided by Lenovo, students, staff and several industry professionals then sat down to hear Brian dive deep into several nuances of configuring systems, APIs, networks, nodes, indexing, scalability are just a few of the issues one must confront in order to make predicative use of the massive amounts of data every vertical now possesses. Brian was kind enough to first take us through the traditional ways of dealing with

data and what changes in technology have occurred to allow us to tackle larger problems – both in terms of reliability and scalability.

• Hadoop & HDFS



### Hadoop File System Structure

After a history on the evolution of Big Data and today what constitutes the classic Hadoop (and Spark) ecosystems, basically there are 3 ~ 4 large players (e.g. Hortonworks, Cludera and Mapper), but we now have several good solutions which have built upon these foundations. However the challenges remain in the file system and data movement (or attempts to avoid movement, i.e. bring the processing to the data instead of the old way). So innovative approaches for an architect these days is to use things like the **MapR-FS** filesystem or **Spectrum Scale** (new name for **GPFS**) to address problems of granularity, etc.



### UMD Seminar Facility

Numerous Q&A interaction with the attendees ensued, all of which were patiently answered by Brian. The guests outnumbered the IEEE members, which indicated a high level of interest in this topic. The session also included discussion on the classic I/O development, and completely solid state (and flash) storage, which now make older model problems largely insignificant. Several of us stayed around for further 1-on-1 interaction with Brian after the event, so clearly activity in this domain remains high. From the feedback forms gathered after the event, clearly interest in Big Data, Deep Learning, Machine Learning, etc. is there. We do hope to see similar events again in the very near future, perhaps at another SE Michigan venue.

-- **Sharan Kalwani**, SM IEEE  
Vice Chair- Computer Society Chapter

*For further correspondence, contact Sharan via his email: [sharan.kalwani@ieee.org](mailto:sharan.kalwani@ieee.org)*

**WIE/SWE April Social:**

On April 23<sup>rd</sup>, 2017, members of the IEEE SEM Women in Engineering joined forces with the Society of Women Engineers (SWE) Detroit Section to host a 'Social' event for all members. ("Social" in IEEE 'speak' = Networking.)

We gathered at the Farmhouse Coffee and Ice Cream outlet in Franklin, Michigan at 11:30 and offered the first small Specialty Coffee, or Ice Cream, 'on us'. Then we all gathered in different 'clusters' to converse about WIE / SWE / Work / Families / Hobbies and generally had a great time getting to know each other, and where our lives and careers have taken us.

An attempted photograph with an iPad left a bit to be desired due to the lovely bright sun light and spacious windows in the 'Farmhouse'. However you can see that those who stayed around to join in the photo were having a great time.

In fact, we all had so much fun, that we decided to do it again. Elsewhere in this issue, you should see the notice of the reprise event, planned for June 25, 2017. If not, check out the vTools event notice at:

<https://events.vtools.ieee.org/m/45583>

The event is open to all IEEE SEM and SWE members, who want to network, enjoy a relaxing morning (Early afternoon) together and meet a few of the wonderful and fascinating people who live and work in our area.

**Come join us!**

<<>>



## Ice Cream Social:

# COFFEE & ICE CREAM!

The IEEE SEM Women in Engineering and the Society of Women Engineers (SWE) Detroit Section invites all IEEE and SWE members who are able, to join us for a reprise of our April Ice Cream Social.

*(We had so much fun the first time that we decided to do it again!)*

Come meet and 'network' (talk) with WIE and SWE members, and we will buy your first small cone, or cup of specialty coffee (your choice).

Plan to join us on Sunday, June 25, 2017  
from 11:30 AM to 1:30 PM at:

**Farmhouse Coffee and Ice Cream**

32644 Franklin Rd  
Franklin, Michigan  
United States 48025

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/45583>

We look forward to seeing you on that Sunday.

The event is open to all IEEE SEM and SWE members, who want to network, enjoy a relaxing morning (Early afternoon) together and meet a few of the wonderful and fascinating people who live and work in our area.

**Come join us!**



## July Picnic:

# SUMMER POTLUCK PICNIC!

The IEEE SEM Computer Society and the WIE (Women in Engineering) Affinity Group invites 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 23<sup>rd</sup>, 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 help 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 that Sunday.

#### 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!**

## Spring Conference:

The IEEE Southeastern Michigan Section's Spring Conference concluded last month on Thursday, May 4th, 2017. Although the event was on the unofficial date of "Star Wars Day," (May the Fourth be with you) the central theme for the conference was not lightsabers or the force but instead "Internet of Things (IoT) and Smart Living" – topics which are far more accessible than galaxies far, far away.



The event was the first of the section's conference events to be held at the Macomb Community College's John Lewis Center and it hosted a variety of speakers and presentations loosely focused around the central IoT theme. The speakers represented many different institutions and 5 of the local section's chapters. Participants in the conference began arriving to the venue at 4PM to register and start engaging in the events activities, despite the rain!



The first activities of the night included the first meeting of the section's new Eta Kappa Nu Alumni group and a demo room as a general gathering area. The demo room featured a variety of whimsical creations including cookie making robots, compressed

air powered vehicles, and Arduino-refurbished radios. These intrigues were presented courtesy of **i3Detroit**, a local hackerspace, and **RoboFest** – a robotics competition for middle and high school students that is held annually at Lawrence Tech University.

For those attendees who wanted to further their career in the academic domain, graduate program information was available for a variety of programs at the University of Michigan-Dearborn. At 5 PM the second grouping of events commenced and guests had to face the difficult decision of choosing which of the 3 technical sessions they would like to attend.



The choices of breakout sessions at 5 PM were Mr. Sharan Kalwani's presentation on advances in computing, Mr. Nevrus Kaja's session on IoT security, and Dr. Yi Lu Murphey's lecture on computational intelligence in vehicles. These represented the interests of the local Chapters 5, 3 and 2 respectively. Lasting approximately 45 minutes, each session allowed up to 20 guests to experience an interactive session with each presenter. After each session concluded, guests were given a 15-minute period to make their second hard decision of the



night with their choice of 6 PM presentation.



At 6 PM, the choices of presentation were between Dr. Omid Dehzangi's research on wearable state monitoring, Ms. Jennifer Dukarski's presentation on how the law and regulations impact the IoT, and Dr. Chuan Wang's session on fully printed stretchable electronic devices. These presentations were organized courtesy of Chapters 1, 2 and 17 – giving Chapter 2 an impressive night with two speakers sponsored. These sessions terminated the breakout part of the event and began the dinner and keynote presentation. (For a detailed review on the keynote speaker, please see Sharan Kalwani's article in this newsletter).

Dinner consisted of Chicken Marsala, Veggie Lasagna, Salad, Coffee, Tea, & Cookies. The food was plentiful, delicious and was a pleasant backdrop to Jake Sigal's keynote, which was met with resounding approval by the guests. After Jake's presentation, the organizing committee recognized the various parties who helped make this event possible and encouraged everyone to attend the next section event – the Fall Ethics conference, which will be held in Ypsilanti on November 13th – 14th. I hope you all will consider attending this event and all other local IEEE events.

**Bob Adams**

Spring Conference Chair.



## Spring 2017 Keynote:

**2017 Spring Conference report: Jake Sigal’s Keynote “Dials of IOT”**

At the IEEE Southeastern Michigan Spring 2017 conference, recently held at the student convention center of the Macomb Community College, I sat down to listen to the scheduled keynote by Jake Sigal. The event theme this time centered around IOT (“Internet of Things”) and so was expecting to be drowned by a boatload of newly fangled acronyms, colorful art showing everything blending harmoniously, and the usual marketing spiel. Instead I was both quite delighted and pleasantly surprised by Jake’s opening & his approach to the entire subject. To begin with the CES (Consumer Electronics Show) best of the best displays and talk about what I view as pioneering devices, which are potentially changing our lives, is definitely an attention grabber. Then leading into what things excited him as a person, entrepreneur and always seeking innovation (in unexpected ways too) made this one talk that folks should not have missed.

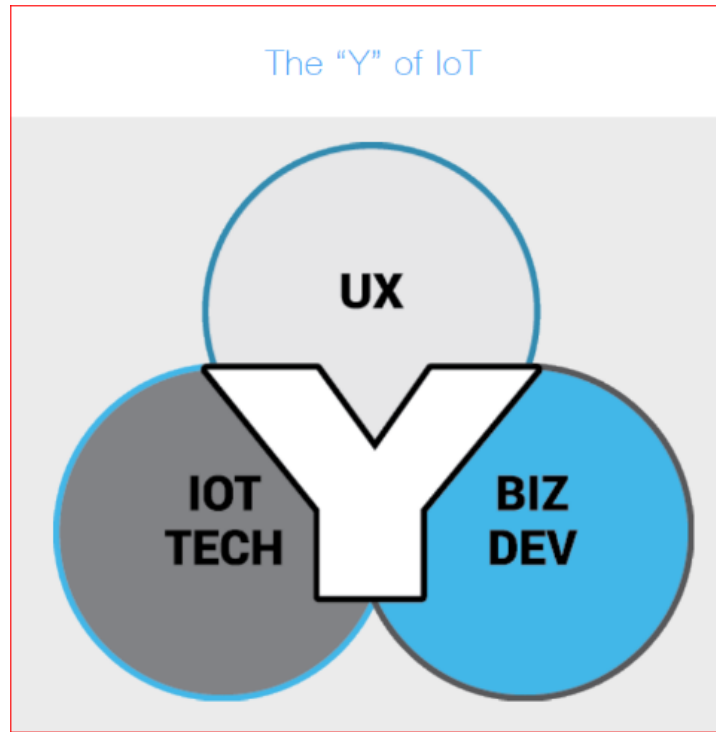
**Jake starts us off with glimpses from CES 2017**

During his passionate talk, the point Jake was subtly driving home was really a segue into his theme (pun intended as the Segway product did come up during the discourse!), which has 3 key elements (or “Dials”) of any product development team’s thrust: The user experience [UX], the technology involved [IOT TECH] and finally the economics itself [BIZ DEV]. These 3 arenas are inescapable no matter how one structures things in this business. I enjoyed listening to the examples he quoted and dissected for us. This gave really a fresh perspective on things. Jake was very frank and honest in freely admitting he is no expert in any of these, but knows enough to surround himself with smarter cookies. That in itself to me would be a pre-requisite or most important “Dial” of them all.

From the CES he talked about “Roost” which is a simple product that allows one to use a 9V battery in your devices (e.g. smoke detector) with an attachment, to alert you via your smartphone. It had the 3 “dials”: a very familiar user experience (UX), tech (simple) and low cost economics. From there he went on to his personal passion: cycling and showed how many products have tried to enhance this in various ways. When applying the 3 dials, one could then see where they may have missed out. Ultimately to succeed, to make a difference, we have to pass these litmus tests in order to succeed.

Another anecdotal example cited by Jake was the infamous Sony mini-Discman, a solid example of not listening to what folks really meant, instead picking up literally what was said.

### Spring 2017 Keynote – Cont.:



The 3 most important "Dials" of Product Development

In closing, a tiny glimpse into how Jake's company - Tome Software Inc - is applying these 3 principles in their approach (the adjustable desks project for example) and clearly illustrates how one should objectively apply the "whY" to the current rising passion of IOT development and deployment, today. Of course, a few "how" "when" "where" etc. also helps. But definitely overall, a very fascinating talk!

Throughout the session, Jake held everyone's attention (both young and old – this writer was happy to see a few super youthful budding engineers-to-be also present there). Personally I think every engineer should listen to this talk, absorb it, as it also makes beautiful that the old adage: 'common sense and simple' does win the day. Jake encouraged folks to reach out to him if they have any interesting thoughts to share. He can be reached on his Twitter account @JakeSigal, or check the website [www.tomesoftware.com](http://www.tomesoftware.com).

Jake's Bio: A proud graduate of Ohio University, Jake invented the original USB turntable at Numark before he went to work on satellite radio products at Delphi. He founded his first startup, Livio, in 2008 and spent five years developing Internet radios and a language that lets mobile apps and hardware systems communicate. Ford bought Livio in 2013 and Jake founded Tome to explore the Internet of Things tech space.

-- **Sharan Kalwani**, Senior Member, IEEE, Vice Chair- Computer Society (SE Michigan)

For further correspondence, feel free to contact Sharan via his email: [sharan.kalwani@ieee.org](mailto:sharan.kalwani@ieee.org), or you can find him at one of the many events organized by Chapter 5

**EMCFest 2017:****EMC Fest 2017 a Well-Attended Success!**

The EMC Society Chapter (5) of Southeast Michigan held their annual EMC Fest on May 11, 2017. Held at the Embassy Suites in Livonia, it ran from 9am to 4 pm with an ice cream reception and vendor dinner afterwards.

The event was attended by 279 people and featured 41 vendor tables—all vendor tables were sold out.

**Vendor Area**

The keynote speaker was Kenneth Wyatt, author of several books including most recently *EMI Troubleshooting Cookbook for Product Designers* which was made available to EMC Fest attendees as part of their registration fee.



Much like his book, his talk was aimed at providing practical advice to product designers who may not be EMC experts but who still have to face the rigors of EMC

compliance testing. Ken Wyatt is president and principal consultant of Wyatt Technical Services LLC, as well as the senior technical editor for *Interference Technology*. He has worked in the field of EMC engineering for over 30 years. His specialty is EMI troubleshooting and pre-compliance testing and is a co-author of the popular *EMC Pocket Guide* and *RFI Radio Frequency Interference Pocket Guide*. You can find out more information on his website: [www.emc-seminars.com](http://www.emc-seminars.com).

Ken's talk was divided into four sessions:

"EMC Essentials,"  
 "Common EMC Issues,"  
 "Developing an EMC Troubleshooting Kit," and  
 "Pre-Compliance Testing & Case Studies."

Each session was followed by a full hour break for people to peruse the vendor tables, get something to eat or drink, and engage in conversations with their colleagues. This allowed everyone present to have plenty of time to talk, ask questions, and find out about the latest offerings from the vendors.



The attendees came from a number of different backgrounds, the event appealing not just to die hard EMC engineers but also to the non-EMC specialists from industries all over Southeast Michigan. The audience was also diverse in terms of career phase, with everyone from college students to retirees attending.

That made Ken's talk all the more important as he spread the word

about EMC essentials and what to look for in both design and troubleshooting. He provided the



audience with Ralph Morrison's perspective that to understand EMI, you have to focus on the spaces where EM fields propagate, not just the traces where currents flow. "Buildings have walls and halls. People travel in the *halls*, not the walls. Circuits have traces and spaces. Energy and signals travel in the *spaces*, not the traces."

His points were backed up with smooth table top demonstrations on the effect on conducted and radiated emissions of such seemingly small decisions as pigtail shield terminations and slots in PCBs. Each topic was bolstered with stories from Ken's many years troubleshooting as an EMC consultant.

He also provided practical advice on how to build useful items such as shielding effectiveness test jigs, ESD detection counters, and DIY near field and current probes.

Between the keynote speaker and the vendors there was plenty of information for attendees to absorb, and a collegial atmosphere for doing so.

Here's looking forward to an equally successful EMC Fest in 2018!

**-Karen Burnham**

*For further information about past and future EMC Fests, please contact [emcfest@emcsociety.org](mailto:emcfest@emcsociety.org)*

## EMC Seminar:



THE IEEE ROCK RIVER VALLEY SECTION  
PRESENTS THE 2017 EMC SEMINAR



## EM Field-Based Design of Circuit Boards for First Pass EMC Compliance

Daniel Beeker

**June 13, 2017**  
**7:30 AM - 6:00 PM**  
**Giovanni's Restaurant**  
**and Conference Center**  
**Rockford, IL**

### Seminar Overview

**Session 1 - Understanding how Electromagnetic Fields behave on Circuit Boards**

**Session 2 - First Pass EMC Circuit Board Design: Techniques to Improve Performance**

**Session 3 - Power Distribution Made Easy**

**Session 4 - PCB Design to Survive Transients**

### Seminar Registration

IEEE Members \$125.00  
Non-IEEE Members \$175.00  
IEEE Student Members \$60.00  
Group Rate (4+ from same corporation), please call.

Seminar Fee includes seminar attendance, a copy of the presentation material, and breakfast, lunch, and refreshments.

Registration help for payment:  
Adrian Vandergrift  
aevandergrift@ieee.org  
815-226-2518

Questions? Please contact:  
Jamal Shafii - Jamalshafii@ieee.org  
Phone: 608-658-6830  
Steve Davidson  
steve.davidson@ieee.org  
Phone: 815-218-8249

This seminar will consist of four sessions. The first session will explain how electromagnetic fields behave on circuit boards. Material presented will focus on the basic principles and physics of electromagnetic energy. It will be presented in easy to understand language with plenty of diagrams. Attendees will discover how understanding the behavior of EM fields can help to design PCBs that will be more robust and have better electromagnetic compatibility performance. In the second session, techniques to improve EMC performance of circuit boards will be discussed. A new design approach that utilizes an electromagnetic physics-based design methodology to control the field energy in your design will be presented. The third session will focus on a simple EM physics- and geometry-based approach for designing power distribution networks on PCBs. From input power connection to the IC die, the simple rules discussed can be used to reduce power-supply noise and improve EMC. The final session will be on PCB design to survive transients. This session will cover some definitions of ESD and EOS while explaining the important differences in the energy involved and the resulting damage and design to mitigate transients. The session will also review PCB design for improving system robustness.

Attendees will have the opportunity to network with EMC and Test Equipment vendors. Past seminars have featured up to 30 exhibitors!



With more than 39 years of experience in electronic system design and EMC, Daniel Beeker provides applications support for NXP Automotive customers worldwide. Daniel also supports NXP customers globally with special function development tools and instrumentation (almost all of the "LFxxx" tools on the NXP website). Daniel worked for Freescale Semiconductor before Freescale and NXP merged in 2015. Daniel also specializes in EMC and signal integrity design techniques for systems and PCBs. In support of this, Daniel has completed more than 200

PCB design evaluations for customers and internal NXP products. Daniel teaches field based design techniques at NXP and industry conferences worldwide; more than 70 sessions with more than 3500 attendees since 2010. Daniel is also involved with NXP IC package design and IC development tool teams to support improved EMC performance, working on more than 20 IC designs. Specialties: Microprocessor and Microcontroller development tools, PCB layout techniques for EMC and signal integrity, and Automotive applications specialist.

Rockford, Illinois is located just over an hour's drive from Chicago's O'Hare airport. Direct bus service from Chicago/O'Hare airport is available. There are several hotels within few blocks of the Giovanni's Conference Center. For more information about things to see and do in Rockford, Visit <https://www.gorockford.com/>

For more information visit our website:

<http://sites.ieee.org/rockrivervalley/events/emcseminar/>

To Register Now: <https://goo.gl/M5DDqH>

### Q&A with Rube Goldberg:

The following article has been reprinted with kind permission from the National Engineering Forum. Originally published at <http://nationalengineeringforum.com/qa-with-rube-goldberg-toy-designer-todd-anderson-and-jennifer-george/>. You can follow them on social media, via Twitter @natlengforum and on Facebook: NEFlamAnEngineer

### Q&A With Rube Goldberg, Toy Designer Todd Anderson and Jennifer George

Mention Rube Goldberg to almost anyone and you're likely to be met with a smile and probably a story about how they loved learning about the Pulitzer Prize-winning cartoonist best known for his complicated, zany invention cartoons.



Image courtesy of Spin Master

Now, Rube Goldberg, Inc. (RGI) is making STEM fun on an expanded scale. In a partnership with [Spin Master Corp.](#), RGI is offering toys in an exclusive deal with Target. We had to get the story, so we talked to Todd Anderson, toy designer and brand manager at Spin Master and Jennifer George, RGI legacy director and Rube Goldberg's granddaughter.

### How are Rube Goldberg Activity Sets Unique?

Todd Anderson (TA): We approached this with the aspects of humor and motion in mind. There's always a task to complete, always in a humorous and complex way. Our toys have real personality and humor as opposed to just the linear aspect of other building kits.

Jennifer George (JG): We also approached the design so that there would actually be trial and error figured into the build; otherwise there is no learning curve. In that sense, the experience is more like that of a real engineer.

TA: When I talked to NPD (National Panel Diary), they classify a STEM toy "as one that possesses a variable that when changed produces a different outcome." In our kits, changing one variable can produce many different outcomes.

JG: This humorous and whimsical approach to understanding STEM makes the Rube Goldberg play sets unique. Our mission was to get children to tinker, experiment, test and to actively engage them to problem solve. Trial and error ultimately gets you to your end goal and success.

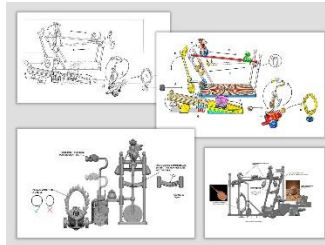


Image courtesy of Spin Master

### What Motivated RGI to Move into the Toy Industry?

JG: Actually, Rube Goldberg has been in the toy industry since the 1960s, just without his name attached. Mousetrap, which is based on my grandfather's cartoons, has sold almost 70 million units since its arrival on the market. There were also hobby kits and puzzles when my grandfather was alive. But when Target approached us to create a STEM-friendly toy, we jumped at the chance.

### Tell us about how you tested the Toys with real kids before you began marketing them. What did you learn from that Process?

TA: We had access to panels and focus groups of kids; some of these were tested with kids of employees of Spin Master as take-home

prototypes. This was very intentional testing. We found that these builds were not as simple as a typical construction or science kit and really require active thinking to get the sets to work and we embraced the difference. Our kits are not the easiest to build and that's a good thing. You learn more when you fail than when you succeed. Every step is a task to complete, and this remains true to the spirit of all Rube Goldberg inventions.

JG: And if you get stuck, we launched a series of "How-to" videos on YouTube to support the consumer and make the overall experience as positive as possible.

TA: In one of our focus groups, a parent was quoted as saying "To my surprise, my son became quickly determined to do the project himself. He worked through the challenging phase and could really celebrate in the success". This was great to see active engagement like that in our toys.



Image courtesy of Spin Master

### Which Set is your favorite, and Why?

JG: The Acrobat Challenge! It was the first one designed and the first prototype that I could have in my hands and build myself. But I'm also a big fan of the Speeding Car Challenge because it's very satisfying when the car moves – and the chicken makes me smile.

TA: I also love the Speeding Car because of the finale. When the car zooms off, it's a great sense of accomplishment

Reformatted by [Sharan Kalwani](#) for Wavelengths Newsletter

**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](http://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](mailto:k.williams@ieee.org)

[karen.burnham@gmail.com](mailto:karen.burnham@gmail.com)

[sharan.kalwani@ieee.org](mailto:sharan.kalwani@ieee.org)

An announcement may be placed in the newsletter.

.....

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

Seminars for the 2015-2016 academic year:

<http://mipse.umich.edu/about/semi-nars.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/>

**Mad Science**

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

**ESD PE Review Class**

[www.esd.org](http://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](mailto: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

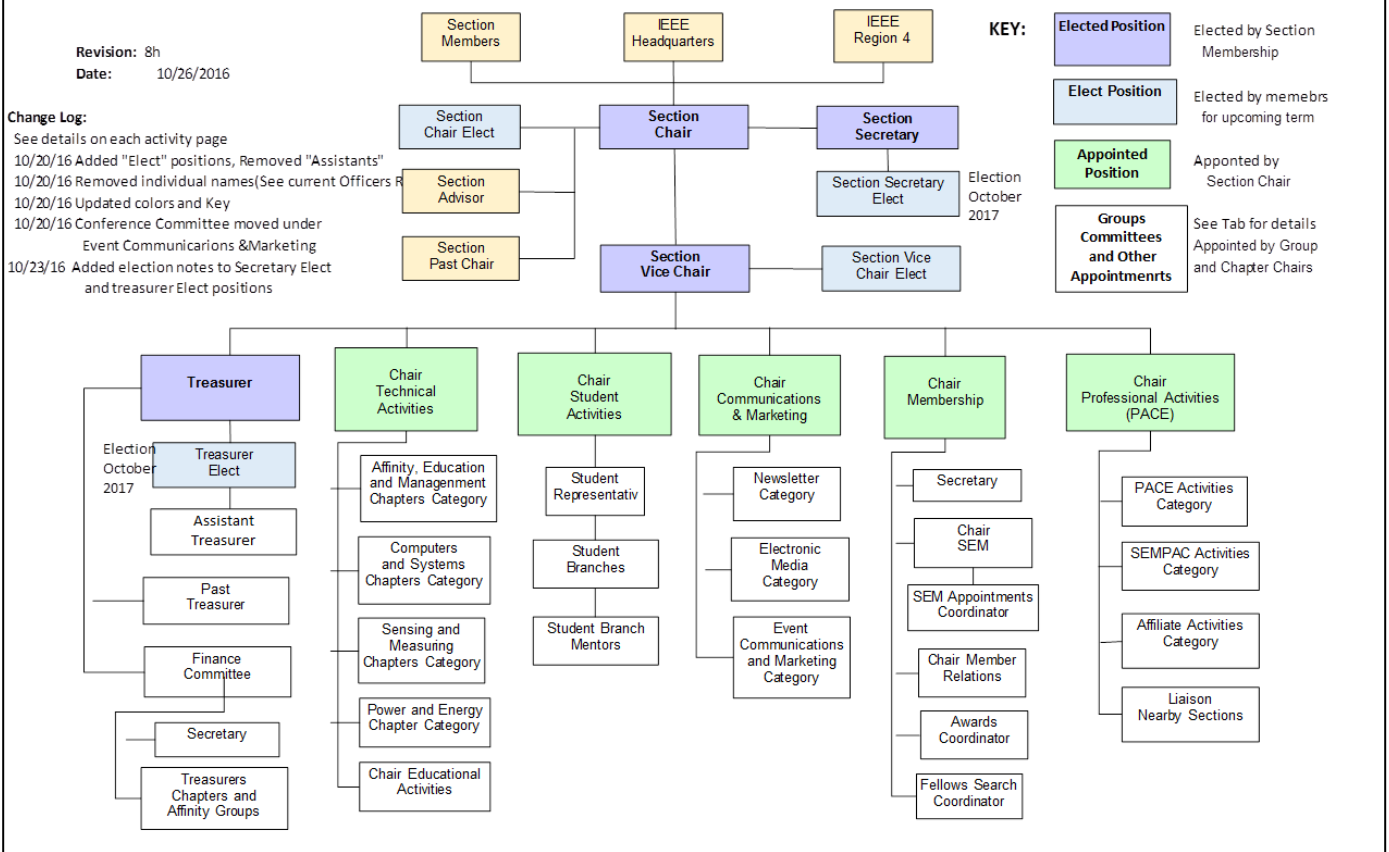
chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to send meeting information to our webmasters for posting on section’s calendar.

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, in PDF format, from the SEM Website at: [www.ieee-sem.com](http://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.

**June 1, Thursday, Teleconference, 12:00 – 1:00 P.M.** [https://meetings.vtools.ieee.org/feed/meeting\\_ical/42553](https://meetings.vtools.ieee.org/feed/meeting_ical/42553)

**July 12, Wednesday, Face to Face, 5:30 – 8:00 P.M.** [https://meetings.vtools.ieee.org/feed/meeting\\_ical/42558](https://meetings.vtools.ieee.org/feed/meeting_ical/42558)

**August 3, Thursday, Teleconference, 12:00 – 1:00 P.M.** [https://meetings.vtools.ieee.org/feed/meeting\\_ical/42554](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](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](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](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](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](mailto: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](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](mailto: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](mailto:k.williams@ieee.org)  
[sharan.kalwani@ieee.org](mailto:sharan.kalwani@ieee.org)  
[jrwoodyard@gmail.com](mailto:jrwoodyard@gmail.com)  
[karen.burnham@gmail.com](mailto: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](mailto: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](mailto:karen.burnham@gmail.com)  
[sharan.kalwani@ieee.org](mailto:sharan.kalwani@ieee.org)  
[jrwoodyard@gmail.com](mailto:jrwoodyard@gmail.com)  
[k.williams@ieee.org](mailto:k.williams@ieee.org)

**Wavelengths Annual Publication Plan for Articles**

Month	AG's	Ch's	Ch's	SB's	Specal 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	GOLD Award
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!		Humanatarian	
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**  
Chaomin Luo

**Chair Finance**  
Nevrus Kaja

**Chair Membership**  
Aisha Yousuf

**Chair Nominations & Appointments**  
Kimball Williams

**Chair Professional Activities**  
Vacant

**Chair Student Activities**  
Nevrus Kaja

**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>



### 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](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:

- 1<sup>st</sup> 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 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>