

IEEE PHILADELPHIA SECTION ALMANACK



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COVERING COUNTIES OF BUCKS, BURLINGTON, CAMDEN, CHESTER, DELAWARE,
GLOUCESTER, MONTGOMERY, PHILADELPHIA

Editor's Column

By Peter Silverberg

The pandemic has affected everyone, and that includes the section. Our Communications Chair, Zizi Elgamal, is on assignment overseas and her return date is uncertain. That creates a vacancy. I will be your editor on a temporary basis. Many of you remember that I did this from 2007 to 2016, so this is a return engagement.

You can't expect me to do this forever! The Communications Chair needs to be filled. We are looking for a volunteer. This is a great place to learn all the running of the section. The responsibilities include the Almanack, the website, and social media. You get a seat on Adcom. Copy is submitted to you by others. It's a rewarding job. To apply: contact Emilio Salgueiro at emsalgueiro@ieee.org or me at psilverberg3@comcast.net.

Meanwhile, all copy inputs must be to me by April 20 for inclusion in the May issue.◊

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Upcoming Events

Adcom meeting

April 13, 7 to 9 pm Virtual

Section Night

April 20, 7 to 9 pm Virtual

An Agrivoltic Greenhouse (see p. 10)

Virtual Delaware Valley Science Fair

March 30 - April 7

PSPE Virtual ZOOM Course:

TECHNOLOGY AND TRENDS IN VEHICLE AUTOMATION (see p.3)

April 1, 7 to 8 pm

CSS/CAS/SMC Joint chapter webinar

April 27, 7 to 8 pm (*see p.2*)

Bower Lecture

April 28 9 am to 1 pm (*see p. 8*)



IEEE PHILADELPHIA CHAPTER OF CSS/CASS/SMCS
PRESENTS

MULTIPLICATIVE NOISE AS A STRUCTURED STOCHASTIC UNCERTAINTY PROBLEM

by

DR. BASSAM BAMIEH

PROFESSOR
MECHANICAL ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA, SANTA BARBARA, CA 93106

Date: Tuesday, April 27, 2021; Time: 7:00 pm to 8:00 pm; Location: Online Webinar (link provided to registrants)

Abstract:

Linear systems with multiplicative, time-varying noise exhibit varied and rich phenomenology such as heavy tails and dramatic differences between different notions of convergence. We study such systems in a framework similar to that used in robust control where the stochastic parameters are viewed as a "structured uncertainty". In particular, a purely input-output approach is developed to characterize mean-square stability. This approach clarifies earlier results in this area and also easily produces new ones in the case of correlated uncertainties. Applications of this framework to networked dynamical systems with link failures and stochastic topologies will be illustrated. In addition, an application to a model of the Cochlea will be described which potentially explains otoacoustic emissions as an instability mechanism. Finally, we illustrate some interesting connections of this work with the phenomenon of Anderson Localization which is a canonical problem in the statistical physics of disordered media.

Biography:

Dr. Bassam Bamieh is Professor of Mechanical Engineering at the University of California at Santa Barbara. He received his B.Sc. degree in Electrical Engineering and Physics from Valparaiso University (Valparaiso, IN) in 1983, and his M.Sc. and PhD degrees in Electrical and Computer Engineering from Rice University (Houston, TX) in 1986 and 1992 respectively. Prior to joining UCSB in 1998, he was an Assistant Professor in the Department of Electrical and Computer Engineering and the Coordinated Science Laboratory at the University of Illinois at Urbana-Champaign (1991-98). His current research interests include Robust and Optimal Control, distributed control and dynamical systems, shear flow transition and turbulence, and active control in thermoacoustic energy conversion devices. He received several awards and honors for his research, including an IEEE Control Systems Society G. S. Axelby Outstanding Paper Award, an AACC Hugo Schuck Best Paper Award, and a National Science Foundation CAREER award. He is a Distinguished Lecturer of the IEEE Control Systems Society, a Fellow of the International Federation of Automatic Control (IFAC), and a Fellow of the IEEE.

REGISTER ON-LINE at: <https://events.vtools.ieee.org/m/263428>
(Please provide your email for meeting link notification)

SPMB Symposium Paper Deadline Coming Soon

by Joseph Picone

Professor, Department of Electrical and
Computer Engineering (Temple U.)

Meeting Announcement:

IEEE Signal Processing in Medicine and Biology Symposium (SPMB)

Date: December 4, 2021

Location: Virtual

Please note that the paper submission
deadline for IEEE SPMB is July 1, 2021.

Students are encouraged to submit papers. This is the 11th annual symposium. Last year we had over 100 people participate. There were 18 oral presentations and 17 posters presented. The papers and abstracts were published in IEEE Xplore.

For more information about the symposium or the paper submission process, please go here: <https://www.ieeespmb.org/2021/>.

[Course sponsored by PSPE that IEEE members can take:

Joseph F. Maida, PE

*Program Chairperson Philadelphia Chapter
PSPE]*

TECHNOLOGY AND TRENDS IN VEHICLE AUTOMATION

Presented by

Stan Caldwell

**Executive Director of Carnegie Mellon
University's Mobility21 National University
Transportation Center**

Thursday, April 1, 2021

Virtual ZOOM Course: 7:00 PM to 8:00 PM

The course will present his research on technology and policy trends related to

automated vehicles. Vehicle automation is just one of many technologies disrupting the transportation sector, including vehicle connectivity, electrification, and shared use, which are evolving on separate but converging paths and enabled by rapid advances in information and communications technology. This course will provide participants with a general understanding and relationship of these technologies and related trends.

Networking: 8:00 PM to 9:00 PM

The Pennsylvania Society of Professional Engineers, through PIE, will evaluate and approve this "course" as meeting the continuing education license requirements for 1.0 Professional Development Hour in New York State. PSPE believes the "course" will be accepted for credit in PA, NJ and other National Model states where courses do not require pre-approval.

Prices using Paypal

Course and PSPE/PIE Certificate* - \$10.00

FOR RESERVATIONS GO TO:

<http://www.pspe-philly.org>

The ZOOM address for attending the course and the PSPE/PIE Course Evaluation Form will be sent to the registered attendees at the email address listed on Paypal statement or provided email when other payment arrangements are made prior to the course.

*PSPE/PIE Certificates will be sent to the registered attendees at the email address within 7 days after the course. All attendees should return the "PSPE/PIE Course Evaluation Form."

Passing of Harold Ammond

We were saddened to learn of the loss of Harold Ammond. It is hard to believe that he is no longer with us. His passing will be mourned by all those who knew him. Harold was Chairman of the Section in 2014 and continued to serve on the Adcom and in other capacities until his passing. Please find Harold Ammond Life Celebration below.

In memory of Harold's dedication and commitment to serving on the Philadelphia Section Board, we've purchased a Benefactors Plate at the National Shrine of St. Neumann . This engraved plate has been offered at the shrine for many years and to date holds close to 3,000 plates with names of Friends of the Shrine. The "Benefactor Board" is located in the hallway of the Shrine Offices and Gift Shop.

His daughter said "they hope to be able to gather together by the summer if the COVID restrictions have eased. If you would like to help celebrate his life with a donation. we know that our Dad would greatly appreciate your contributions to":

The IEEE Foundation: <https://www.ieeefoundation.org/how-to-give>
IEEE Foundation Development Office
445 Hoes Lane
Piscataway, NJ 08854, U.S.A.
Phone: +1 732 465 5871 Email: donate@ieee.org
Or, The ILR School at Cornell University:
<https://www.ilr.cornell.edu/alumni/your-impact>
Please contact Haley Singer at hs258@cornell.edu or 607-255-4293 to discuss these or other giving opportunities

Honoring Harold Ammond's Life 1927 - 2020

The family of Harold Ammond is greatly saddened to share that we lost our Dad on December 19, 2020 at the amazing age of 93. He remained tech-savvy his entire life and he had facetimed with both of his daughters on December 18 to make certain that everyone would receive the gifts he had sent for the holidays. We all wept a bit as his gifts arrived after his passing. We were grateful that Dad passed to his next adventure in his sleep at home, as he always wanted. The entire extended family is devastated that COVID prevented them from spending more precious time with Harold. They are deeply indebted to his local family, Dr. Paul and Karen Langevin, Chris Barrett, Taylor McDermott and our dear family friend, Marina Gurvich, for making it possible for him to be comfortable and happy in his home.



For anyone who knew Harold, he was as formal as his name suggests. He *always* wore a suit with a crisp white shirt and tie, felt great in a tux, and would "get casual" by taking off his suit jacket but retaining the shirt and tie! Over the years he gave toasts at weddings, political or business events in his tux; he organized

meetings in his suit; but could also be seen barbecuing the family's dinner, raking leaves and perhaps even mowing the lawn in the same attire.

He had lived with congestive heart failure for 20 years and during that time had quite a few hospitalizations that rushed us all to the hospital. Each time he'd say - "this is it, girls." But time and time again, he bounced back. We are so thankful to have gotten so much time with the man who had nine, maybe even ten lives.

Born in 1927, in Brooklyn, New York to Veronica Johnson Ammond and Frederick Ammond, Harold was a well-earned 93 years old. He was the widower of the former Senator Alene S. Ammond who predeceased him in 2019. Harold grew up on Long Island with his family and sister, Muriel, spending much time with his Johnson family cousins. Muriel was differently abled and Harold always lovingly looked after her. He was proud of his sister, often reminding us that "everybody loves her and she is the best damn Bingo player in town!" She could play 15 cards at a time. His love and support enabled her to have a wonderful and independent life of joy.

He stepped up and joined the US Navy after the bombing of Pearl Harbor. He served as an Airologist (a Navy-term used prior to "meteorologist") forecasting weather patterns for the safe movement of the Navy's aircraft carriers. He ended his tour serving in Trinidad and forever enjoyed the lyrical timbre of steel drums.

After WWII ended, he was accepted to the ILR School at Cornell University in Ithaca, New York where he earned his Bachelors in Industrial and Labor Relations. He was following in his father, Fred Ammond's footsteps as he was a leader in the Retail Clerks Union. At Cornell, he was invited to join a Jewish

Fraternity before the fraternity brothers learned he was Catholic. In one of the many moments-made-for-comedy in Harold's life, the fraternity honored their original offer and changed the charter to allow him to join. Harold became the House Steward and was responsible for working with the fraternity cook to plan daily meals. He thought that as long as they were going to have fish once per week, it might as well be on Fridays! This unlikely story led to a lifetime of dear, dear friendships.

He proudly chose to work on the side of Labor for his entire career. He worked in Chicago and Pittsburgh for the Retail Clerks Union and then moved to Cherry Hill, New Jersey to become the Executive Director of ASPEP: The Association for Professional Engineering Personnel who represented the professional engineers and scientists at what was then, RCA. He loved the work and believed strongly in the power and need for the labor movement.

Harold was a friend and a mentor to many in the industry. The current Executive Director of ASPEP said that "Harold was a large part of ASPEP's success and continued existence, especially as we transitioned from one company to another. His contributions to the Association he served so faithfully and for so long are too many to mention here. ASPEP will always be indebted to Harold for giving us the vast majority of his career in labor relations and helping shape the professional labor organization we are today. The best way we can honor Harold is by making sure ASPEP stays as one of the premier professional labor associations in the country. An association he helped build!"

He helped establish CESO, the Council of Engineers and Scientists Organizations, to address a lack of information on the unique challenges and opportunities facing professional unions. Harold traveled the nation visiting similar unions to discuss the common problems and challenges. Harold also travelled internationally to forward the cause of professional unions and his travels took him to Sweden, Norway, Belgium, England and Australia, advancing the interests of engineering and scientific professionals worldwide. He spent the next 45 years working with aerospace engineering leaders at RCA, GE, Lockheed Martin and others; those who ended up sending men to the moon, building the AEGIS radar defense system, and moving military and civilian aviation forward. He was also a lifetime active member of the IEEE, whose work he admired and supported, and whose meetings he attended up through this Fall. Harold had meetings with President George Bush, Vice-President Dan Quayle, and NJ Congressional leadership to further the work of engineers and scientists in aerospace. One young engineering professor said of his work with Harold, "He was pushing me to talk with Congress people. He taught me so much about US political systems. I learned so much from him and was very proud being an American because of his teaching."

He met the former Senator Alene S. Ammond (nee Matte), who was from Queens, New York and they married in 1953. They settled in Cherry Hill, New Jersey where they raised their two daughters: Cindy and Karen. He was always very welcoming of the girls' friends when they were growing up. Whether it was loading everyone into the car to go to

"Richman's for ice cream," having a barbecue in the backyard or heading out on vacations at the NJ shore or Candlewood Lake, CT - all were welcome in the Ammond home.

Much excitement ensued as the couple worked together to help Alene to be elected to the New Jersey State Senate as the representative of District 6. Harold's immense organizational skills helped forward the campaigns and he truly reveled in being the "husband of the Senator." Harold's love and support were the wind beneath her wings. They had a spirited relationship and the family now pictures them in a lively political discussion; enjoying their morning coffee with two eggs over easy and a good bagel. And for dinner, a "really fine steak" or Harold's famous Cornell Shrimp Creole for dinner.

Harold loved fishing with the grandkids on Marco Island and spent many years cultivating their love of the sport there. Everyone has a fond memory of the trips into the mangrove forests to catch dinner! Harold was known for sometimes carrying a life-sized photo of some of the great catches that were made. He loved to fly, to travel the world, he loved to fish and cook for his family. In "another life" he might have been a chef! He loved his girls, his grandkids and his sons-in-law and was so very proud of them.



INTERNATIONAL TEST CONFERENCE

OCTOBER 12-14 2021

CALL FOR PAPERS

The International Test Conference is the world's premier venue dedicated to the electronic test of devices, boards and systems—covering the complete cycle from design verification, design-for-test, design-for-manufacturing, silicon debug, manufacturing test, system test, diagnosis, reliability and failure analysis, and back to process and design improvement.

Emerging technologies such as optical, biomedical, and quantum devices will require new test solutions. Artificial Intelligence (AI) and the need for trustworthy devices are providing both new challenges and new opportunities for off-chip and on-chip test. At the same time, more stringent quality requirements, especially in automotive applications, are requiring more efficient test, debug, monitoring, and repair techniques that can transfer to the field.

Authors are invited to submit original, unpublished papers describing recent work in the field of test and design. Of particular interest are works dedicated to the topics listed on the right and/or works focused on special tracks such as Automotive, AI, or Security. Authors are also invited to submit practical, industry best practices papers. A special **industrial paper track** that focuses on case studies and practical examples is also available. Such papers will be limited to 5 pages in the final proceedings. The primary author on these submissions must be from industry. Industrial authors who want a longer paper in the proceedings should submit to one of the regular tracks. Submissions simultaneously under review or accepted by another conference, symposium or journal, will be summarily rejected.

Note: Travel in October may be still restricted or limited. ITC 2021 will administrate a virtual component to enable accepted authors to present their work remotely.

Submissions must include:

- Title of paper.
- Name, affiliation, e-mail address of each author.
- The corresponding author(s). ITC will communicate with the corresponding author(s).
- One or two topic(s) from the topic list, or a description of your topic.
- An electronic copy of a complete paper of six pages (with a maximum of 10) for regular papers. Regular submissions of less than four pages are rarely accepted. Industrial track papers are limited to a maximum of five pages.
- An abstract of 35 words or less to be entered online.

ITC maintains a competitive selection process for technical papers. Submissions must clearly describe the status of the reported work, its contribution, novelty and/or significance. Supporting data, results (priority is often given to papers with results from real designs) and conclusions, and references to prior work must also be included. ITC does not accept submissions that do not meet the specified criteria.

Paper title/abstract due: April 16, 2021
Paper final PDF due: April 23, 2021
Author notification: July 15, 2021
Final manuscript due: Aug 20, 2021

Authors are also invited to submit a **single-page** poster proposal. Posters are a useful way of presenting late-breaking results, getting feedback on an innovative method, or participating without having to write a full paper. Acceptance as a poster does not preclude submission of a more complete work as an ITC paper in 2022. Additional information on poster submissions will be provided on the ITC web page.

Poster submission deadline: June 7, 2021
Author notification: July 5, 2021

Test Week tutorial and workshop proposals are also welcomed. Deadlines and other information about proposals can be obtained from TTTC at: <http://tab.computer.org/ttcc>

For detailed information about the submission process, requirements and deadlines, the selection process and any other questions regarding the program itself or contact information, please consult the ITC web site at <http://www.itctestweek.org>.

ITC invites submissions on the latest advances in test, validation and diagnosis of ICs, boards and systems.

Topics of interest include (but not limited to):

3D/2.5D Test
Adaptive Test in Practice
Artificial Intelligence (AI)/Machine Learning in Test
ATE/Probe Card Design
Automotive Test
Advances in Boundary Scan
Bring-Up
Data Driven Methods
Data Exchange and Infrastructure
Defect-oriented Testing
DFM and Test
Diagnosis
Economics of Test
End-to-End Data Analysis
End-to-End System Security
Embedded BIST and DFT
Emerging Defect Mechanisms
Field Monitoring, Test, & Debug
Hardware Security and Trust
IoT Testing
Jitter, High-Speed I/O and RF Test
Known-Good-Die testing
Memory Test and Repair
MEMS Testing
Mixed-Signal and Analog Test
New Technologies and Test
On-Chip Test Compression
Online Test
Pre-Silicon Verification
Post-Silicon Validation
Power Issues in Test
Protocol-aware Test
Quantum Device Testing
Reliability and Resilience
Scan Based Test
SoC/SIP/NoC Test
Silicon Debug
Simulation and Emulation
System Test (Applications)
System Test (Hardware/Software)
Test-to-Design Feedback
Test Escape Analysis
Test Flow Optimizations
Test Generation and Validation
Test Resource Partitioning
Test Standards
Test Time Analysis and Reduction
Testing High Speed Optics/Photonics
Timing Test
Yield Analysis and Optimization





Penn Engineering Events

Distinguished Lectures Commencement Departmental Events Calendar Resources

« All Events

Neural Networks for Machine Learning: A Symposium to Honor Kunihiro Fukushima, Recipient of the 2021 Bower Award and Prize for Achievement in Science

April 28 at 9:00 AM - 1:00 PM

The School of Engineering and Applied Science is honored to co-organize, with Drexel University and the Franklin Institute, a symposium to honor the Bower Awardee, Kunihiro Fukushima, the inventor of the Neocognitron. Dr. Fukushima joins a list of many distinguished laureates of the Franklin Institute – of these over **90 laureates** have later received the Nobel Prize.

Dr. Fukushima has received the **Bower Award** "for his pioneering research that applied principles of neuroscience to engineering through his invention of the first deep convolutional neural network, "Neocognitron"—a key contribution to the development of artificial intelligence."

<https://www.fi.edu/awards>

Register Here: <https://tinyurl.com/BowerFukushima>



Kunihiro Fukushima

Ph.D., Laureate

Schedule

- 9:00 Introduction
- 9:20 "Deep CNN Neocognitron and its Advances" *Kunihiro Fukushima*
- 10:00 "Appraisal of Kunihiro Fukushima's Work" *Jürgen Schmidhuber*
- 10:40 Coffee Break
- 10:50 "A Brave New World: Overfitting is Good When Deep" *Tomaso Poggio*
- 11:30 "Multidisciplinary Innovation & Fukushima: Lessons Learned" *Donald Wunsch*
- 12:10 "The Unreasonable Effectiveness of Deep Learning in AI" *Terry Sejnowski*
- 12:50 Questions and Discussion

Speakers

KUNIHIRO FUKUSHIMA, PH.D., Laureate

*Fuzzy Logic Systems Institute
Former: Osaka University and NHK Science and Technology Research Laboratories*

JÜRGEN SCHMIDHUBER, PH.D.

NNAISENSE and the Dale Mole Institute of A. I. Research (IDSIA) in Mano, Switzerland

TOMASO POGGIO, PH.D.

Center for Brains, Minds, and Machines Massachusetts Institute of Technology

DONALD WUNSCH, PH.D.

Applied Computational Intelligence Laboratory Missouri Institute of Science and Technology

TERRY SEJNOWSKI, PH.D.

Computational Neurobiology Laboratory, Salk Institute and Division of Biological Sciences, University of California

+ GOOGLE CALENDAR

+ I CAL EXPORT

Details

Date:
April 28
Time:
9:00 AM - 1:00 PM
Website:
<https://tinyurl.com/BowerFukushima>

« [PSOC Webinar: Jason Locasale](#)

[PSOC Webinar: Buzz Baum](#) »



Quick Actions

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IEEE Philadelphia Section, Region 2, to Honor Grace Hopper by starting a Women’s walk of Honor and Achievement in the sidewalks of Philadelphia.

by Kate McDevitt, Membership Chair



Grace Hopper was an American Scientist born December 9, 1906. She was an amazing role model for women in science and technology. She graduated with a BA degree from Vassar and went on to earn her master’s degree and Ph D in mathematics at Yale University. At age 37, she joined the Navy. In less than one year, she was promoted to Lieutenant and later Commander. She was assigned to the Mark 1 at Harvard University. In 1949, she came to Philadelphia and worked with Eckert-Mauchly continuing her pioneering work in computer technology.

It was in Philadelphia close to Broad and Spring Gardens Streets that she helped create the UNIVAC, the first all-electronic digital computer. It was here

that she invented the first compiler, a program that translates written instruction into code that computers read directly. This led to the development of COBOL, one of the earliest computer languages created by her team.

She retired from the Navy as Rear Admiral and when asked “what was her greatest joy in her life?” Grace responded with her love to inspire students by teaching, and continued that love until her death on January 01, 1992. Throughout her life she received many honors, and in 2016, Grace Hopper was awarded The Presidential Medal of Freedom.

To honor Grace Hopper’s endless accomplishments, IEEE Philadelphia Section, Region 2, is creating a plaque to be placed in the sidewalk in front of The Mathematical, Civil, and Science Charter School of Philadelphia on Broad Street near Spring Garden Street where Grace worked. Grace Hopper will be the first Woman in this Walk of Honor and Achievement for Women in Education, Scientist, Technology, Engineers, and Mathematics from and around Philadelphia. ♦

SECTION NIGHT

Date: uesday April 20, 2021

Time: 7 pm - 8 pm

Location: Virtual

Cost: No Charge. Registration is required.

Register through vTools or contact the office.

(CEU: PDH certificates are free for IEEE members. For non-members, the cost is \$9 per certificate. You may pay when registering. PDH certificate will be emailed 2-3 weeks after the meeting.)

An Agrivoltaic Greenhouse

Speaker: Michael Evans

This talk will introduce agrivoltaics, the combining of agriculture and photovoltaics on the same land. It will discuss the competition for land use which motivates the field, and general approaches to using arable land for both photovoltaic (PV) energy collection and agriculture. It will then discuss our work integrating PV energy collection and agriculture, the benefits of our system, and the results of our prototype and simulations. Finally, this talk will discuss proposed future improvements to this system.

Future Milestone?

I have recieved a communication from the IEEE History Center that the PNJ connection was founded in 1923 and could be a milestone at the century mark. We have a number of milestones in Philadelphia but this is not one. Volunteers from the PES are natural to pick this up. Can we (Salgueiro or Silverberg) hear that it will be undertaken?