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Chair Rama Vinnakota, right, accepts the citation on behalf of IEEE Vancouver from IEEE Canada President Witold Kinsner at a recent IEEE Canada dinner banquet in Ottawa.

Gaseous radiation detectors: status, trends and applications



Archana Sharma
CERN Laboratory, Geneva

Distinguished Lecturer

Watch for time, date & venue posting at www.ieeecontact.org

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Progress in micro-fabrication technology has facilitated the development of radiation detectors capable of economically covering large detection volumes with a low material budget. Besides their widespread use in particle-physics and nuclear-physics experiments, gaseous detectors are employed in many other fields: astro-particle research and applications. The invention of Micro-Pattern Gas Detectors (MPGD), in particular the Gas Electron Multiplier (GEM), the Micro-Mesh Gaseous Structure (Micromegas), and more recently other micro-pattern detector schemes, offers the potential to develop new gaseous detectors with unprecedented spatial resolution, high rate capability, large sensitive area, operational stability and radiation hardness. Given these recent developments, particle detection through the ionization of gas has resulted in large fields of application in future upgrades of particle, nuclear and astro-particle physics experiments. In my IEEE distinguished lecture, I will focus on MPGDs and their applications for high-energy particle physics and societal applications such as medical imaging, material science, and homeland security.

Speaker: Archana Sharma is a senior staff scientist at the CERN Laboratory in Geneva, Switzerland. She has been active in the field since 1989 mainly working on instrumentation especially gaseous detectors. She is the pioneer of simulations and experimentation on wire chambers, resistive plate chambers and micro-pattern gaseous detectors over last three decades. Following a graduate degree in Nuclear Physics from BHU Varanasi, India, Archana received her Particle Physics Ph.D. from Delhi University in 1989, followed by an "Instrumentation for High Energy Physics" D.Sc. from the University of Geneva in 1996. Sharma also earned an executive MBA degree from the International University in Geneva in 2001. She is an internationally recognized expert for her experimental work on gaseous detectors for research in High Energy Physics.

Archana has worked on several CERN experiments both on R&D being involved in designing and prototyping, and on running laboratories for construction, installation and commissioning of large scale gaseous detectors. She is the founder and leader of CMS GEM Collaboration, for exploiting one of the most sensitive detectors for trigger and tracking in the CMS Experiment at LHC, with the highest discovery potential.

Sharma pioneered the development of micro-pattern detectors, her publications, review articles and book: a special volume on Instrumentation on Particle Physics edited by her are widely referred to and cited. Since 2001, Prof. Sharma has led the construction of gaseous detectors and upgrades on the CMS experiment and is well known for incessantly mentoring students into professionals. She is the co-owner of patent on a family of detectors called THRAC – Timing and High Rate Capable devices. She is an IEEE Senior, recognition from the International Institute of Electronics and Engineers where she also served several terms on the Transnational Committee, encouraging participation in this field from Asia.

Archana has served on numerous committees and plays a vital role in advisory review boards for leading International Conferences, Publications and Symposia in the field. Archana is an examiner for European Commission Horizon 2020 projects and some national funding agencies.

Dr. Sharma has been on board as honorary Adjunct professor in several institutions where she teaches regularly courses on gaseous detectors and their applications in high energy physics and in other fields like medical imaging and diagnostics, astronomy, space and PET.

She has been very actively facilitating knowledge exchange and capacity building in the science and technology sector exploiting her mandate in the International Committee and the Career Committees of CMS experiment.

Prof. Sharma is the author and co-author of over 800 publications and is invited regularly for keynote talks in international conferences and public addresses in various science and technology events. Archana has been conferred with many prestigious awards and medals from NGO's in India. She has appeared on BBC and CNN on several occasions and is frequently cited in the national media and printed press in India.

Finally, as an aside, Archana also runs an NGO called Life Lab Education and Research Foundation with the main objective to create partnerships with educational institutions for the benefit of the underprivileged: w.lifelab.org.in



Kip Morison
BC Hydro

The journey to the digital utility

The digital revolution is having profound impacts on the electric utility, providing exciting opportunities and some potential threats. The digital landscape is changing how we work, how we manage our assets, how we operate our system, and how we engage with employees and customers. This presentation will talk about some of the key technologies involved in the journey to the digital utility and how BC Hydro is using them to derive value for the enterprise and for the customers. Some of the potential risks and challenges expected as we travel down the digital road will also be discussed.

Speaker: Kip Morison has over 30 years of experience in the energy sector and is the Chief Information Officer for BC Hydro in Vancouver, Canada. Prior to his current role, Kip was Chief Technology Officer at BC Hydro. Kip's industry experience includes roles as Manager of Long Term Planning and R&D at the British Columbia Transmission Corporation, Director of Power System Technologies at Powertech Labs, and Senior Engineer at Ontario Hydro. Kip holds degrees in Electrical Engineering from the University of Toronto and is a registered professional engineer and an IEEE Fellow.

Friday 12 May

12:00 PM to 1:00 PM

Center Auditorium
BC Hydro
Edmonds Office
6911 Southpoint Dr Bby

Free event.
No registration required

Feel free to invite those you think will be interested in these presentations. These IEEE presentation hours may be considered towards Continuing Professional Development (CPD) credit



Information
Joint Power & Energy Chair
Dipendra Rai
Dipendra.Rai@bchydro.com



I am pleased let readers know that I have accepted the role of IEEE Young Professionals Chair for all of Canada — ie, Region 7.

This is a very exciting opportunity and I am excited to take the excellent work done in IEEE Vancouver to the Canadian region.

Sean Garrity



Angshul Majumdar
IIIT, Delhi, India

Deep representation learning

Deep learning has recently attracted a lot of attention from academia and industry. In this talk we discuss the basic building blocks of deep learning – autoencoders, restricted Boltzmann machine and convolutional neural network. These three techniques are born out of the machine learning community. We also discuss about two powerful representation learning tools from the signal processing community – dictionary learning and transform learning. We show how in the recent past (last one year) dictionary learning has been used for building deeper architectures. We conclude the talk with the deeper versions of transform learning – a topic that is going to be realized in the near future.

Speaker: Angshul Majumdar received the Bachelor's degree from the Bengal Engineering College,

Shibpur, India, and the Master's and Ph.D. degrees from the University of British Columbia in 2009 and 2012, respectively. He is currently an Assistant Professor with the Indraprastha Institute of Information Technology (IIIT), Delhi, India. He has co-authored over 150 papers in journals and reputed conferences. He has authored the book Compressed Sensing for Magnetic Resonance Image Reconstruction (Cambridge University Press, 2015) and co-edited a volume on MRI: Physics, Reconstruction, and Analysis (CRC Press, 2015). His research interests are broadly in the areas of signal processing and machine learning, with a specific focus on deep learning. He is a Senior Member of IEEE and is currently serving as the Chair of the IEEE SPS Chapter's Committee and the Chair of the IEEE SPS Delhi Chapter.

11:00 am - 12:00 noon

Tuesday 23 May

Room TASC1 9204
SFU Burnaby

Information

Signal Processing Chair
Ivan Bajic
ivan_bajic@ieee.org



Project Management Series
Workshop 2

Communication and Coordination Panel

Tuesday 09 May
6:00 PM to 8:00 PM
745 Thurlow Street - 25th Floor, Vancouver

Speakers

Michael Wrinch, CEO and founder of Hedgehog Technologies
Tomas Reyes, PM for Community Partnerships and Integration at Doctors of BC

Presentation on coordination and communication in projects by a panel of experts from various project management fields, and a Q&A session.

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Ana Laura Gonzalez-Rios, Chair
Women In Engineering
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Sean Garrity, Chair
IEEE youngprofessionals
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Winnie Ye
Carleton University

2PM

Tuesday 23 May

ASB 9705

Simon Fraser University

Light refreshments
will be provided

Information
Electron Devices Chair
Bonnie Gray
bgray@sfu.ca

Silicon Photonics

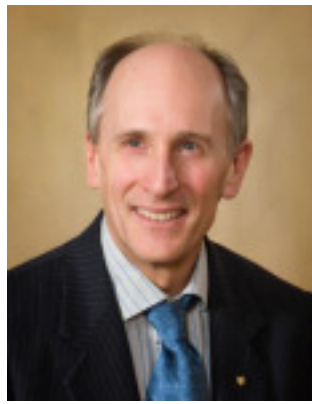
Silicon based photonics has been considered as the most promising candidate for next generation photonic platform due to its potential for monolithic integration with silicon microelectronics. The most popular silicon-on-insulator (SOI) platform offers a high refractive index contrast between the cladding and the silicon waveguide core, facilitating the confinement and guiding of light in structures within submicron and nanometer dimensions. In addition, the mature silicon microfabrication technology establishes a firm foundation for making low-cost and compact integrated photonic devices. A wide range of active and passive optical devices has been realized on the SOI platform. The applications of these devices can be found in high-speed communications, health industry, chemical and biological analysis, environmental monitoring, optical interconnects, and renewable energy. This talk will focus on the past and present research projects on silicon photonics at Carleton University.

Speaker: Dr. Winnie Ye is a Canada Research Chair (Tier II) in Nano-scale IC Design for Reliable Opto-

Electronics and Sensors. She is currently an Associate Professor in the Department of Electronics at Carleton University. Her expertise is in silicon photonics and its applications in biophotonics, telecommunications, and renewable energy. Dr. Ye received her B.Eng. degree in Electrical Engineering from Carleton University. She then studied Photonics and received her M.A.Sc. and Ph.D degree in Electrical and Computer Engineering from the University of Toronto and Carleton University, respectively. After working with the Silicon Photonics/Optoelectronics team at the National Research Council (NRC) during her Ph.D. program, she joined Prof. Lionel Kimerling's laboratory at the Massachusetts Institute of Technology (MIT) and Prof. Kenneth Crozier's laboratory at the Harvard University as a NSERC postdoctoral fellow to work on opto-electronic integration and silicon nanofabrication. Dr. Ye returned to Canada in 2009. She is the recipient of the Early Researcher Award (ERA) from the Ministry of Innovation Ontario in 2012, and the Research Achievement Award from Carleton University in 2013. She has also been the Chair of the IEEE Women in Engineering (WiE) Ottawa Chapter since 2012. >

IEEE Electron Devices Society





Dylan Williams
NIST

Metrology for 5G millimeter-wave communication systems

Millimeter-wave communication systems promise to make possible new applications in virtual reality, mobile robotics, and globally aware autonomous driving by unlocking the millimeter-wave spectrum, and its unlimited potential for broadband low-latency communication channels.

I will describe a new program at NIST to develop metrology for these emerging 5G millimeter-wave communications systems.

The program includes projects to develop traceable modulated signals at millimeter-wave frequencies, accurate millimeter-wave channel models, free-field test methods for connectorless wireless devices, and large-signal measurements for characterizing millimeter-wave transistors.

Speaker: Dylan F. Williams (M'80–SM'90–F'02) received the Ph.D. degree in electrical engineering from the University of California, Berkeley, in 1986.

He joined the Electromagnetic Fields Division of the National Institute of Standards and Technology, Boulder, CO, in 1989, where he develops metrology for the characterization of monolithic microwave integrated circuits and electronic interconnects. He has published over 80 technical papers. Dr. Williams is the recipient of the Department of Commerce Bronze and Silver Medals, two Electrical Engineering Laboratory's Outstanding Paper Awards, two Automatic RF Techniques Group (ARFTG) Best Paper Awards, the ARFTG Automated Measurements Technology Award, and the IEEE Morris E. Leeds Award. He also served a four-year term as Editor-in-Chief of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. A previous chair of MTT-11 Microwave Measurements Committee, he currently serves as President of the IEEE Microwave Theory and Techniques Society.

Friday 19 May

16:00 - 17:00

Room 418

MacLeod Bldg, UBC

Information

Joint Aerospace and
Electromagnetics Chairs
Dave Michelson
davem@ece.ubc.ca



**IEEE Joint Aerospace and
Electromagnetics Chapter**

ICICS-ECE-IEEE Workshop:
Future Communications and
Multimedia Systems

CONNECTIVITY FOR THE INTERNET OF THINGS

ICICS/ECE/IEEE Workshops:

FRIDAY, MAY 12, 2017
8:15 AM – 12:15 PM (PST)
UBC Vancouver Campus
Kaiser Building
Rooms 2020 and 2030
2332 Main Mall
Vancouver, BC V6T 1Z4

free registration ends
wednesday 10 may

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You are invited to attend the 2017 ICICS-ECE-IEEE Workshop on Connectivity for the IoT

The workshop features five seminars from industry speakers and a student poster session highlighting latest advances in the broad areas of communications and computing for the Internet of Things (IoT). For free registration and technical program,

go to

<http://icics.webi.it.ubc.ca/workshops/index.php/home/>

SMACK software verification toolchain



Zvonimir Rakamaric
University of Utah

Monday 08 May

10:30 AM

Room 2030

Kaiser Bldg, UBC

Tool prototyping is an essential step in developing novel software verification algorithms and techniques. However, implementing a verifier prototype that can handle real-world programs is a huge endeavor, which hinders researchers by forcing them to spend more time engineering tools, and less time innovating.

In this talk, I will present the SMACK software verification toolchain. The toolchain provides a modular and extensible software verification ecosystem that decouples the front-end source language details from back-end verification algorithms. It achieves that by translating from the LLVM compiler intermediate representation into the Boogie intermediate verification language. SMACK benefits the software verification community in several ways: (i) it can be used as an off-the-shelf software verifier in an applied software verification project, (ii) it enables researchers to rapidly develop and release new verification algorithms, (iii) it allows for adding support for new languages in its front-end. We have used SMACK to verify numerous C/C++ programs, including industry examples, showing it is mature and competitive. Likewise, SMACK is already being used in several existing verification research prototypes.

Speaker: Zvonimir Rakamaric is an assistant professor in the School of Computing at the University of Utah. Prior to this, he was a postdoctoral fellow at Carnegie Mellon University in Silicon Valley, where he worked closely with researchers from the Robust Software Engineering Group at NASA Ames Research Center to improve the coverage of testing of NASA's flight critical systems. Zvonimir received his bachelor's degree in Computer Science from the University of Zagreb, Croatia; he obtained his M.Sc. and Ph.D. from the Department of Computer Science at the University of British Columbia, Canada.

Zvonimir's research mission is to improve the reliability and resilience of complex software systems by empowering developers with practical tools and techniques for analysis of their artifacts. He is a recipient of the NSF CAREER Award 2016, Microsoft Research Software Engineering Innovation Foundation (SEIF) Award 2012, Microsoft Research Graduate Fellowship 2008-2010, Silver Medal in the ACM Student Research Competition at the 32nd International Conference on Software Engineering (ICSE) 2010, and the Outstanding Student Paper Award at the 13th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS) 2007.

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