

2020 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting

5–10 July 2020



Awards Presentation
Wednesday, July 8, 2020



IEEE



PROGRAM

IEEE Awards Presentation Introductions and Welcome

Mahta Moghaddam, AP-S President

Kathleen Melde, Chair, AP-S Awards Committee

IEEE Level Awards

IEEE Fellows

AP-S Field Awards

Paper Awards

AP Society Recognition

Raj Mittra Travel Grant Awards

AP-S Outstanding Chapter Awards

Concluding Remarks

2020 IEEE AP-S AWARD RECOGNITION

Tapan Kumar Sarkar - 2020 IEEE Electromagnetics Award

for contributions to the efficient and accurate solution of computational electromagnetic problems in frequency and time domain, and for research in adaptive antennas.

Andrea Alù -2020 IEEE Kiyo Tomiyasu Award

for contributions to novel electromagnetic materials and their application.

2020 IEEE AP-S FELLOWS

Jaume Anguera Pros

for contributions to small multiband antennas for wireless telecommunication devices

Filippo Capolino

for contributions to development of electromagnetic phenomena in metamaterials and periodic structures

Xudong Chen

for contributions to optimization methods for electromagnetic inverse scattering

Nuria Llombart Juan

for contributions to millimeter and submillimeter wave quasioptical

William Scanlon

for contributions to antenna design for wearable and implantable applications

Shiwen Yang

for the development of time-modulated antenna arrays

2020 IEEE FELLOWS EVALUATED BY OTHER IEEE SOCIETIES

Kartikeyan Machavaram

for contributions to high-power millimeter wave and terahertz

Jung-chih Chiao

for contributions to wireless and battery-less medical implants

Thomas Kuerner

for contributions to terahertz data communication

DISTINGUISHED ACHIEVEMENT AWARD

David Pozar, University of Massachusetts at Amherst

"For significant contributions to the electromagnetic analysis, development, and design of microstrip phased arrays and reflectarrays, and for educational leadership and service to the electromagnetics community."



David M. Pozar received the PhD degree from Ohio State University in 1980, and joined the faculty at the University of Massachusetts Amherst. In 1988 he spent a sabbatical leave at Ecole Polytechnique Federale de Lausanne, in Lausanne, Switzerland. He is currently Professor Emeritus at the University of Massachusetts Amherst.

Professor Pozar is a Life Fellow of the IEEE. He has served as an Associate Editor of the IEEE Transactions on Antennas and Propagation (1983-1986 and 1989-1992), as a member of the IEEE AP-S AdCom (1989-1991), and as an Associate Editor of the IEEE AP-S Newsletter (1982-1984). In 1981 he received the "Outstanding Professor for 1981" award from Eta Kappa Nu, the student honor society. In 1984 he received an NSF Presidential Young Investigator Award, and the "Keys to the Future Award" from the IEEE Antennas and Propagation Society. In 1985 he received the University of Massachusetts Engineering Alumni Association "Outstanding Junior Faculty Award". In 1986 he received the R.W.P. King Best Paper Award from the IEEE Antennas and Propagation Society. In 1987 he received the URSI Issac Koga Gold Medal for his work on printed antennas and phased arrays. He again received the R.W.P. King Best Paper Award in 1988. In 1989 he received the United Technologies Corporation "Outstanding Teaching Award". He served as a Distinguished Lecturer for the IEEE Antennas and Propagation Society in 1993-1995. In 1995 he received the College of Engineering "Outstanding Senior Faculty Award". He received the College of Engineering "College Outstanding Teacher Award" in 1997. In 1998 he received the H. A. Wheeler Applications Prize Paper Award", from IEEE Antennas and Propagation Society. He received an IEEE Third Millennium Medal in 2000, and he received the S. A. Schelkunoff Transactions Prize Paper Award in 2004. He received the Chancellor's Medal for the University of Massachusetts in 2003. Professor Pozar has published over 100 papers on microstrip antennas and phased arrays, and is the author of several books and monographs, including Microwave Engineering (4th edition), Microstrip Antennas, and Microwave and RF Design of Wireless Systems.

CHEN-TO TAI DISTINGUISHED EDUCATOR AWARD

Cynthia Furse, University of Utah

"For motivating, challenging, educating, and inspiring the next generation of EM engineers through innovative teaching, hands on experiences, current research, and lively participation."



Cynthia Furse (M'85–SM'99–F'08) is a Professor of Electrical and Computer Engineering and past Associate Vice President for Research at the University of Utah. Professor Furse received her B.S. in electrical engineering with a mathematics minor in 1985, M.S. degree in 1988, and Ph.D. in 1994 from the University of Utah.

She has taught electromagnetics, wireless communication, computational electromagnetics, microwave engineering, antenna design, entrepreneurship, and introductory electrical engineering (for which she co-authored an open source textbook) and has been an early leader in the development of the flipped classroom. Prof. Furse's counts her greatest career achievement in the success of her students. In addition to students in her classes, she has served as the major advisor for 27 PhDs, 56 MS students, 174 undergraduate researchers, 12 high school research students, including one exceptional young woman who won the International Science Fair. Her extensive research on how electromagnetic fields propagate in complex lossy scattering media has been applied in medical applications in the human body, geophysical prospecting, ionospheric plasma, aircraft wiring networks, and photovoltaic systems. She is a founder of LiveWire Innovation, Inc., a spin-off company based on her research, commercializing devices to locate intermittent faults in live electrical systems.

Dr. Furse is a Fellow of the IEEE and the National Academy of Inventors. She is a past AdCom member for the IEEE AP society and past chair of the IEEE AP Education Committee. She has received numerous teaching and research awards including the 2009 IEEE Harriett B. Rigas Medal for Excellence in Teaching and the 2019 University of Utah distinguished Teaching Award. Dr. Furse and her husband, Larry, are the proud parents of a grown son and daughter and eight vibrant grandchildren.

JOHN KRAUS ANTENNA AWARD

Yueping Zhang, Nanyang Technological University

"For pioneering and significant contributions to the development of antenna-in-package (AiP) technology."



Yueping Zhang is a full Professor with the School of Electrical and Electronic Engineering at Nanyang Technological University, Singapore, a Distinguished Lecturer of the IEEE Antennas and Propagation Society (IEEE AP-S), a Member of the IEEE AP-S Paper Award Committee, and a Fellow of IEEE.

Prof. ZHANG was a Member of the IEEE AP-S Field Award Committee (2015-2017), an Associate Editor of the IEEE Transactions on Antennas and Propagation (2010-2016), and the Chair of the IEEE Singapore MTT/AP joint Chapter (2012).

Prof. ZHANG was a Distinguished Scholar affiliated to Shanghai Jiao Tong University (2012). He was awarded a William Mong Visiting Fellowship (2005) and appointed as a Visiting Professor (2014) by the University of Hong Kong.

Prof. ZHANG has published numerous papers, including two invited and one regular papers in the Proceedings of the IEEE and one invited paper in the IEEE Transactions on Antennas and Propagation. He is probably the first and only Chinese radio scientist who has managed to publish a historical article in an English learned journal such as IEEE Antennas and Propagation Magazine. He received the prestigious IEEE AP-S Sergei A. Schelkunoff Prize Paper Award in 2012.

Prof. ZHANG holds 7 US patents. He has made pioneering and significant contributions to the development of Antenna-in-Package (AiP) technology that has been widely adopted by chipmakers for millimeter-wave applications. His current research interests include the development of Antenna-on-Chip (AoC) technology for Very Large Scale Antenna Integration (VLSAI) and characterization of chip-scale propagation channels at terahertz for Wireless Chip Area Network (WCAN).

JOHN KRAUS ANTENNA AWARD

Duixian Liu, IBM

"For pioneering and significant contributions to the development of antenna-in-package (AiP) technology."



Duixian Liu received the B.S. degree in electrical engineering from XiDian University, Xi'an, China, in 1982, and the M.S. and Ph.D. degrees in electrical engineering from the Ohio State University, Columbus, in 1986 and 1990, respectively.

From 1990 to 1996, he was with Valor Enterprises Inc. Piqua, Ohio, initially as an Electrical Engineer and then as the Chief Engineer, during which time he designed an antenna product line ranging from 3 MHz to 2.4 GHz for the company, a very important factor for the prestigious Presidential "E" Award for Excellence in Exporting in 1994. Since April 1996, he has been with the IBM T. J. Watson Research Center, Yorktown Heights, NY, as a Research Staff Member. He has received five IBM's Outstanding Technical Achievement Awards and one Corporate Award (IBM's official acknowledgement of breakthrough technical achievements that have led to significant market and industry success for the company). He was named Master Inventor in 2007. He was the chief editor for *Advanced Millimeter-wave Technologies - Antennas, Packaging and Circuits* published by Wiley in 2009, co-editor for *Handbook of Antenna Technologies* published by Springer in 2016, and editor for *Antenna-in-Package Technology and Applications* published by Wiley in March 2020. He has authored or coauthored more than 130 journal and conference papers. He received the Best Paper Prize of the 2007 IEEE International Workshop on Antenna technology for "Antenna-in-package in LTCC for 60 GHz Radio," IBM Research's 2011 Pat Goldberg Memorial Best Paper Award in Computer Science, Electrical Engineering and Math for "Organic Packages with Embedded Phased-Array Antennas for 60-GHz Wireless Chipsets," IBM Research's 2017 Pat Goldberg Memorial Best Paper Award in Computer Science, Electrical Engineering and Math for "A 28-GHz 32-Element TRX Phased-Array IC With Concurrent Dual-Polarized Operation and Orthogonal Phase and Gain Control for 5G Communications," the 2012 S. A. Schelkunoff Prize Paper Award of the IEEE Antennas and Propagation Society for "Dual Grid Array Antennas in a Thin-Profile Package for Flip-Chip Interconnection to Highly Integrated 60-GHz Radios," and the 2017 IEEE Journal of Solid-State Circuits Best Paper Award for "A 28-GHz 32-Element TRX Phased-Array IC With Concurrent Dual-Polarized Operation and Orthogonal Phase and Gain Control for 5G Communications." He has 132 patents issued. His research interests are antenna design, EM modeling, chip packaging, digital signal processing, and communications technologies.

Dr. Liu is a Fellow of IEEE, and was an associate editor for the IEEE Transactions on Antennas and Propagation (2005-2013), a Guest Editor for the IEEE Transactions on Antennas & Propagation special issues on Antennas and Propagation Aspects of 60-90 GHz Wireless Communications (October 2009), Antennas and Propagation at mm- and sub mm-waves (April 2013), Antennas and Propagation Aspects of 5G Communications (October 2017), and for the IEEE AWPL for a Special Cluster Antenna-in-Package, Antenna-on-Chip, Antenna-IC Interface: Joint Design and Co-integration Aspects (2019), the Lead Guest Editor for International Journal of Antennas and Propagation on special issues on Wearable and RFID Antennas (July 2013). He has been an organizer or chair for numerous international conference sessions or special sessions and served as a technical program committee member for many international conferences. He was the general chair of the 2006 IEEE International Workshop on Antenna Technology: Small Antennas and Novel Metamaterials, White Plains, New York. He has served as an external Ph.D. examiner for several universities and external examiner for government organizations on research grants. He has been invited to give talks on mmWave and antenna-in-package designs to universities and IEEE local chapters in USA, Canada, Sweden, the Netherlands, Singapore, Japan, Taiwan and China.

LOT SHAFAI MID-CAREER AWARD

Jamesina Simpson, University of Utah

"For advancing and applying global and local FDT models of the Earth-ionosphere waveguide and for establishing programs to help mentor and encourage engineering students."



Jamesina Simpson Prof. Simpson obtained the B.S. and Ph.D. degrees in electrical engineering from Northwestern University, Evanston, IL, in 2003 and 2007, respectively. From August 2007 to June 2012, she was a tenure-track assistant professor in the Electrical and Computer Engineering (ECE) Department at the University of New Mexico (UNM). In July 2012, she joined the ECE Department at the University of Utah as an associate professor.

Prof. Simpson's research lab encompasses the application of the finite-difference time-domain (FDTD) method to modeling electromagnetic phenomena at frequencies over 15 orders of magnitude (~ 1 Hz vs. ~ 600 THz). In particular, her group has pioneered advanced three-dimensional (3-D) Maxwell's equations FDTD models of global electromagnetic wave propagation within the Earth-ionosphere waveguide. These models have been applied to a variety of applications, including remote-sensing of oil fields, scintillation, hypothesized electromagnetic earthquake precursors, remote-sensing of localized ionospheric anomalies, remote-sensing of airplanes that have crashed into the oceans, Schumann resonances, and space weather effects on the operation of electric power grids. Dr. Simpson has received a 2010 NSF CAREER Award, the 2012 IEEE AP-S Donald G. Dudley, Jr. Undergraduate Teaching Award, and the 2017 URSI Santimay Basu Medal. She is currently serving as USNC-URSI Chair of Commission B and as a track editor for IEEE Transactions on Antennas and Propagation.

Current and former students in Prof. Simpson's research lab have earned awards such as the NSF Graduate Research Fellowship, the IEEE Antennas and Propagation Society Pre-Doctoral and Doctoral Research Awards, and the American Association of University Women Fellowship. Graduates from her lab have accepted positions in industry and with the government, including Intel Corporation, the COMSOL Group, Singapore's Institute of High-Performance Computing, and the National Nuclear Security Administration's Future Leaders Program.

HARRINGTON-MITTRA COMPUTATIONAL ELECTROMAGNETICS AWARD

Eric Michielssen, University of Michigan

"In recognition of being an outstanding computational scientist, as well as a mentor and role model for the next generation of faculty members."



Eric Michielssen received his M.S. in Electrical Engineering (Summa Cum Laude) from the Katholieke Universiteit Leuven (KUL, Belgium) in 1987, and his Ph.D. in Electrical Engineering from the University of Illinois at Urbana-Champaign (UIUC) in 1992. From 1992 to 2005, he served on the faculty at UIUC. In 2005, he joined the University of Michigan, Ann Arbor, where he currently is the Louise Ganiard Johnson Professor of Engineering and Professor of Electrical Engineering and Computer Science.

Eric Michielssen received a Belgian American Educational Foundation Fellowship in 1988 and a Schlumberger Fellowship in 1990. Furthermore, he was the recipient of a 1994 International Union of Radio Scientists (URSI) Young Scientist Fellowship, a 1995 National Science Foundation CAREER Award, and the 1998 Applied Computational Electromagnetics Society (ACES) Valued Service Award. In addition, he was named 1999 URSI United States National Committee Henry G. Booker Fellow and selected as the recipient of the 1999 URSI Koga Gold Medal. He also was awarded the UIUC's 2001 Xerox Award for Faculty Research, appointed 2002 Beckman Fellow in the UIUC Center for Advanced Studies, named 2003 Scholar in the Tel Aviv University Sackler Center for Advanced Studies, selected as UIUC 2003 University and Sony Scholar. In 2011 he received the UM College of Engineering David E. Liddle Research Excellence Award. In 2014 he was the recipient of the IEEE APS Chen-To-Tai Distinguished Educator Award, and in 2017 he received the IEEE APS Sergei A. Schelkunoff Transactions Prize Paper Award. He is a Fellow of the IEEE (elected 2002) and a member of URSI Commission B.

Eric Michielssen authored or co-authored over 200 journal papers and book chapters and over 400 papers in conference proceedings. His research interests include all aspects of theoretical and applied computational electromagnetics. His research focuses on the development of fast frequency and time domain integral-equation-based techniques for analyzing electromagnetic phenomena, and the development of robust optimizers for the synthesis of electromagnetic/optical devices.

2020 IEEE AP-S PAPER AWARDS

SERGEI A. SCHELKUNOFF TRANSACTIONS PRIZE PAPER AWARD

David S. Abraham and Dennis D. Giannacopoulos

"A Convolution-Free Mixed Finite-Element Time-Domain Method for General Nonlinear Dispersive Media," IEEE Transactions on Antennas and Propagation, vol. 67, no. 1, (2019): 324-334.

HAROLD A. WHEELER APPLICATIONS PRIZE PAPER AWARD

Matthew Jared Horst Mohammad Tayeb Ghasr , and R. Zoughi

"Compact Microwave Camera Based on Chaotic Excitation Synthetic Aperture Radar (CESAR)" IEEE Transactions on Antennas and Propagation 67, no. 6, (2019): 4148-4161.

R. W. P. KING PAPER AWARD

David R. Hendry and Amin M. Abbosh

"Coupled-Resonator Theory of Isolation in Multi-Mode Antennas." IEEE Transactions on Antennas and Propagation 67, no. 9 (2019): 5801-5811.

PIERGIORGIO L. E. USLENGHI LETTERS PRIZE PAPER AWARD

Nikolai Simonov, Seong-Ho Son, and Min-Ho Ka,

"Method for Scattering of Electromagnetic Waves from the Human Body Based on Truncated Norton Surface Wave Approximation," IEEE Antennas and Wireless Propagation Letters 18, no. 8 (2019): 1631-1635.

EDWARD E. ALTSCHULER AP-S MAGAZINE

PRIZE PAPER AWARD

Jian-Ming Jin, and Su Yan

"Multiphysics modeling in electromagnetics: Technical challenges and potential solutions." IEEE Antennas and Propagation Magazine 61, no. 2 (2019): 14-26.

2020 SOCIETY RECOGNITIONS

2019 President

Koichi Ito

Outgoing Adcom

Roberto Graglia (2015 President)

Zhongxiang Shen

Agostino Monorchio

Silvo Barbin

Donald McPherson

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Co-Chair

Ahmed Kishk

Lot Shafai

David Michelson

Yahia M. M. Antar

2020 Technical Program Chairs

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Ke Wu

Ashwin K. Iyer

Marco Antoniadis

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COMPLETING THEIR TERMS

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Hang Wong

Jim West

Sandra Costanzo

Costas Constantinou

Pedram Mousavi

2020 RAJ MITTRA TRAVEL GRANT AWARD

Professor LeyreAzpilicueta, Research Professor,
Tecnologicode Monterrey, Mexico

2020 OUTSTANDING CHAPTER AWARDS

1ST PLACE

Islamabad AP03/MTT17/EMC27 Joint Chapter

2ND PLACE

UFCG Bahia Student Branch Chapter

3RD PLACE

Malaysia AP/MTT/EMC Joint Chapter

2020 AP-S STUDENT PAPER COMPETITION FINALISTS

Xu Gengyu, University of Toronto

Shaham Amit, Technion - Israel Institute of Technology

Lu Elliot, Michigan State University

Vakalis Stavros, Michigan State University

Wang Xiaoyi, Polytechnique Montréal

Zhu Jiyue, University of Michigan

Nallandhigal Srinaga Nikhil, École Polytechnique de Montréal

Lin Shen, University of Illinois at Urbana-Champaign

Park Junho, Pohang University of Science and Technology

Xue Li, Purdue University

2020 STUDENT DESIGN CONTEST FINALISTS

**Blindsee - King Abdullah University of Science & Technology (Saudi Arabia) /
University of Electronic Science and Technology of China (China)**

Title: A "Light" Beam for the Blind

Faculty Advisor: Atif Shamim

Members: Yiming Yang, Jiahao Zhou, Haoran Zhang, Heng Wang

Eclectic Engineers - Lund University (Sweden)

Title: In tune with radar - A radar based musical instrument

Faculty Advisor: Mats Gustafsson

Members: LOsama Eldawebi, Ludvig Lifting, William Marnfeldt, Shervin Sedighi

ETF Belgrade - University of Belgrade (Serbia)

Title: FMCW Drone Detection Radar

Faculty Advisor: Slobodan Savić, Milan Ilić

Members: Danilo Đokić, Nikola Milenić, Pavle Petrović, Nemanja Grbić

MSU- Michigan State University (USA)

Title: Drone Detection and Localization System

Faculty Advisor: Jeffrey Nanzer

Members: Cory Hilton, Jason Merlo, Torre Rocco, Stavros Vakalis

PWR Radar - Wroclaw University of Science and Technology (Poland)

Title: Radar Theremin

Faculty Advisor: Adam Narbudowicz

Members: Alicja Kwaśny, Piotr Grobelny, Aleksander Kubeczek, Kamil Mężyński

Troy - National Taiwan University (Taiwan)

Title: Wearable Trojan Radar System

Faculty Advisor: Shih-Yuan Chen

Members: Yun-Ying Chan, Huan-Ting Chen, Ting-Chia Hsu, Shih-Ming Huang, Wa-Kin Lei

2020 USNC-URSI AWARDS

USNC-URSI BOOKER FELLOWSHIP AWARD

Dr. Salvatore Campione, Sandia National Laboratories

"For innovative contributions to the electromagnetic modeling of complex systems and structures from microwave to optical frequencies."



Information about the award:

The USNC-URSI Booker Fellowship is awarded once every triennium to an outstanding young American researcher (not over the age of 35 as of Sept. 30 preceding the URSI General Assembly and Scientific Symposium). The award includes a certificate and a monetary prize of \$2,000 USD to assist with the travel costs to attend the URSI General Assembly and Scientific Symposium in Rome, Italy during Aug. 2021.

2020 USNC-URSI STUDENT PAPER COMPETITION FINALISTS

**Biological Cells Communication: Quorum Sensing versus
Electromagnetic Signaling**

Student: Navid Barani

Advisor: Kamal Sarabandi

Department of Electrical and Computer Engineering,
University of Michigan, Ann Arbor, MI, USA

A Spatially-Confined, Platform-Based HF Direction Finding Array

Student: Ruyu Ma

Advisor: Nader Behdad

Department of Electrical and Computer Engineering,
University of Wisconsin-Madison, Madison, WI, USA

**Fast Surface Integral Modeling of Penetrable Media with an Iteratively-
Assembled Surface Impedance Operator**

Student: Shashwat Sharma

Advisor: Piero Triverio

Edward S. Rogers Sr. Department of Electrical & Computer Engineering,
University of Toronto, Toronto, ON, M5S 3G4 Canada

USNC-URSI RECOGNITION

The USNC-URSI would like to congratulate the following members who will receive Awards in the URSI General Assembly and Scientific Symposium in Rome, Italy in Aug. 2021.

Prof. Raj Mittra (Karl Rawer Gold Medal)

Prof. John Volakis (Booker Gold Medal)

Dr. Xiaolan Xu (Santimay Basu Prize)