

PHILADELPHIA SECTION of the IEEE

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Almanack



Vol. 59, No. 3 www.ieeephiladelphia.org

March 2014

SECTION MEETING

March 18, 2014

Dinner: 6 pm

Speaker: 7 pm

Sheraton University City

Philadelphia

Meal Cost: \$25.00 (students \$15.00)

Parking cost paid by section

Ben Parvey, J.D.

Development, Financing, Ownership and Management of District Energy and CHP systems

Samuel M. Herb, P.E.

The Fieldbus Monster

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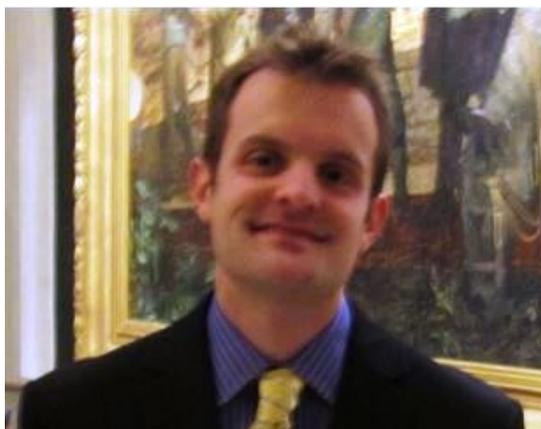
Note: In the event of bad weather please call the Sheraton after 1pm the day of the meeting at 215-387-8000. Ask the front desk if the meeting has been canceled.

March 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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2	3	4 CONET	5	6	7	8 STEM Ed. Conf.
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Chair's Message

By Philip M. Gonski, P.E



For many of us, engineering is not just a job, but a passion and often, a hobby.

On a blustery, snow-filled Saturday morning in January, Peter Silverberg and I ventured out to judge the Philadelphia Future City Competition, which was hosted in Newtown Square, where middle school children were tasked with modeling their very own “Cities of the Future.” Most students envisioned their city as energy-independent, with the help of renewables, widespread use of public transit, and community collaboration. Their passion for sustainability and command of basic engineering concepts was remarkable.

Even more striking than the displays, was the students’ ability to communicate their ideas and think on their feet, as educators and professionals went from booth to booth asking tough, mind-provoking questions. I have no doubt that the students participating in this competition will strongly consider the engineering fields, as they have the benefit of great teachers, a strong academic curriculum, and events where community volunteers help cultivate their desire to learn.

Keeping this flame alive in the years to come is the next challenge. While television glamorizes the fields of advertising (Mad Men), law (Law & Order), medicine (ER), and criminal justice (take your pick), we’ve yet to see a primetime show devoted to the engineering profession. Maybe I should send a screenplay to Hollywood. *

In the meantime, all of us can attest that children are fascinated by science and engineering phenomena in their early years – my school trips to the Science and Industry Museum (Chicago) were some of my fondest memories. The problems facing schools around the country are certainly to be debated; however, it is indisputable that schools and teachers are being tasked to do more with fewer resources, while programs for science are losing funding every day. Without the benefits of lab experiments, field trips, and career exploration, a child’s initial interest in science can wane. This is especially true in metropolitan areas where education is critical and under serves the population.

I’m sure most people have heard about the need for additional Science Technology Engineering and Math (STEM) education. The exact number of advanced STEM degrees required to fuel the future of engineering in America is a matter for statisticians. However, few would dispute the necessity, and in my opinion, more can be done to promote engineering among the youth. Professional societies must continue to assist educators.

IEEE Members Mark Soffa, John Ianuzzi, and Ken Paist are rolling out a new series of courses aimed at bringing low-cost Arduino kits to local schools as well as a “Teach the Teachers” seminar on how to introduce engineering into the classroom. Arduino boards are small, processor-driven electronics that intro-duce children to circuitry and program-ming. The first pilot class will be held on March 29, thanks to a generous lab donation by DeVry University in Fort Washington, Pennsylvania.

Please join us in making the IEEE Philadelphia Chapter part of the solution to the recent challenges facing our schools. Contact me at philip.m.gonski@ieee.org with specific ideas on how we can work with you to bring engineering to the kids.

*Editor’s note: Star Trek and MacGyver were that kind of show long ago. The CSI shows use some science.

IEEE NIGHT
Philadelphia Section Meeting
Joint with: Magnetism (MAG) and Reliability (R)

Date: Tuesday, March 18, 2014

Time: Dinner is at 6 PM. Program starts at 7 PM, and 8 PM

Location: Sheraton University City Hotel, 36th and Chestnut Streets, Philadelphia Pa.

Cost of dinner is: \$25.00 (Students \$15.00); meeting only is free (Real cost of dinner is over \$40.00, which is mostly subsidized by section)

Reservations are needed, call (484.270.5136) or email the section office (sec.philadelphia@ieee.org) or use vtools in the web site.

Indoor parking is at location and paid by Section. Bring ticket to be stamped

Note: In the event of bad weather please call the Sheraton after 1 PM the day of the meeting at 215.387.8000. Ask the front desk if the meeting has been canceled.

Development, financing, ownership and management of District Energy and CHP systems
Ben Parvey, J.D.

Private development, financing, ownership and management of District Energy and CHP systems free up institutional capital and resources and enable institutions to concentrate on their core missions. The presentation will focus on various third-party financing structures and funding incentives, including financial grants, tax incentives, low-interest loans, or utility and environmental policies that increase the financial prospects for District Energy and CHP projects. The presentation will also discuss the benefits of integrating on-site clean energy and energy infrastructure while consolidating energy costs and improving operations. Case studies will be used in the presentation.

Benjamin Parvey is Blue Sky Power's CEO and has dedicated his professional career and education towards developing innovative public private partnerships. As Co-founder and CEO of Blue Sky Power, Parvey has led the company's development of clean energy projects for health care and higher education facilities, governmental entities, non-profits and commercial entities. In addition to advancing the strategic direction of the company, Parvey oversees the implementation of innovative finance structures and transactional elements of each clean energy project.



Prior to founding Blue Sky Power, as a public and project finance attorney with Saul Ewing LLP in Philadelphia and

Wilmington, Parvey assisted hospitals, universities, states, counties, municipalities, school districts, municipal utilities, economic development and improvement authorities and their underwriters with financing capital projects. Parvey has worked on over \$4 billion in financings to provide funds to construct clean energy systems, hospitals, schools, municipal buildings, senior living facilities, airport facilities, water and wastewater systems, manufacturing facilities, and various other capital projects. Prior to practicing law, Parvey was the Market Development Manager for the Investor Responsibility Research Center in Washington, DC, where he provided Corporate Governance analysis and Institutional Shareholder Services to private asset managers and public pension funds with assets in excess of \$500 million. In this position, he consulted with some of the world's largest institutional investors and pension funds and coordinated the company's branding campaign. Ben gained experience in federal government while working for the Secretary of the U.S. Senate, the U.S. Senate Armed Services Committee and a judge on the U.S. Court of Appeals for the Third Circuit. Parvey recently served two terms as Chairman of the Camden County Environmental Commission and a term as Chairman of the Multiple Sclerosis Society's Government Relations Committee. Attorney Bar Admissions: New Jersey and Pennsylvania; Education: J.D. - Rutgers University School of Law - Camden; B.A. - Law & Society - American University School of Public Affairs

The Fieldbus Monster
Samuel M. Herb, P.E.

In the automation world, the emergence of digital communication to field devices in industrial plants has been emerging for several decades with varying successes. Many field networks have been developed for differing purposes, and several types occur in the same plant, often confusing their responsible engineers and managers.



Samuel M. Herb, P.E. has previously been with Honeywell, Leeds & Northrup, Moore Process Automation, Siemens, and Invensys during his career. He has worked in the Utility and Process Controls industries for six decades; with various roles in marketing, business development, marketing communications, control applications, product management, systems engineering, project management, product evaluation, technical publications, and education. Owner of JAOMAD Consultancy. ISA member since 1962, Sam has been active in their Philadelphia section since, as well as developing several national training tapes, CDs, On-Line and instructor-led courses, books & articles for about four decades. Sam is a graduate of Drexel University.

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**Section Notes**

**IEEE PHILA. SECTION OFFICERS**

- Chair:** Philip Gonski, P.E., [pgonski@gmail.com](mailto:pgonski@gmail.com)
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- Past Chair:** Mark Soffa, [msoffa@kns.com](mailto:msoffa@kns.com)

Adcom meets second Tuesday of the month (March 11.) at the Sheraton University City. Members are welcome to attend. Reserve a seat by calling the office by the Friday before.

**PLAN AHEAD**

- April 29, 2014. Senior Member Workshop – learn how to advance. See page 22.
- May 17, 2014. Life Members to Visit Sarnoff Collection at TCNJ
- May 27, 2014. At 11:00 A.M. Drexel University – Distinguished Lecturer Prof. Maria Greco will give a lecture on selected Signal Processing topics.
- April 23, 2014. Magnetic recording symposium. See page 24

**Almanack Staff**

- Publisher: Phil Gonski
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- Asst. Editor: Dr. Janet English-Cartright [jenglish@fi.edu](mailto:jenglish@fi.edu)
- News and notices contact [psilverberg3@comcast.net](mailto:psilverberg3@comcast.net) or 856.461.6615 or fax 509.461.6617
- Deadline for the April issue is March 11, 2014
- New & improved web site: [www.ieeephiladelphia.org](http://www.ieeephiladelphia.org)

**ADVERTISE IN THE ALMANACK:**

The Philadelphia Section of the IEEE encourages placement of technical, professional, promotional and commercial advertisements in the Almanack. The Almanack is published ten times a year and is read by

more than 4,000 members with an average annual salary of over \$70,000 in over 150 key industries. For more information, contact Peter Silverberg at 856.461.6615 or [psilverberg3@comcast.net](mailto:psilverberg3@comcast.net)

Rates:

Full Page: 7.5x10: \$100

3/4 Page: 7.5x7.5: \$75

1/2 Page: 5 x 5: \$50

1/4 Page: 2.5 x 5: \$25

1/8 Page: 2.5 x 2.5: \$12.50



**TEN REASONS FOR ATTENDING  
THE IEEE Philadelphia Section 2014  
Awards Banquet & Gala (April 12)**

1. This is one of the best ways to celebrate your engineering profession and to increase your contact and friendship with your peers in the Delaware Valley.
2. The Philadelphia Section is one of the largest and most influential sections in the IEEE. Become a part of its activities.
3. For management, this is an ideal way to reward your engineers and managers and increase your social contact with them and their families in a most pleasant atmosphere.
4. The Union League is one of the most prestigious locations for professional banquets in the Philadelphia area.
5. You will be present and participate when we recognize and reward our outstanding members (your peers) in a short ceremony.
6. The Philadelphia Section partly subsidizes the banquet.
7. You will hear an interesting and provocative keynote address.
8. Organization and corporate sponsorship will be recognized at the Banquet, in the Award Program Book, and in the Philadelphia Section Newsletter (Almanack), which goes to 4,000 professionals and decision makers.
9. The evening will conclude with a gala that you can enjoy with your friends at your leisure.
10. All in all, this quite an opportunity. Don't miss it.

Be sure to reserve early! Call the IEEE Office at 484.270.5136. The reservation form is on the next page. Sponsorship forms follow that. It is now easy to use vtools to register.

**The Philadelphia Section of the IEEE  
Cordially Invites You to the Annual  
Awards Banquet & Gala**

At

**The Union League of Philadelphia**  
Broad and Sansom Streets, Philadelphia, PA 19102

**Saturday, April 12, 2014  
Hosted Reception 5:30 PM | Dinner 6:30 PM**

\$850.00 Table of 10 | \$85.00 pp by 3/7/14  
\$90.00 pp by 4/4/14 | \$100.00 pp after 4/4/14  
Dress is Business Attire

**Final Registration Deadline: April 9, 2014.** Please note: Cancellation must be made in writing by April 9, 2014 to receive a refund or not be liable for payment)

**Registration:** # \_\_\_\_\_ Persons at \$ \_\_\_\_\_ per person | # \_\_\_\_\_ Table (s) at \$850

Enclosed is a check in the amount of \$ \_\_\_\_\_ Payable to "IEEE-Phila", or charge \$ \_\_\_\_\_ to my  
\_\_\_ Visa \_\_\_ MasterCard \_\_\_ Amex \_\_\_ Discover Exp. Date \_\_\_\_\_ CSV # \_\_\_\_\_  
Credit card # \_\_\_\_\_

Name on Card \_\_\_\_\_

Billing Address, City, State, Zip \_\_\_\_\_

Billing Telephone# \_\_\_\_\_

**List attendee name(s) w/designation and company: (you may email the list of attendee to  
sec.philadelphia@ieee.org**

1. \_\_\_\_\_
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10. \_\_\_\_\_

Contact name \_\_\_\_\_

Company \_\_\_\_\_

Tel \_\_\_\_\_ E-mail \_\_\_\_\_

**E-mail/fax to: IEEE- Phila 610.664.5599, [sec.Philadelphia@ieee.org](mailto:sec.Philadelphia@ieee.org);**

IEEE Section Office, 11 Bala Avenue, Bala Cynwyd, PA 19004 | 484.270.5136 | [sec.philadelphia@ieee.org](mailto:sec.philadelphia@ieee.org)



Philadelphia Section

Exhibitor & Sponsorship Opportunities  
Deadline: March 21, 2014

## IEEE Philadelphia Section Awards Banquet & Gala!

Saturday, April 12, 2014 – 5:30 P.M. to 10:00 P.M.

At

The Union League of Philadelphia

The IEEE is a non-profit, technical association with over 415,000 individual members in about 175 countries, making it the world's largest professional association advancing innovation & technical excellence. IEEE inspires members through its highly cited publications, conferences, and technological standards, professional & educational activities. The Philadelphia Section of IEEE serves over 4,000 members in the Delaware Valley. IEEE is the trusted "voice" of Engineering, Computing & IT around the globe.

IEEE Philadelphia Section's 2014 Awards Banquet—Saturday, April 12, 2014 at the prestigious Union League, 140 S. Broad St., Philadelphia, PA 19102. An annual event, the Awards Banquet is a major social occasion, recognizing those honored by the Institute & the Section for their contributions, & those honored by organizations with mutual interests of IEEE.

Your Company has the opportunity to promote your products & services while supporting this great organization & the achievements of this year's award winners!

### Exhibit Opportunities: \$100

Promote your company's achievements, equipment & services. Your company's exhibit table will be open to attendees during a pre & post-dinner reception. Price includes a 6-ft table and recognition in the Award's Program Book).

### Banquet Sponsorships and Congratulatory Ads

Sponsorships underwrite IEEE Student Scholarships, this evening's Awards & Banquet Program Book. Sponsorships will be featured in the Awards Banquet Program Book. Submit your ad or corporate listing information.

### Gold Sponsor: \$525

- Full page ad (5" w x 8" l) in the Awards Program Book
- One-half page of editorial in the IEEE Philadelphia Section's monthly E-newsletter, *Almanack* (4,000+ readership)
- Two (2) complimentary dinner tickets (\$170 value)
- Prominent signage at event, logo/company name recognition on all pre- & post-meeting announcements, press releases, and a listing on the Philadelphia Section's Web site.
- 6-ft exhibit table where you can promote your company's achievements, equipment & services during a pre & post-dinner reception open to attendees.
- Visibility in all sponsorship mentions (from time of sign-up)

### Silver Sponsor: \$350

- Half-Page ad (5" x 4" l) in Awards Program Book
- One-half page of editorial in IEEE Philadelphia Section's monthly E-newsletter, *Almanack* (4,000+ readership)
- Prominent signage at event, logo/company name recognition on all pre & post-meeting announcements, press releases, and a listing on the Philadelphia Section's Web site.
- 6-ft exhibit table where you can promote your company achievements, equipment & services during a pre- & post-dinner reception open to attendees.
- Visibility in all sponsorship mentions (from time of sign-up).

### Congratulatory Ads:

- 1) Full page (5" w x 8" l) in Awards Program Book AND on IEEE Philadelphia Section's Web site - \$150
- 2) Half-page (5" x 4" l) in Awards Program Book Only – \$75

IEEE - Philadelphia Section • 11 Bala Avenue, Bala Cynwyd, PA • 19004  
484-270-5136 • sec.philadelphia@ieee.org • www.ieeephiladelphia.org

# IEEE Philadelphia Section's Awards Banquet - April 12, 2014 Sponsorship Agreement

Please return this sponsorship form (completed & scanned)  
By **March 21, 2014** to: – [sec.philadelphia@ieee.org](mailto:sec.philadelphia@ieee.org)

**YES! I want to participate in the 2014 IEEE Philadelphia Awards Banquet & Gala as a:**  
\_\_\_ **Gold Sponsor**; \_\_\_ Silver Sponsor; \_\_\_ Company Exhibitor;  
\_\_\_ Congratulatory Ad; \_\_\_ Full page; \_\_\_ Half-page

**Note:** • Program ad sizes: Full page 5x8; half page 5x4. Ad Format: b/w. Email in JPEG, PDF or EPS.  
• All information & ads for the Program book must be emailed to the Section office by **March 21, 2014**.

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Make checks payable to "*IEEE Philadelphia Section*"

Or charge \$\_\_\_\_\_ to my credit card:  Visa  Mastercard  Amex  Discover

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Credit Card# Exp. Date CVV#

\_\_\_\_\_  
Name on Credit Card

\_\_\_\_\_  
Billing Address (include city, state and zip)

\_\_\_\_\_  
Billing Telephone#

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Contact Information:**

Company: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone \_\_\_\_\_

Email \_\_\_\_\_

For questions about sponsorships, ads & reservations, contact Philadelphia Section office at  
(484) 270-5136, email [sec.philadelphia@ieee.org](mailto:sec.philadelphia@ieee.org),

Or Contact Sponsorship Rep, Sheree Goldflies at: [shereeg01@comcast.net](mailto:shereeg01@comcast.net) \*856-430-9887\*

THANK YOU FOR YOUR SUPPORT OF THE IEEE PHILADELPHIA SECTION!

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TCF™-2014

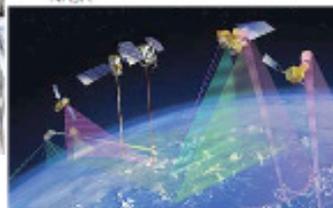
The College of New Jersey Hosts  
The 39th Anniversary of  
THE ORIGINAL PERSONAL COMPUTER SHOW

39th Annual

# Trenton Computer Festival™



**KEYNOTE SPEAKER:**  
Joseph Salvo,  
Manager of the  
Complex Systems  
Engineering Laboratory,  
GE Global Research  
speaks on  
"The Internet  
of Things"



Focus on  
**Multimedia in  
a Post-PC World**

**Admission: \$10.00 (advance)  
\$12.00 at Gate**  
Free Parking  
[www.tcf-nj.org](http://www.tcf-nj.org)

@ The College of New Jersey, Ewing, NJ  
**Saturday, March 15, 2014**  
9:00 am — 5:00 pm  
Registration/Flea Market open at 9 am, Talks start at 10:15 am.

- A Full Track on Internet-of-Things
- Google Glass talk by author Barry Burd 
- Cloud Computing
- Android/iPhone Apps

## INDOOR FLEA MARKET & VENDOR FAIR

50+ Talks, Workshops, Tutorials,  
Demos and Special Events!

Object-Oriented Programming University:  
One Day of Short Courses by Mike Redlich

Microsoft Presentations and Special  
Workshop on "Safe Computing"

Quadcopter Demonstration

MULTIMEDIA, 3D PRINTERS,  
PHOTOGRAPHY, HOME CONTROL,  
HISTORIC COMPUTERS, SECURITY and WIFI

Ham Cram Session & Exam:  
Get an Amateur Radio License in one  
day at TCF! Cram begins at 9 am



Arduino Developer/User Tutorial/  
Workshop

Bitcoin - Learn about the Digital Currency

## TCF IT PROFESSIONAL CONFERENCE

Friday March 14, 2014, 8:30 am — 5:00pm\*\*  
Continuing as part of TCF's Saturday Talks.  
For Conference Info and Fees See  
<http://princetonacm.acm.org/tcfpro/>

\*\*The IT Pro (Friday) and ISEC Conferences require separate registrations.

For additional TCF'14 info,  
directions and advance tickets:  
[www.tcf-nj.org](http://www.tcf-nj.org)

## DOOR PRIZES

Integrated STEM Education Conference (ISEC)\*\*  
Saturday, March 8 – 9:00 am — 5:00 pm  
at Friend Center, Princeton University, NJ  
Designing Pathways to STEM Success  
Info: <http://ewh.ieee.org/conf/stem/>

The 2014 Trenton Computer Festival™ is sponsored by The College of New Jersey and its School of Engineering.

## 2014 CVD Registration is Open

By Russell Harrison

IEEE-USA's annual Congressional Visits Day (CVD) will be held this year on March 25 and 26 in Washington, DC. Any and all IEEE members who are concerned about declining federal investments in basic research, our national labs and our research universities is encouraged to attend.

The CVD offers concerned IEEE members an opportunity to meet directly with your members of Congress and their staff in Washington. This annual event is a crucial part of IEEE-USA's ongoing efforts to protect federal investments in science and engineering.

These efforts are especially crucial in 2014. After three years of tight federal budgets, Congress is looking for additional programs to cut. Basic research and R&D have so far survived the first few rounds of budget cuts with only modest reductions. But that may be about to change. Programs that the public doesn't know much about or that can be cut without doing immediate damage to too many people are prime targets. R&D fits the bill perfectly. While R&D is vitally important to America's long-term economic prosperity, the fact is, should Congress cut the programs, the country won't feel the impact of these cuts for a few years.

And how many Americans know we have national labs, let alone how they contribute to the country?

If IEEE members want Congress to protect the basic research and R&D budgets, we need to speak up and make sure Congress knows how valuable these programs are to us and our country.

There is simply no better way to get a legislator's attention than to have a voter come to Washington and ask for the legislator's support, especially in an election year.

All IEEE members are welcome and encouraged to attend this year's CVD. To join your colleagues from across the country, go here to learn more and to register: <http://www.ieeeusa.org/policy/cvd/>

If you would like to speak with your members of Congress, but can't come to Washington, there may be opportunities to hold meetings in your local area. Please contact IEEE-USA staffer Russ Harrison to find out, or if you have other questions about this year's CVD. Russ can be reached at [r.t.harrison@ieee.org](mailto:r.t.harrison@ieee.org) or (202) 530-8326.

## Section Picks a Winner at Future City.

We had a great competition day this year on January 25. There were 26 teams competing, with about 200 students and 100 volunteers attending and working to make the day a lot of fun. We did have fewer teams than usual this year; with a number of teams not being able to attend due to lost school days due to the snow. That didn't dampen the enthusiasm of those who were there.

The Section provided two judges, Phil Gonski and Peter Silverberg. The competition was at a new location, SAP America headquarters in Newtown Square, PA. After much walking around and getting jostled, we settled on Lionville Middle School of Exton PA for the Section's Special Award, which is a plaque and \$200. At the end of the day, the Final Judges chose this school for its first place award and a trip to the national competition. The mentor listed in the program is Dan Koval of Bently Systems. As you can see in the photo, it is a large team.



## Aerospace Electronics Chapter

The AES Chapter has a chair; Fauzia Ahmad.. [Fauzia.ahmad@villanova.edu](mailto:Fauzia.ahmad@villanova.edu). 2016 Radar Systems Conference now has a date and a hotel thanks to Tom Fagan. Loews Hotel; May 1—6, 2016. Chapter will be looking for volunteers as the date approaches.

## Life Members Visit Helicopter Museum

By Peter Silverberg and Jennifer Tarica

Nine of us managed to trek to the American Helicopter Museum in West Chester February 8. We were lucky that it was open in that the ice storm closed it for the preceding two days. Fantastic to see all these grounded historic helicopters in one hangar.



## Invitation to join CONET

As an IEEE section member you receive invitations to our events. You may be a practicing Electrical Engineering Consultant or you may be interested in learning more about consulting. If you are considering becoming a CONET member, now would be a great time to do so.

Please take a moment to apply for CONET membership for 2014, using the application on page 15 or by visiting our website, [www.PhilaCONET.com](http://www.PhilaCONET.com). I hope to see you at CONET events this year. Here's what we did in 2013 - Robert O. Peruzzi, PhD, PE CONET Chair.

## CONET 2013 Activities Summary:

Meeting topics and speakers were selected to appeal to a variety of technical professionals. There was an even balance of technical and consulting-business orientation. Our five live, face-to-face meetings in 2013 featured presentations titled:

- Information Assurance, Privacy & Security
- Software Defined Networking (SDN)
- Informal Social and Business Meeting
- Intellectual Property Issues in Consulting
- Personal Branding for Consultants

CONET Meeting Announcement for 2014 March 4



RF IN SCIENCE AND INDUSTRY

Presented by Jonathan Allen, Ph. D.

*(One PDH credit will be available to attendees)*

Date: Tuesday evening, 2014 March 4

Place: Sheraton University City, 36 & Chestnut Streets, Philadelphia PA 19104  
Fairmount/Franklin Suite – downstairs from main lobby

Free Parking for CONET Members: Sheraton indoor garage – entrance on 36<sup>th</sup> Street.

Take your garage ticket, and have it stamped when you sign in to the meeting.

For information on becoming a member, you may go to <http://www.philaconet.com>

Open: You do not have to be an IEEE member or a CONET Member to attend this meeting.

Networking/Social time: Starts at 5:30 PM

Dinner: 6:15 PM (Be sure to allow for rush-hour traffic or inclement weather.)

Program: 7:00 to 9:00 PM

Main Speaker: Jonathan Allen, Ph. D., Engineering Consultant

**Abstract:** We usually associate radio frequency (RF) with the wireless transmission of signals. RF power, however, also finds a wide range of industrial, scientific, and medical applications where the RF field is applied to a process rather than radiated into space via antennas. This talk concentrates on RF heating, and ionized plasma discharges. The latter are critical to the semiconductor and thin film industries. We will therefore discuss the theory, practices, and equipment involved in industrial RF.

**Main Speaker's Background:** Jonathan Allen received his Ph.D. in physics from Washington U. in St. Louis. Continuing in the area of his thesis, he developed new instruments for analyzing atmospheric aerosol pollution. His career then turned to the emerging solar photovoltaic industry where he developed RF systems for plasma deposition of thin film photovoltaic materials. He also designed multi-kilowatt RF generators and associated equipment at RF Power Products Co. in Voorhees, NJ. He is currently an independent consultant specializing in radio frequency R&D and custom instrumentation.

For information on becoming a member, you may go to <http://www.philaconet.com>  
(Page 1 of 2)

CONET Meeting Announcement for 2014 March 4, continued

Admission, Reservations, and Payment

| Admission Fees  |               |                      |            |
|-----------------|---------------|----------------------|------------|
|                 | CONET Members | IEEE Student Members | All Others |
| A: With Dinner  | \$30          | \$40                 | \$40       |
| B: Meeting-Only | Free          | Free                 | \$15       |

A: With Dinner: Reservations and advance payment are required.

- 1) Reserve by sending an e-mail to [CONETtreasury@gmail.com](mailto:CONETtreasury@gmail.com) Include your full name and telephone number.
- 2) You will get an e-mail confirmation with instructions for paying by check or credit card.
- 3) Advance payment is required to reserve space for dinner.
- 4) Payment by check must be received no later than Wednesday, February 26, 2014. The credit card deadline is Friday, February 28, 2014.

B: Meeting-Only: Reservations are preferred. Walk-ins are accepted if space is available.

- 1) Reserve by sending an e-mail to [CONETtreasury@gmail.com](mailto:CONETtreasury@gmail.com) Include your full name and telephone number.
- 2) You will get an e-mail confirmation with instructions for paying by check or credit card.
- 3) Advance payment is not required for meeting-only admission.
- 4) Check or exact cash is accepted at sign-in. (No credit card payment at sign-in.)

The IEEE Philadelphia Consultants Network (CONET) is an Affinity Group of the IEEE. Most Members are electrical or computer engineers. The CONET mission is to share knowledge through technical and business networking. For details, and information on becoming a member, you may go to [www.PhilaConet.com](http://www.PhilaConet.com)

Meeting updates will be sent by e-mail: Be sure your current e-mail address is in our records. If in doubt, confirm your current e-mail address to [CONET.Phila@IEEE.org](mailto:CONET.Phila@IEEE.org)

Questions about this meeting can be directed to Robert Peruzzi at (610) 462-3939 or by e-mail to [Peruzzi@RPeruzzi.com](mailto:Peruzzi@RPeruzzi.com)

For information on becoming a member, you may go to <http://www.philaconet.com>  
(Page 2 of 2)



## Membership Application for IEEE Philadelphia Consultants Network 2014

You are invited to renew or to become a new CONET member. Our mission is to improve our technical consulting businesses by sharing and expanding our technical knowledge and our business capabilities. Our Web site, [www.PhilaCONET.com](http://www.PhilaCONET.com) is a complete and permanent record of our activities since 2010.

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Membership is open to the public. We are an affinity group of the IEEE Philadelphia and Lehigh Valley Sections. Membership in IEEE is encouraged but not required. Paying the Annual Fee for Service is the only membership requirement – which may be a tax-deductible business expense for consultants.

---

### Membership Benefits:

- Online listing of professional profile on [www.PhilaCONET.com](http://www.PhilaCONET.com)
- Free admission and parking for all CONET meetings
- Discounted dinners at meetings
- Timely email notifications of consulting opportunities and announcements
- Best of all, effective cross-references with other CONET members

### CONET 2013 Activities Summary:

Meeting topics and speakers were selected to appeal to a variety of technical professionals. There was an even balance of technical and consulting-business orientation. Our five live, face-to-face meetings in 2013 featured presentations titled:

- Information Assurance, Privacy & Security
- Software Defined Networking (SDN)
- Informal Social and Business Meeting
- Intellectual Property Issues in Consulting
- Personal Branding for Consultants

### Our programs include short talks by CONET members including:

- "Show and Tell", where a member makes a three-minute self-introduction to explain his area of practice as if to potential clients, and receives constructive criticism from the audience
- "Consulting Tales from the Street", where a member relates an on-engagement technical or business problem faced and overcome, or not. Open discussion follows. This feature replaces the "Consulting Puzzler" for 2014



**CONET Membership Application for 2014**  
[www.PhilaCONET.com](http://www.PhilaCONET.com)

|                                                                                                       |                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Include check or money order for \$80.00 payable to CONET for your 2014 Annual Fee for Service</p> | <p>Deliver this form or equivalent to:<br/><b>Peter Z. Ingerman</b><br/><b>CONET Treasurer</b><br/><b>40 Needlepoint Lane</b><br/><b>Willingboro, NJ 08046-1997</b></p> |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Member Name: \_\_\_\_\_

Postal Address: \_\_\_\_\_

E-mail for CONET correspondence: \_\_\_\_\_

Phone for CONET correspondence: \_\_\_\_\_

New Member

Renewing Member, revising profile

Renewing Member, no profile change

You will receive instructions for creating or revising your online professional profile. If you have questions, you may contact Robert Peruzzi at (610) 462-3939 or e-mail [Peruzzi@RPeruzzi.com](mailto:Peruzzi@RPeruzzi.com).

Most CONET members are electrical, electronics, or computer experts who are, or who aspire to be, independent consultants. CONET is one of many consultant networks, which are affiliated with the IEEE – in our case jointly through the IEEE Philadelphia and Lehigh Valley Sections.

So, please consider joining in time to attend March 4 as a CONET member. Thank you.

# 9th Annual IEEE/ACM IT Professional Conference at TCF: ITPC-2014

The Trenton Computer Festival (TCF) is the nation's longest running personal computer show and it is being held at The College of New Jersey. For the ninth year, the Trenton Computer Festival is extending its program to provide Information Technology and computer professionals with an additional day of technical conference. The IT Professional Conference at TCF is intended, in an economical way, to provide attendees with insight and information pertinent to their jobs, and to keep them informed of emerging technologies that could impact their work.

The ITPC will be held at 8.30AM -5:00PM on Friday, March 14, 2014  
and an additional track at  
The Trenton Computer Festival on Saturday, March 15, 2014

## Trenton Computer Festival IEEE/ACM Information Technology Professional Conference at The College of New Jersey, Ewing Township, NJ

| Admission (Advanced Purchase Tickets below)                                                             |                                                                                                 |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Advance Purchase Tickets: Students and Senior Citizens                                                  | \$ 35.00                                                                                        |
| Advance Purchase Tickets: Professionals                                                                 | \$125.00                                                                                        |
| At the door: Students, Senior Citizens, and Professionals                                               | \$150.00                                                                                        |
| Note:                                                                                                   | Admission includes continental breakfast, lunch, and admission to the main Festival on Saturday |
| Go to <a href="http://princetonacm.acm.org/tcfpro/">http://princetonacm.acm.org/tcfpro/</a> to register |                                                                                                 |

**Special Feature:** A facilitated networking session will be conducted at lunch to allow attendees to meet and get to know each other. Door Prizes will be raffled including development kits and books.

Also of interest is the 4th IEEE Integrated STEM Education Conference (ISEC '14) to be held on NJ Saturday, March 8, 2014, at the Friend Center at Princeton University Princeton, for registration contact: [www.ewh.ieee.org/conf/stem](http://www.ewh.ieee.org/conf/stem).

|                                                                                                                                                                                                     |                                                                                                                                                                                                                                   |                                                                                                                                                                                      |                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Technical Sponsor</p>  <p>Association for<br/>Computing Machinery</p> <p>Princeton Chapter of the<br/>ACM</p> | <p>Financial Co-Sponsor</p>  <p>IEEE<br/>computer<br/>society</p> <p>Princeton/Central Jersey<br/>Chapter of the<br/>IEEE Computer Society</p> | <p>Technical Co-Sponsor</p>  <p>IEEE</p> <p>Princeton/Central Jersey<br/>Section of the IEEE</p> | <p>Technical Co-Sponsors</p>  <p>REGION 1<br/>IEEE</p>  <p>IEEE<br/>R2</p> |
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**Call for Participation**  
**4th IEEE Integrated STEM Education Conference (ISEC '14)**  
**Theme: Developing Pathways for STEM Success**  
**Friend Center at Princeton University**  
**Princeton, NJ**  
**Saturday, March 8, 2014**

We invite you to attend the 4th IEEE Integrated STEM Education Conference (ISEC '14), which will be held Saturday, March 8 at the Friend Center at Princeton University. An exciting program of papers, presenters, and exhibitors is planned; come and share it with us! Doors will open at 8:15 am for registration and networking, with the program running from 9 am to 4:30 pm.

We are also honored to have three inspiring, important keynote speakers this year:

\* Karen Panetta, PhD, Associate Dean of Graduate Education, Tufts University and IEEE WIE Worldwide Director, speaking on Inspiring Innovation at 9 am

\* Nita Patel, Systems and Software Engineering Manager, L-3 Warrior Systems and IEEE WIE International Chair, speaking on Pathways to Success: Inspiration to Close the Gender Gap at 11 am

\* Alicia Abella, PhD, AVP Cloud Services Research Organization, AT&T, speaking on STEM Education - Vital for the Future of America at 1 pm

Information on the program, registration, housing, directions, and parking can be found at [www.ewh.ieee.org/conf/stem](http://www.ewh.ieee.org/conf/stem) and our Facebook page (search for ISEC). Contact us at [isec.2014@gmail.com](mailto:isec.2014@gmail.com) for more information.

We also invite you to participate in the 39th Trenton Computer Festival ([www.tcf-nj.org](http://www.tcf-nj.org)) and the 9th IT Professional Conference ([princetonacm.acm.org/tcfpro](http://princetonacm.acm.org/tcfpro)) the following weekend. ITPC is scheduled for Friday, March 14, 8:30 am - 5 pm and Saturday, March 15, 10:15 am - 4:30 pm. TCF is scheduled for 9 am - 5 pm on Saturday, March 15. Both conferences are at the College of New Jersey, Ewing, NJ. ISEC and ITPC attendees receive free admission to TCF.

TCF's theme this year is "Multimedia in a Post-PC World." Joseph Salvo, PhD, Manager, Complex Systems Engineering Laboratory, GE Global Research is TCF's keynote speaker; his topic is "The Internet of Things" and his talk will start at 2:35 pm. There will also be 50+ talks and demonstrations throughout the day.

ITPC provides a series of presentations on topics relevant to today's professional IT community. We bring together practitioners, academics, and industry leaders to exchange experiences, ideas, innovations, implementations, and approaches important and relevant in the current environment.

Please see the conferences' websites for information on registration; directions; parking; featured speakers, exhibitions and workshops; qualifying for an amateur radio license with the David Sarnoff Radio Club; and the popular TCF Flea Market and Vendor Fair.



**IEEE Power & Energy and Industry Applications Societies**

**Topic: Smart Grid Concepts and Applications**

**Speaker:** Dave Kearns, Application Director, S&C Electric Company

**Date and Time:** Thursday, March 13, 2014  
Lunch @ 11:45 a.m.; Presentation: 12:10 – 1:30 p.m.

**Cost:** No Charge for Presentation  
\$13 for buffet lunch (\$10 for Full-Time Students)

**Location:** PECO Main Office Building  
2301 Market St., Philadelphia, PA 19101

**Public Transportation:** SEPTA (Rail to 30<sup>th</sup> Street Station and/or Trolley to 22<sup>nd</sup> & Market Street)

**Reservations:** Register by visiting: [www.ieeephiladelphia.org](http://www.ieeephiladelphia.org) and click on "Section Meetings and Events" to register on v-Tools. If you have problems or cannot register online, e-mail or call Jonathan Schimpf at [jschimpf@burns-group.com](mailto:jschimpf@burns-group.com) or 215-979-7700, ext 7709, by 5:00 p.m., Wednesday, March 12<sup>th</sup>, 2014 (Specify if you want lunch – We pay in advance)

**Abstract:** This presentation will begin with a brief review of factors driving Smart Grid deployments and how the Smart Grid concept continues to evolve, followed by descriptions of the major technologies that collectively work together to make the grid "smart". It will then summarize a few examples of Smart Grid applications covering both utility and Microgrid examples. Specific cases discussed will include a utility case with extensive fiber based self-healing grid deployed by the City of Chattanooga, while the "Perfect Power" application for the campus of the Illinois Institute of Technology will be discussed as a major Microgrid deployment. The presenter will also be available following the Session to entertain any questions on specific S&C products or SG Projects.

**The Speaker:** Dave's career in the utility industry spans 40 plus years divided between over 15 years of utility engineering and engineering management followed by over 25 years on the supplier side focusing on the application of distribution automation systems. His utility career was spent with Kentucky Utilities in Lexington where his last responsibility was for the design, planning and construction for all distribution facilities in the Lexington District. Dave has also worked with Kearney and then S&C Electric Company and EnergyLine Systems. He is presently at S&C as Application Director, Smart Grid Technologies; his return to S&C occurred when EnergyLine was absorbed by S&C. Dave has a BSEE degree, is an active member of IEEE, has given numerous presentations on multiple applications of DA technologies and projects and currently serves as Vice Chair of an EEI Working Group as well as a member of the DistribuTECH Executive Committee.

\*\*\*\*\* A Certificate of Attendance will be available upon request \*\*\*\*\*

Chapter Chair: Mike Reynolds, Burns Engineering - [mreynolds@burns-group.com](mailto:mreynolds@burns-group.com) (215-979-7700, ext 7717)  
Vice Chair: Afan Abdullah, Sargent & Lundy, LLC - [Afan.A.Abdullah@sargentlundy.com](mailto:Afan.A.Abdullah@sargentlundy.com) (302-622-7228)  
Secretary: Jonathan Schimpf, Burns Engineering - [jschimpf@burns-group.com](mailto:jschimpf@burns-group.com) (215-979-7700, ext 7782)  
Treasurer: Tim McBride, Eaton Corporation - [TimothyMcBride@eaton.com](mailto:TimothyMcBride@eaton.com) (610-497-6137)  
Membership and Programs: Barney Adler, PECO - [b.adler@ieee.org](mailto:b.adler@ieee.org) (215-731-3240)  
Professional and Educational Activities: Rich Delp, Schiller and Hersh Associates - [rdelp@schillerhersh.com](mailto:rdelp@schillerhersh.com) (215-886-8947)  
Programs and Public Relations: Bob Swayne, Burns Engineering - [rswayne@burns-group.com](mailto:rswayne@burns-group.com) (215-979-7700, ext.7781)  
Join Our Group on LinkedIn! [http://www.linkedin.com/groups?gid=3033618&trk=hb\\_side\\_g](http://www.linkedin.com/groups?gid=3033618&trk=hb_side_g)  
Check out our website: <https://sites.google.com/site/ieeepesiasphiladelphiachapter/>  
IEEE Philadelphia Section website: [www.ieeephiladelphia.org](http://www.ieeephiladelphia.org)

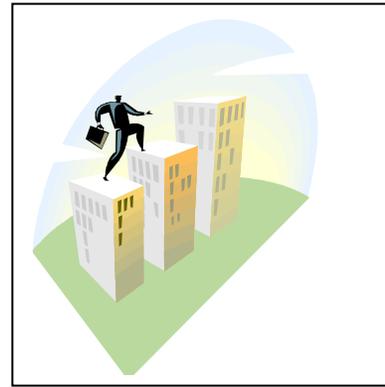
**SENIOR MEMBERSHIP WORKSHOP  
STEP UP TO SENIOR MEMBER — ELEVATE  
YOURSELF!**

The Philadelphia Section wants to increase the number of Senior Members in our section. We are setting up a workshop for the purpose of signing up new Senior Members. We gain, and you gain by advancing.

**When:** Tuesday Evening, April 29, 2014 at 6 - 8:30 PM

**Where:** Sheraton University City; 36<sup>th</sup> and Chestnut;  
Philadelphia

**Perks:** Sandwiches will be served. Parking will be validated.



What does it mean to be a Senior Member of the IEEE?

The Senior Member grade is a way for IEEE members to receive recognition for their professional experience and significant performance in Electrical and Electronics Engineering and related fields, including: Computer Science and Information Technology, Physical Sciences, Biological and Medical Sciences, Mathematics, Technical Communications, Education, Management, Law, and Policy.

If you meet the experience requirements, come to the workshop. If you have 10 plus years of relevant industry experience or educational accomplishments in IEEE designated areas, you can be eligible for an upgrade to Senior Member grade. We will help with the references, and the rest of the paperwork. Most of the Executive Committee, who are Senior Members or Fellows will be there and can serve as reference persons. We need also volunteers from the ranks of Senior Members and Fellows to be mentors.

Address your questions to Robert Lawson at [rclawson@ieee.org](mailto:rclawson@ieee.org)

**Senior Member advancement provides IEEE members with significant and distinct benefits:**

1. **Recognition:** The professional recognition of your peers for technical and professional excellence.
2. **Senior Member Plaque:** Since January 1999, all newly elevated Senior Members have received an engraved Senior Member plaque to be proudly displayed for colleagues, clients and employers to see. The plaque, in an attractive fine wood with bronze engraving, is sent within six to eight weeks after elevation.
3. **US\$25 Coupon:** IEEE will recognize all newly elevated Senior Members with a coupon worth up to US\$25. This coupon can be used to join one new IEEE Society. The coupon expires on 31 December of the year in which it is received.
4. **Letter of Commendation:** If you indicate that you would like one, a letter of commendation will be sent to your employer on the achievement of Senior Member grade.
5. **Announcements:** Announcement of elevation can be made in Section/Society and/or local newsletters, newspapers and notices.
6. **Leadership Eligibility:** Senior Members are eligible to hold executive IEEE volunteer positions.
7. **Ability to Refer Other Candidates:** Senior Members can serve as a reference for other applicants for Senior Membership.
8. **Review Panel:** Senior Members are invited to be on the panel to review Senior Member applications.

## Science

(Ernest's Page)

By Ernest Cohen, Ph.D.

While we would prefer to ignore the possibility, nations and economies can fall apart remarkably fast. A case in point is Detroit, which only a few decades ago, was the fastest growing city in America. On the international scene, consider the USSR. A more esoteric example is the predominance of Middle East Muslim nations in science for a few centuries, followed by rapid collapse, and being eclipsed by Europe. I am concerned that a similar breakdown can happen here, as too many Americans seem to doubt science. We, as electrical engineers, with significant social prestige, are in a good position to counter this trend. The needed changes are in the public culture; political action will follow when it is useful

While America is still leading in the world science and technology competition, our lead has significantly lessened in the last few years. An anti-science culture has begun to develop in America. Some aspects have direct effects: many people refused flu vaccinations. Others reject evolution because it contradicts their religious faith. And, a slim majority of Americans reject the concept of anthropogenic climate change. Of course, these people have been influenced by propaganda from the fossil fuel industry, in the same manner that the tobacco industry pushed "not proven" in the matter of smoking and health.

I am also not a believer in intelligent design, or other alternatives to evolution. This column is not intended to be anti religious. As Dr. Tyson of the Hayden Planetarium: said on Bill Moyer's TV show, "Believe whatever you like, but don't bring it into the science classroom." (or the laboratory).

America seems to be falling behind other nations in the science race. For many decades, because of high pay, ample facilities, and minimal ethnic discrimination, America used to import the best scientists from all over the planet. Now, many still come here as students, but return home, particularly to China, to continue their research. We have been waiting half of a century for a practical earth-based fusion reactor to power our civilization without pouring carbon dioxide into the atmosphere. Environmentalists still suggest that we depend upon fusion power from a natural reactor which is 92 million miles away (the sun). Will the future fusion power systems be American designed and built, European, or Chinese?

Basic science needs public support. Applied development can get private corporate funding, but depends on progress in basic science. As people who understand the situation, and have good social status, engineers are in a position to get more support for basic research, and more support for STEM (Science, Technology, Engineering, and Mathematics) education. I am tired of hearing all the ads from local colleges for MBA degrees, rather than engineering.

It seems as if our local electrical engineers are so much involved with electronics, computers and similar areas that they have forgotten the other major branch of their field: power. No one has answered my challenge on how they would determine optimum standards for power systems if none existed, and they were starting from scratch. Send comments to [Ernest.Cohen@ieee.org](mailto:Ernest.Cohen@ieee.org), please.

## IEEE Philadelphia Employment Network Group

**Date:** March 27, 2014

**Time:** 7:00 PM - 9:00 PM

**Topic and Speaker:** "General Meeting/Job Search Roundtable", moderated by George Butts

**Meeting Agenda:** Job search topics and open discussion roundtable.

**Location:** Room 709, 7th Floor, Bossone Enterprise Center 3128 Market Street, Philadelphia, PA 19104 (between 31st and 32nd Streets) on Drexel University's campus.

**Cost:** No Charge, refreshments will be available

**Registration:** Please register by March 25, 2014, by using vTools at [https://meetings.vtools.ieee.org/meeting\\_view/list\\_meeting/24047](https://meetings.vtools.ieee.org/meeting_view/list_meeting/24047)

**Parking:** Nearby lots: (1) On the left side of Market Street just before 31st Street; (2) on the right side of Market Street, just past 31st Street; (3) from Market make Left on 36th to University City Sheraton garage.

**Public Transportation:** SEPTA (Rail: 30th-Street Station; Subway and Trolley: The Market-Frankford Line (the Blue Line) stops at 30th and 34th Streets and all trolley trains (the Green Lines) stop at 30th and 33rd Streets.)

\*\*\* join our group on LinkedIn for the latest updates and articles related to IEEE Employment around the Philadelphia Region - Search LinkedIn Groups for "IEEE Philadelphia Employment Network" \*\*\*

## **ETAP Training Courses**

ETAP 101; Power Systems Seminar; Free 1-Day Seminar; March 03, 2014

Location: Embassy Suites-Valley Forge; 888 Chesterbrook Blvd., Wayne, PA 19087

Time: 9:00 a.m. - 4:00 p.m.

ETAP 154; Power System Engineering I -; Emphasis on Arc Flash & Coordination

4-Day Workshop; March 4-7, 2014

Location: MicroTek – Philadelphia; 1150 First Ave, Parkview Tower, Suite 250;

King of Prussia, PA 19406-1334

Time: 8:00 a.m. - 5:00 p.m.

**Information:** IEEE Philadelphia Members will get a discount on the class if they use their membership number <http://etap.com/training/ieee-member-training-discount.htm>

The web site of this company is ETAP.com. It is also on Facebook.

## **A use for Arduino**

I (Peter Silverberg) ran across a web site with a strange application.

Access it at < <http://www.engadget.com/2014/02/10/fish-on-wheels>>

This write up is from someone called Steve Dent and his twitter handle is: @stevedent.

A company called Studio Diip has created a motorized go-cart for fish. Though "why" is the first question that comes to mind, at this point we're only able to give you the "how." When Little Dory starts to swim in a particular direction, her movement is captured by a top-mounted web cam, processed by a Beagle board and used to steer the Arduino-controlled carriage under her bowl. As seen in the video at this site, that lets her follow her muse outside the aquarium's confines. We're hoping this experiment makes it beyond the lab one day, as we're pretty damned curious to see where a fish wants to go. ("Away from the cat" or "towards the ocean" seem like safe bets.

## **Student branches (gleaned from a planning meeting document)**

The upcoming Region 2 Student Activities Conference, hosted by Rowan University, is on Saturday, April 5. See [www.rowan.edu/clubs/ieee/sac](http://www.rowan.edu/clubs/ieee/sac). Strive to have your Student Branch represented in every event. Many of the competitions will have a spontaneous walk-in participation level. A new Robotics Competition is being introduced (Jeffrey Eker, Rowan lead). Rowan's Christen Corrado is chairing the conference. Companies are encouraged to sponsor the conference starting at \$250. Sponsors will be recognized on several occasions, and will be entitled to a table at the Career Fair.

Philadelphia Section will hold its Student Engineering Writing Contest with a submissions deadline of Friday, March 14. With the permission of each of the author(s), most papers will be forwarded to the Region 2 Student Paper Contest. Barney Adler will be sending out the rules for the Writing Contest in short order.



# PERPENDICULAR MAGNETIC RECORDING

A SYMPOSIUM HONORING  
DR. SHUNICHI IWASAKI  
&  
DR. MARK H. KRYDER



RECIPIENTS OF THE 2014 BENJAMIN FRANKLIN MEDAL IN  
ELECTRICAL ENGINEERING



Dr. Shunichi Iwasaki



Dr. Mark H. Kryder

## CITATION:

FOR THE DEVELOPMENT AND  
REALIZATION OF THE SYSTEM OF  
PERPENDICULAR MAGNETIC RECORDING,  
WHICH HAS ENABLED A DRAMATIC  
INCREASE IN THE STORAGE CAPACITY OF  
COMPUTER-READABLE MEDIA.

The Franklin Institute Awards are presented by



WEDNESDAY, APRIL 23, 2014

8:00 AM to 12:00 PM

Villanova University

East & West Lounges, Dougherty Hall

Registration and Breakfast: (West Lounge) 8:00 am to 8:30 am

Welcome: (East Lounge)

8:30 am Dr. Moeness G. Amin  
*Director, Center for Advanced Communications (VU)*

Speakers:

9:00 am Dr. Randall H. Victora, University of Minnesota  
*Fighting Physics: The Transition from Longitudinal to Perpendicular Magnetic Recording*

9:25 am Dr. Hisashi Takano, World Wide Research, HGST, a Western Digital Company  
*Perpendicular Magnetic Recording: From Research to Commercialization – Part I*

9:50 am Dr. Yochiro Tanaka, Toshiba Corporation  
*Perpendicular Magnetic Recording: From Research to Commercialization – Part II*

10:15 am COFFEE BREAK

10:35 am Dr. Jian-Gang Zhu, Carnegie Mellon University  
*Perpendicular Recording: New Heights for Data Storage Density*

11:00 am Dr. Mark H. Kryder, Carnegie Mellon University  
*The Implementation and Future of Perpendicular Recording Technology*

11:30 am Dr. Shunichi Iwasaki, Tohoku Institute of Technology  
*Perpendicular Magnetic Recording to New Civilization - From Science to Technology*

12:00 pm Close

For 190 years, The Franklin Institute has honored the greatest minds in science, engineering, technology, and business. The Franklin Institute Awards are amongst the oldest and most prestigious comprehensive science awards in the world. Recognizing these brilliant men and women from around the world is one important way that the Institute preserves Benjamin Franklin's legacy. They are the Franklins of today; they will inspire the Franklins of tomorrow.



IEEE PHILADELPHIA CHAPTER OF AP/MTT-S

APPLICATIONS OF TERA-HERTZ (THz) FREQUENCIES AND THz SIGNAL GENERATION CHALLENGES

DR. ASHER MADJAR  
M<sup>2</sup> MICROWAVES LLC  
LANSDALE, PA USA  
WWW.M2MICROWAVES.COM

6:00- 7:00 PM, MONDAY, MARCH 17, 2014

BOSSONE 709, DREXEL UNIVERSITY

(LIGHT REFRESHMENTS ARE TO BE PROVIDED 15 MINUTES BEFORE)

**Abstract:** In recent years there is a big interest in the Tera-Hertz (THz) frequency range, which is located in between microwaves and optics. This range has not been utilized, and very little infrastructure exists. This situation has changed in the last few years, and now much R&D is being performed all over the world. In this presentation the application of the newly emerging THz frequency range is briefly reviewed. Both military and medical applications are presented. In this talk a review of the most common approaches used for THz generation provided in addition to a detailed description of photo mixer based generation. This approach has been investigated by the author in a research project performed at Temple University in Philadelphia. Topics to be covered in this talk are:

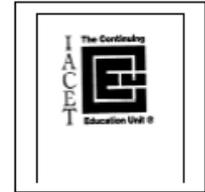
- Definition of the THz range
- Main applications of THz
- Review of generation methods of THz
- THz generation by photo mixing

**Biography:** Asher Madjar (IEEE Life Fellow) received his D.Sc. Degree from Washington University in St. Louis in 1979 and the B. Sc. and M. Sc. Degrees from the Technion – Israel Institute of Technology - in 1967 and 1969, respectively. Dr. Madjar's expertise is in the area of microwave and microwave photonics components, integrated circuits and subsystems. He has been working for more than 40 years in this field in industry and in parallel teaching in academia both in Israel and USA. He performed research in many aspects of this field, and has published over 150 papers in the professional magazines and in conferences. In industry, he established several key know how centers (MIC laboratory, MMIC design group) and trained generations of microwave engineers in Israel. His current interest is in advanced technologies for microwave and microwave photonics hardware that includes monolithic integration, THz devices, wide band gap devices, optical/microwave interaction, and advanced design techniques.

Dr. Madjar became a member of IEEE in 1972. He is a Life Fellow of IEEE since 2011, and an IEEE Fellow since 1997. He has been involved in the instruction of many graduate students both in Israel and USA. He is one of the founders of the European Microwave Association and has been involved heavily in restructuring the European Microwave Conference and European Microwave Week. He served on the first Board of Directors of the European Microwave Association. He is a member of the TPC of both IEEE International Microwave Symposium and the European Microwave Conference. He was the chairman of the European Microwave Conference in 1997 (Jerusalem). He received the "Best Researcher Award" from RAFAEL, Israel in 1997. Dr. Madjar was involved heavily in IEEE activities in Israel, both in the section level and the AP/MTT chapter, which he established in 1973 and served as its chairman for many years. Presently Dr. Madjar is an independent consultant and occasionally he teaches in Drexel University in Philadelphia, PA and Tel Aviv University in Israel.



A Special IEEE Philadelphia Section  
Parent – Child or Parent - Grandchild  
Hands-On Workshop



*Beginner's Guide to Arduino  
an on-ramp to Electronics, Programming*  
March 29, 2014

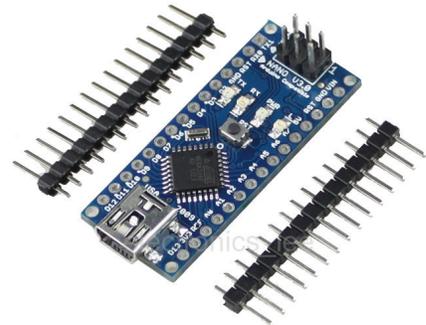


*Hosted By:*  
Ken Paist

This one-day IEEE Philadelphia Section Hands-On Workshop is intended to introduce middle school and high school students with an adult sponsor to basic electronics and programming using an Arduino compatible single chip micro-controller board.

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It is intended for artists, designers, hobbyists and anyone interested in creating interactive objects or environments. The vast community of Arduino enthusiasts provides a great source of project ideas, "how to" tutorials, parts and accessories, and more.

Arduino boards are not new. However, the cost of building projects with them keeps going down, and programming them keeps getting easier. Computers are often compared to the Apollo Guidance Computer, AGC, used on the Apollo 11 mission. It turns out that the controller used on many Arduino boards has about half of the memory and runs at about 16 times the speed of the AGC. On top of that, the Arduino is much smaller, uses much less power, and is much easier to program. This makes Arduinos ideal for beginners and advanced users.



This Hands-On Workshop features the ATmega328 micro-controller on an Arduino compatible board. The header pins on the board are connected to digital and analog I/O on the controller chip making it easy to connect to simple devices like switches and LED or more nuanced devices like optical sensors and motors. The "C" like programming environment provides easy access to the digital and analog I/O and timers for real-time real-world applications

**Presenter:** Ken Paist is a Design Engineer with Paist Design Group, LLC. He has a Master's Degree in Electrical Engineering from Drexel University. He has extensive experience in mixed signal PCB, FPGA, and full custom IC design. Additionally, Ken has developed a number of Science, Technology, Engineering and Math (STEM) programs for the Boy Scouts in Chester County ([kpaist@paist-designs.com](mailto:kpaist@paist-designs.com)).

**Topics:**

- Arduino hardware
- Soldering
- Basic electronic components

Ohm's Law  
Arduino programming

- IDE setup
- Data types
- Loops
- Arrays

Digital-to-Analog  
Analog-to-Digital

**Things to Bring:** A notebook computer with a USB port running Windows XP or later to load the Arduino IDE. Not compatible with Apple IOS.

**Things Provided:** Arduino compatible starter kit, resources disc including Arduino IDE software

**Background Required:** Basic algebra for solving simple equations.

**Intended Audience:** Middle school and high school students paired with an adult sponsor. Adults without a student will be put on a waiting list because our priority is introducing children to the joy of programming.

**Location, Hours and Lunch:** *DeVry University, 1140 Virginia Drive, Fort Washington, PA 19034*, from 8:30 AM to 4:30 PM. Parking is availability on campus. Lunch (11:30 AM to 12:30 PM) on your own is available from several venues on and off campus.

**REGISTRATION FORM - IEEE-Philadelphia Section: A Special IEEE Philadelphia Section Parent – Child or Parent – Grandchild Hands-On Workshop Questions? Call 484-270-5136).**

**REGISTER ON-LINE** at [www.ieeephiladelphia.org](http://www.ieeephiladelphia.org) or complete attached form:  
Registration includes notes. Lunch and parking are not included, but they are available nearby.

|                  | Payment received<br>before March 15, 2014 | Payment received<br>after March, 15 2014 |
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**\*Non-members receive a \$50 credit towards their IEEE membership (Does not include student membership). Add \$20 for CEU certificate**

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