Madison Section Newsletter

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Upcoming Meetings

IEEE Section Meeting: "Cybersecurity and You: Recommendations on Protecting Your Personal Digital Assets"

Date/Time: Tuesday April 16th, 5:30pm - 7:00pm

Location: Sector67, 56 Cory Street, Madison 53704

Meeting Info

IEEE ECN Meeting: "Entrepreneurs and Startups, A panel Discussion"

Date/Time: Friday April 26th, 11:30am - 1:00pm

Location: Sector67, 56 Cory Street, Madison 53704

Meeting Info

News/Announcements

Volunteers Needed! See below for more information

It's time to Renew you IEEE Membership!

Past Meeting Reviews

Review of March LMAG/St udent Branch Meeting

Amateur Radio Digital Communication Mode FT8

Review of March Section Meeting

Thorium and the Waste Issue

Review of March PES-IAS Meeting

Magnetic Levitation and Bearingless Motors

April Section Meeting: "Cybersecurity and You: Recommendations on Protecting Your Personal Digital Assets"

- Tuesday, April 16th, 5:30-7:00 PM
- Speaker: Nate T oth, Alliant Energy
- Location:
- Sector67
  56 Cory Street, Madison
  53704
- Please Register at the IEEE-Madison event page.

Title: Cybersecurity and You: Recommendations on Protecting Your Personal Digital Assets
Talk: Nathan Toth, Chair of IEEE Madison, will make a presentation on how you can stay safe online and on your home computers, and how you can protect your digital assets. The threats present against you and your digital assets are serious. But as we become more connected to the world, as our information moves to the cloud, and as our personal identities are furth er connected to our digital lives, the importance of safeguarding those assets becomes more crucial. Discussed will be tips on how to make sure you can browse the internet safely, how you can protect your computer from malware, how to protect social media accounts, and how to avoid scams and fraud.

Bio: Nathan works as a IT Security Systems Administrator at Alliant Energy, and is very experienced in network security, firewalls, defending against internet based threats, and maintaining safe computer systems. He is a 2007 graduate from Herzing College with a degree in Computer Science, is ISC2, CompTIA, and Cisco certified, and broad experience in securing networks and systems of all sizes.

April ECN Meeting: "Entrepreneurs and Startups, A panel Discussion"

- Friday, April 26th, 11:30am-1:00 pm
- Speakers: (See below)
- Location:
  Sector67
  56 Cory Street, Madison
  53704
- Please Register at the IEEE-Madison event page.

Panel Discussion: Three local Entrepreneurs with experience in starting, running, and financing start ups will participate in a panel discussion about the process. Each panel member will give a short summary of the experience and then continue the discussion with questions from attendees.

The meeting will start with a short introduction of all present -- pleased be prepared to give your "Elevator Speech". Bring a brown-bag lunch. Snacks and drinks are available at Sector67 for a small fee.

Bios: Panel Members

Mark Shults received two BS degrees from MIT in Aeronautical Engineering and Biology in 1970 and a MS in Biomedical Engineering from the University of Wisconsin Madison in 1975. He has over 4 decades of experience in medical R&D. About half of this time he spent at the UW Medical School also with one year each at Harvard Medical School and the Technical University of Berlin, Germany. Overlapping with this academic career were positions as VP of R&D at venture-funded Markwell Medical in Madison WI (1981- 1999) and DexCom in San Diego (1999 – 2003). Mark was a 1999 founder of DexCom, a publicly traded (DXCM) industry leader in FDA cleared continuous transcutaneous glucose sensors for people with diabetes. He is a member of the angel investing group, Wisconsin Investment Partners.

Daniel van der Weide is a pioneer in terahertz generation and detection using integrated circuits, having designed, fabricated and measured the shortest pulses on record using these circuits in 1994, with comparable results at world-record slew rates reported in 2018. He has made extraordinary contributions to the understanding of terahe rtz electronics, including coherent measurements, ultra-broadband antennas, and remote sensing. He helped develop the ability to localize high-frequency energy which led him to its use in a wide range of applications, including the first non-contact measurements of pore-forming protein dynamics in membranes. The small-signal measurements gave way to exploration of localized microwave power to treat cancer. With others, he pursued the clinical refinement of this application of 2.45 GHz microwave power, ultimately establishing Neuwave Medical Inc., which has treated thousands of patients with kidney, lung and liver lesions, and was acquired by Johnson & Johnson in 2016.

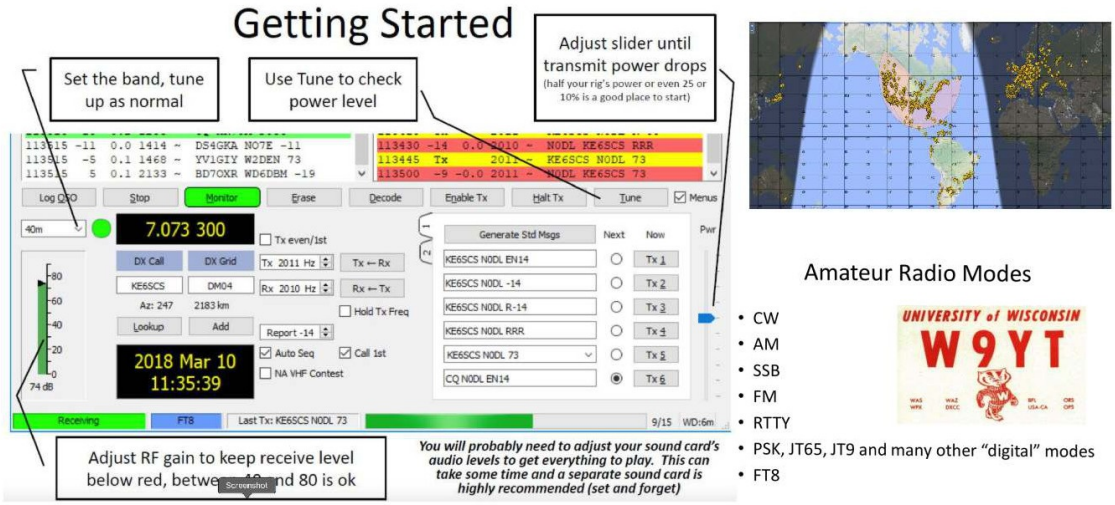
Justin Reed, CEO and Co-founder of C-Motive Technology, Inc. is an entrepreneur at heart, driven to "build something from nothing," and applies his meticulousness to the company's strategic development, fundraising, evaluating new business opportunities, and forging customer r elationships, among many other hats. A graduate of UW-Madison's power research program (WEMPEC), Justin's technical expertise lies in multi-level power converters and electromechanical power conversion. He has authored or co-authored over a dozen technical papers and is an inventor of patented and patent-pending core C-Motive technology.

Reviews of Past Meetings

Review of March LMAG/Student Branch Meeting: "Amateur Radio Digital Communication Mode FT8"

Dale Burmeister gave a very informative talk on the use of a new (developed in 2017) digital communication mode called FT8, shorthand for Franke & Taylor, 8-frequency shift keying format. The mode as implemented represents a 31 dB signal to noise improvement over typical SSB mode communication, and is even 6 dB (S/N) more efficient than CW. The 31dB improvement means that you cna make a contact with 1 Watt using FT8 that would require 1000 Watts SSB! To use the code, one needs a computer (there are event Raspberry Pi implementations) with an audio card and a traditional SSB transmitter. The typical 2500 Hz of bandwidth is sliced into a number of "virtual" channels, with each one using about 50 Hz of bandwidth.

Dale demonstrated a live contact with FT8 by the use of Virtual Network Computing (VNC) from the College of Engineering to his home. He made two live QSOs while connected. He also showed how the contacts can be automatically logged and showed his current world-wide contacts via a mapped slide. Copies of his slides are at this link. Dale is also an alumni if the Badger Amateur Radio Society (BARS) and is always searching for students interested in Amateur Radio who can join BARS and help operate W9YT.

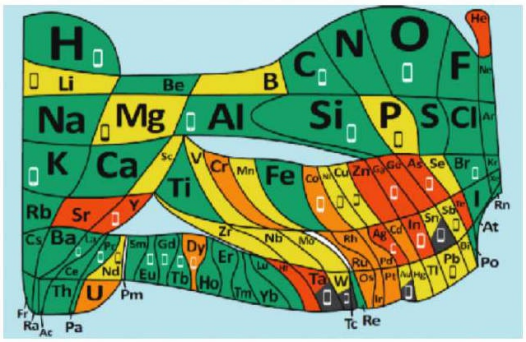


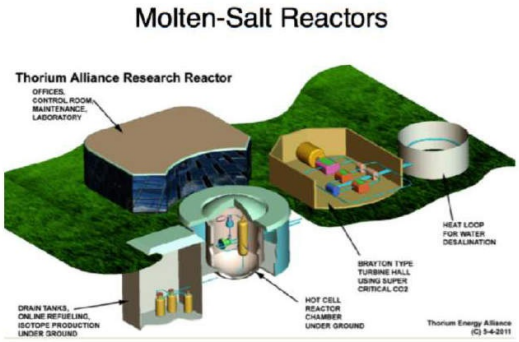
Review of March PES/IAS Meeting: "Magnetic Levitation and Bearingless Motors"

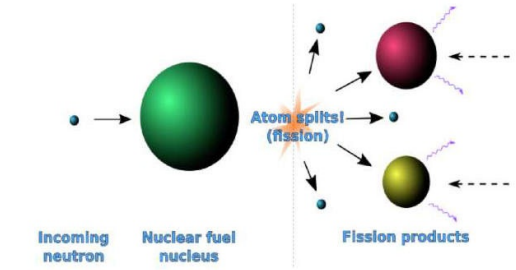
The meeting was a well attended meeting with many undergraduate and gradate students present. The talk started with a brief overview of the problem identifying the lifetime and reliability issues of existing motors with bearings. Other low-wear bearing approaches were discussed such as air and fluid bearings. Dr. Severs en then showed how current motors could be modified with the addition of a small amount of additional winding to provide both the torque for rotation and the forces necessary to center the shaft in the housing with no bearings, except for mechanical lands under no excitation. He showed the research motor used to demonstrate the the technique is practical. It is likely possible that the shaft position sensing can be done with some additional control circuits measuring the winding currents and voltages. At this point, there is considerable control circuitry, but that will be reduced to an integrated assembly with production volume.

Review of March Section Meeting: "Thorium and the Waste Issue"

Dr. Steeves informative talk discussed fission, actinides, fission products, and a comparison of thorium with uranium, especially with regard to thorium's use in molten salt reactors instead of light water reactors. If you missed the talk, his slides are available here. He also addressed the issue of different reactor types including Pressurized and B oiling Water Reactors, the Canadian CANDU Reactor, and Gas Cooled reactors and traced the Thorium Reactor's History. Finally, he addressed the waste (he calls it unused fuel) issue and explained how thorium or other advanced reactors could help to minimize and consume the waste stored.







News/Announcements

- **Volunteers Needed:** Are you interested in volunteering? If so, IEEE Madison is looking for a few people interested in a few exciting new volunteer positions.First, the Executive Committee is looking to fill a new position of auditor. This position will work with the Treasurer and the Executive Committee to review all expenditures and ensure that IEEE Madison remains compliant with all IEEE policies and procedures, as well as applicable laws. The auditor will also serve o n the Finance and Audit committee. If you are interested and wondering how much time this volunteer position will require, it is estimated that it will be at most a couple hours per month. If you are interested, please contact Nathan Toth, IEEE Madison Section Chair, at tothnj@ieee.org.

  Secondly, IEEE Madison will be forming an Ethics Committee. The purpose of the Ethics Committee will be to foster awareness of ethical issues, promote ethical behavior among members of IEEE Madison, and advise the Executive Committee on IEEE Ethics policy and concerns. The Ethics Committee will consist of 3 or more members of IEEE. For those interested in volunteering for the ethics committee, please contact Nathan Toth, IEEE Madison Section Chair, at tothnj@ieee.org. The time commitment for this committee will be approximately 2 hours per month.
  Volunteering for IEEE Madison helps to grow a community of engineers, scientists, and technologists in the Madison area.

  If you are interested in any of the above positions or are interested in volunteering for any other position or task, please contact Nathan Toth at tothnj@ieee.org.

- **Renew your IEEE Membership:** It is pasttime of year to renew your IEEE Membership and help support the Madison Section. However, you can still renew! A portion of your dues goes to financially support the Section, allowing us to host events with little or no cost to members. To renew your membership, click on this RENEW NOW link.

IEEE Madison Leadership

- Section Chair – Nate Toth
- Section Vice Chair – Hugh Schmidt
- Section Trea surer – Tom Kaminski
- Section Secretary – Mike Stemper
- Webmaster – Nate Toth
- PES/IAS Chair – Dan Ludois
- PES/IAS Vice Chair – Eric Severson
- PES/IAS Secretary/Treasurer- Mike Stemper
- EMB Chapter Chair – Dennis Bahr
- Life Member Affinity Group Chair – San Rotter
- Life Member Affinity Group Vice Chair – Charles Cowie
- ECN Chair – Tom Kaminski
- Young Professionals Chair – Nate Toth
- Members at Large: Clark Johnson, Craig Heilman, Dennis Bahr, San Rotter.

Membership Upgrades

Those interested in upgrading their IEEE membership level should send their resumes or other information showing five years of significant performance in an IEEE-designated field to Charles J Gervasi via email at cj (at) cgervasi.com. Madison Section Board will attempt to find Senior IEEE members knowledgeable in the applicant's area of practice who may be able to provide references. You are invited to attend thinformal networking portion of the monthly Section meetings (starting at 11:30am) to meet the Section Board members and discuss intentions.

The Institute of Electrical and Electronics Engineers or IEEE (read Eye-Triple-E) is an international non-profit, professional organization dedicated to advancing technology innovation and excellence for the betterment of humanity. IEEE and its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities. It has the most members of any technical professional organization in the world, with more than 300,000

members in around 150 countries. The IEEE consists of 38 societies, organized around specialized technical fields, with more than 300 local organizations that hold regular meetings. Discover what IEEE Member Discounts can offer you. The Memb er Discounts portfolio consists of insurance products and programs for the home, office and travel, all at excellent group rates and reduced pricing. Visit IEEE Member Discounts to see what's available in your location and enjoy the savings. For more information, please visit: IEEE.ORG.